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Spent Nuclear Fuel Management
and
Idaho National Engineering Laboratory
Environmental Restoration and
Waste Management Programs
Final Environmental Impact Statement

Volume 3
Part A

April 1995

U.S. Department of Energy
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COVER SHEET

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ABSTRACT: This document analyzes at a programmatic level the potential environmental consequences over the next 40 years of alternatives related to the transportation, receipt, processing, and storage of spent nuclear fuel under the responsibility of the U.S. Department of Energy. It also analyzes the site-specific consequences of the Idaho National Engineering Laboratory sitewide actions anticipated over the next 10 years for waste and spent nuclear fuel management and environmental restoration. For programmatic spent nuclear fuel management, this document analyzes alternatives of no action, decentralization, regionalization, centralization and the use of the plans that existed in 1992/1993 for the management of these materials. For the Idaho National Engineering Laboratory, this document analyzes alternatives of no action, ten-year plan, and minimum and maximum treatment, storage, and disposal of U.S. Department of Energy wastes.
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INTRODUCTION

DOE added Volume 3, Response to Public Comments, to the Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Environmental Impact Statement (EIS) to fully address and respond to public comments on the Draft EIS. In addition, DOE considered public comments, along with other factors such as programmatic need, technical feasibility, and cost, in arriving at DOE’s preferred alternatives. During the public comment period for the Draft EIS, more than 1,430 individuals, agencies, and organizations provided comments. This volume represents a broad spectrum of private citizens; businesses; local, state, and Federal officials; Native American Tribes; and public interest groups. Comments were received from all affected DOE and shipyard communities.

Volume 3 summarizes the comments on the EIS that DOE received during the public comment period, and provides responses to those comments. In addition, this volume includes discussions of how public comments influenced the identification of the preferred alternatives, the extent to which public comments led to changes to the EIS, and a description of how to find specific comment summaries and responses in this volume.

Responses to comments consist of two parts. The first summarizes the comment(s), and the second responds to the comment(s). Frequently, identical or similar comments were provided by more than one commenter; in such cases, DOE grouped the comments and prepared a single response for each group. Summarization of comments was also appropriate because of the large number of comments received.

In compliance with the provisions of the National Environmental Policy Act (NEPA) and Council on Environmental Quality (CEQ) regulations, public comments on the Draft EIS were assessed and considered both individually and collectively by DOE and the Navy. Some comments led to EIS modifications or explanations of why comments did not warrant further response. Most comments not requiring an EIS change resulted in a response to correct readers’ misinterpretations, to explain or communicate government policy, to clarify the scope of the EIS, to explain the relationship of this EIS to other related NEPA documentation, to refer commenters to information in the EIS, to answer technical questions, or to further explain technical issues.
The Record of Decision will include the decisions made by the Secretary of Energy, who will consider public comments on the Draft EIS.

How DOE Considered Public Comments in the NEPA Process

As required in the CEQ regulations [40 CFR 1502.14(c)], the Final EIS identifies DOE's preferred alternatives. The preferred alternatives were identified based on consideration of environmental impacts, regulatory compliance, DOE and spent nuclear fuel (SNF) programmatic missions, Idaho National Engineering Laboratory (INEL) environmental restoration and waste management programs, public issues and concerns, national security and defense, cost, and DOE policy. Public input considered in DOE's identification of preferred alternatives included concerns, desires, and opinions regarding the activities addressed in the EIS, and expectations of DOE in making the decisions on complex-wide programmatic SNF management and SNF management, environmental restoration, and waste management programs at INEL.

Public input contributed to the development of performance factors, defined as desirable attributes or characteristics that measure the relative acceptability of alternatives, which were used to identify candidate preferred alternatives. The candidate preferred alternatives then were evaluated against technical and nontechnical sensitivities, including public perception of environmental impacts, indicated stakeholder preferences, implementation flexibility, regulatory risk, SNF processing potential, environmental justice, potential resistance to implementation, and fairness.

DOE's preferred alternative for SNF management reflects DOE and public consensus that SNF should be actively managed in preparation for ultimate disposition. DOE's preferred alternative for SNF management, environmental restoration, and waste management at INEL reflects DOE's goal and the public's desire to have those activities meet DOE's obligations under agreements negotiated or anticipated with the U.S. Environmental Protection Agency and the State of Idaho. The EIS, including its preferred alternatives, will be considered by the Secretary of Energy, along with other factors, to arrive at a decision to be documented in a formal Record of Decision.

Changes to the EIS Resulting From Public Comments

A major purpose of NEPA is to promote efforts that will prevent or eliminate damage to the environment by ensuring informed decisionmaking on major Federal actions significantly affecting the quality of the human environment. Consideration of public comments on the Draft EIS helps ensure that the EIS is an adequate decisionmaking tool; accordingly, this EIS has been enhanced, as appropriate, in response to public comments. However, commentors raise specific issues and concerns, none of the comments identify new reasonable alternatives requiring assessment or result in a significant change in the analysis of potential environmental consequences.

Based on review of public comments, coupled with consultations held with commenting agencies, as well as state and tribal governments, the main EIS enhancements include the following.

Seismic and water resource discussions and analyses were reviewed, clarified, and enhanced for all alternative sites, and current data and analyses were added to Volumes 1 and 2, as appropriate. A discussion of potential accidents caused by a common initiator was added. The option of stabilizing some of DOE's SNF (specifically from N-Reactor) by processing it at available facilities overseas was added, thus enhancing processing options discussed in the EIS. DOE added to the EIS an analysis of barge transportation with respect to the option of shipping N-Reactor fuel to a point for overseas processing, as well as to support the potential transport of Brookhaven National Laboratory SNF to another site, as appropriate. In addition, DOE added an analysis of shipboard fires, primarily in response to comments related to receiving SNF containing uranium from foreign research reactors.

In Volume 2, DOE revised the air quality analysis to upgrade the information on existing baseline conditions. The analysis compared impacts of each alternative with Prevention of Significant Deterioration increment limits. Additionally, the Waste Experimental Reduction Facility project summary was enhanced and clarified. The EIS also was revised to reflect current projections of employment, including the projected downsizing of the INEL work force due to contractor consolidation.

In response to public comments, a brief summary of a separate cost evaluation of the various alternatives was added to the EIS, although the cost evaluation was performed independently of this EIS for additional purposes. The discussion about the options regarding management of Fort St. Vrain SNF currently stored in Colorado was expanded. As committed to in the Draft EIS, the evaluation and discussion of environmental justice was expanded in Volumes 1 and 2; this analysis is based on interim DOE guidance in the absence of DOE or interagency policy in this regard, and reflects limited public comments received about environmental justice. Consultation with commenting Native American Tribes is reflected in the environmental justice analysis, as well as in various sections of the EIS, as appropriate.
Other enhancements include a clarification that potential shipment of SNF containing uranium of U.S. origin from foreign research reactors consists of a bounding estimate of 22 metric tons of heavy metal. In addition, as a result of public comments, DOE enhanced Volume 1 to include a description that clarifies the relationship between other SNF-related DOE NEPA reviews and this EIS. In the same regard, the relationship between this EIS and the Spent Fuel Vulnerability Assessment Action Plans was clarified in the EIS. With regard to Naval SNF, enhancements to Appendix D (Naval Spent Nuclear Fuel Management) include providing additional information in the following areas: importance of Naval SNF examination, impacts of not refueling or defueling nuclear-powered vessels, the reasons why storage and processing Naval SNF in foreign facilities were not evaluated in detail, environmental justice considerations, the transition period required to implement Naval SNF alternatives, potential accident scenarios at Naval shipyards, and uncertainties in calculating potential environmental impacts.

Editorial changes were made to the EIS to correct errors, none of which was considered substantive, and to clarify discussions deemed by some commentors to be misleading.

How to Use Volume 3 to Locate Responses

Volume 3 is organized into topical sections, which are listed in the Table of Contents.

Volume 3 also contains three appendices to help readers locate specific comment summaries and responses. Appendix A is an alphabetical list of commentors' last names, organizations or agencies, showing for each the associated comment document number and response section number(s). For some entries, the word "Anonymous" or "Indeterminate" appears in the left column. Anonymous entries include comment documents with no names or organizations appearing anywhere in the document, or commentors at public hearings who wished to remain anonymous. "Indeterminate" reflects a name that was illegible due to the commentor's penmanship or poor quality of the comment document, or unidentifiable due to a poor recording from the toll-free telephone line.

Appendix B is a sequential numerical list of comment document numbers showing associated commentors and response section numbers. The comment document number is useful for cross-referencing. Complete (unsummarized) comment documents can be found in the reading rooms and information locations listed at the end of the Summary and in Volumes 1 and 2.

Appendix C is a correlation of response section numbers to comment document numbers.

A comment document can be a mailed letter, facsimile, oral or written testimony, exhibits or questions from a public hearing, or an comment given over the toll-free telephone line. Comment documents can, and often do, contain multiple individual comments, and each corresponding response might fall under a different response section.

To find a response to comment(s):

1. Turn to Appendix A and find your name (or organization or agency, if you stated that you represented one of these), and note the response section number(s) assigned to that comment document.

2. Turn to the Table of Contents under the heading Comment Summaries and Responses, where response section numbers are listed in numerical order, to find the page on which the response section number(s) that apply to your comment(s) appear.

3. Turn to the appropriate page(s) to find a response to a summary of your comment.

Use the same process to find another person's or organization's comments.

If your comment document contains more than one comment, repeat steps 2 and 3 for each comment because each response could fall under a different response section.

How to Find Reference Documents

Technical references and other supporting documentation cited in Volume 3 are available in the reading rooms and information locations listed at the end of the Summary and in Volumes 1 and 2. Readers can find the document of interest on the alphabetical list provided in the reading rooms and information locations.
ACRONYMS

ALARA: as low as reasonability achievable
CDC: Centers For Disease Control and Prevention
CEDE: committed effective dose equivalent
CEQ: Council on Environmental Quality
CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act
CFR: Code of Federal Regulations
CWA: Clean Water Act
D&D: decontamination and decommissioning
DCGs: Derived Concentrations Guidelines
DOE·HQ: U.S. Department of Energy, Headquarters
DOT: U.S. Department of Transportation
EA: environmental assessment
EBR: Experimental Breeder Reactor
EDE: effective dose equivalent
EPA: U.S. Environmental Protection Agency
ER&WM: environmental restoration and waste management
ESRP: Eastern Snake River Plain
FEMA: Federal Emergency Management Agency
FFA/CO: Federal Facility Agreement and Consent Order
FONSI: finding of no significant impact
FRR: foreign research reactor
FRR EIS: EIS: Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel
ACRONYMS

HEPA  high efficiency particular air (filter)
HHS  U.S. Department of Health and Human Services
ICPP  Idaho Chemical Processing Plant
INEL  Idaho National Engineering Laboratory
MCLs  maximum contaminant levels
MTHM  metric tons of heavy metal
NEPA  National Environment Policy Act
NRC  U.S. Nuclear Regulatory commission
NTS  Nevada Test Site
NWPA  Nuclear Waste Policy Act
ORR  Oak Ridge Reservation
OSHA  Occupational Safety and Health Administration
PSD  prevention of significant deterioration
RCRA  Resource Conservation and Recovery Act
ROD  Record of Decision
RWMC  Radioactive Waste Management Complex
SDWA  Safe Drinking Water Act
SNF  spent nuclear fuel
SRS  Savannah River Site
TEDE  total effective dose equivalent
TRU  transuranic
UBC  Uniform Building Code
USGS  U. S. Geological Survey
VOCs  volatile organic compounds
WERF  Waste Experimental Reduction Facility
WINCO  Westinghouse Idaho Nuclear Company, Inc.
WIPP  Waste Isolation Pilot Plant

1. PREFERENCE FOR ALTERNATIVES
1.1 Specific Preferences
1.1.1 SNF Management

01.01.01 (002) SNF Management
COMMENT
Commentors prefer alternatives that do not result in foreign spent nuclear fuel being transported through or managed at a specific location, and cite potential catastrophic impacts from releases of radioactive material due to accidents.

RESPONSE
A decision regarding the policy to accept spent nuclear fuel (SNF) from foreign research reactors is being reached through a process based on a separate EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft) (FRR EIS). However, the domestic transportation and management of such SNF, if it is returned to the United States, is included in this EIS to ensure that all potential impacts of SNF transportation are evaluated. See the response to comment 05.12.07.01 (001) regarding the potential for release of radioactive materials during postulated accidents.

1.1.1.1 Action Alternatives

01.01.01.01 (001) Action Alternatives
COMMENT
The commentors object to the Port of Oakland being proposed as an entry and/or transfer point for foreign research reactor spent nuclear fuel.

RESPONSE
The Port of Oakland is considered in the EIS as a potential point of entry for foreign research reactor (FRR) SNF. However, the issue of selecting ports of entry for shipments of FRR SNF is not within the scope of this EIS. That issue is being analyzed in the FRR EIS. DOE will not make a final decision on the acceptance of FRR SNF until the FRR EIS and this EIS are completed.

01.01.01.01 (002) Action Alternatives
COMMENT
The commentor supports the Regionalization by fuel type alternative.
01.01.01.01 (004) Action Alternatives

COMMENT
Commentors oppose the No Action alternative for one or more of the following reasons:

- High-level waste management under this alternative is unacceptable.
- Resources would be wasted.
- It is irresponsible and should be redefined as the choice that just meets existing commitments.
- It is unsafe.
- SNF would be difficult to manage.
- Some university research reactors would be forced to shut down without prompt removal of unneeded nuclear fuel.
- Not permitting shipment of SNF from university reactors will prevent decommissioning of reactors and force universities to incur significant expenses that could not be offset by revenues.
- K-basin wastes at the Hanford Site are not stabilized.
- The increased risk is considered unacceptable.

RESPONSE
Volume 1, section 3.1 identifies the preferred alternative for programmatic SNF management and the actions DOE would take to the extent required by this alternative. Research and development activities would be included. See also the response to comment 04.04 (008).

01.01.01.01 (005) Action Alternatives

COMMENT
Commentors object to bringing additional spent nuclear fuel to the Oak Ridge Reservation, where rainfall and percolation rates are perceived to be too high, and suggests a drier, western location instead.

RESPONSE
Analyses performed for this EIS and summarized in Volume 1, Chapter 5 and Appendix F, Part Three, section 5.8 indicate that the environmental consequences of the five SNF management alternatives would be small at any of the sites, including the Oak Ridge Reservation. Therefore, bringing additional SNF to this site is not likely to add to environmental or health hazards that may already exist.

01.01.01.01 (013) Action Alternatives

COMMENT
The commentor supports the No Action alternative, with the opinion that all other alternatives merely "move the problem around," placing it "out of sight, out of mind."

RESPONSE
Volume 1, section 1.1 of the EIS has a comprehensive discussion of the options available for managing SNF, including storage, stabilization, transportation, and preparation for final disposition. Specific technologies to accomplish these options are discussed in Volume 1, Appendix J. These options are incorporated to varying extents in all of the alternatives, as described in Volume 1, Chapters 3 and 5. The alternatives have definite purposes for relocating SNF, such as storing similar fuel types in a single secure facility. In this way, the alternatives attempt to balance transportation concerns with other worthy considerations, including nonproliferation, worker safety, and cost effectiveness. Methods for final disposition, such as burial, are outside the scope of this EIS.
01.01.01.01 (015) Action Alternatives

COMMENT
Commentors state that transportation risks and the need to avoid such risks prior to final movement of spent nuclear fuel to a permanent storage site must be considered. Commentors also express a preference for a Decentralization alternative with no transportation, and/or allude to a "shell game" whereby unnecessary movements of spent nuclear fuel are being made.

RESPONSE
Transportation risks were analyzed for all the alternatives and no significant impacts were identified. DOE evaluated the alternatives not only from the standpoint of environmental impacts, but from the perspective of deciding on an appropriate programmatic strategy for managing DOE SNF until decisions are made regarding its ultimate disposition. Such decisions are anticipated within the next 40 years. This programmatic strategy must not only address currently identified vulnerabilities in the management of SNF, but ensure safe, environmentally sound, and cost-effective SNF management in the future. The role of transportation, and its costs and impacts, is a factor in making these decisions and a tool in implementing programmatic decisions. There have not been, nor will there be, unnecessary movements of SNF.

01.01.01.01 (019) Action Alternatives

COMMENT
The commenter expresses a preference for the No Action alternative because DOE will be forced to evaluate the necessity for generating radioactive waste and minimize the waste streams to the lowest extent possible.

RESPONSE
In general, DOE has adopted a policy emphasizing waste minimization and avoidance, as discussed in Volume 2, Chapters 1 and 2 of the EIS. Most new radioactive waste will be created during unavoidable cleanup activities and decommissioning of contaminated facilities that no longer serve essential national missions. However, DOE does not officially consider SNF a waste material. Continuing or eliminating all sources of SNF is, therefore, not part of DOE's waste minimization objectives and is outside the scope of this EIS.

01.01.01.01 (022) Action Alternatives

COMMENT
The commenter prefers an alternative that manages spent nuclear fuel at its current location or at the site of generation without polluting the environment, and states that if spent nuclear fuel must be transported for safety reasons, transportation should be minimized.

RESPONSE
Several alternatives in this EIS evaluate leaving all or most SNF where it is now stored or generated. In addition, other EIS alternatives were evaluated to consider providing and maintaining DOE's flexibility to safely, efficiently, and responsibly manage SNF until final disposition decisions can be made. General technologies for managing SNF are discussed in Volume 1, section 1.1.3 and Appendix J of the EIS. Volume 1, Figure 3-7 compares estimated shipments among all of the alternatives. The wide range of shipment numbers reflects DOE's desire to consider all realistic transportation possibilities and the related stakeholder concerns. See also the response to comment 04.04 (008).

01.01.01.01 (026) Action Alternatives

COMMENT
The commentator states that radioactive wastes should remain at their current locations pending development of final solutions, and states that a nationwide EIS on a broad-based, solution-oriented waste policy needs to be prepared.

RESPONSE
DOE is preparing the Waste Management Programmatic Environmental Impact Statement, and public comments will be solicited on the waste policies to be addressed in that document.

01.01.01.01 (029) Action Alternatives

COMMENT
Commentors favor the Decentralization alternative, a modified Decentralization alternative, or a hybrid including the Decentralization alternative because decentralization of spent nuclear fuel management requires generators to assume responsibility for their spent nuclear fuel and requires minimal transportation. Recommended modifications include Decentralization with limited exam for Navy fuel at the Idaho National Engineering Laboratory. Storage preferences include dry cask storage and canning of spent nuclear fuel over processing.

RESPONSE
Volume 1, section 3.1 describes DOE's preferred alternative for SNF management; Volume 2, section 3.4 describes the preferred alternative for SNF management, environmental restoration, and waste management at INEL. See the responses to comments 04.04 (008) and 04.04 (011).

01.01.01.01 (033) Action Alternatives

COMMENT
The commenter supports centralization or regionalization of existing nuclear fuel inventories.
RESPONSE
Volume 1, section 3.1 identifies the preferred alternative for programmatic SNF management and the actions that DOE would take to the extent required by this alternative. Research and development activities would be included.

01.01.01.01 (038) Action Alternatives
COMMENT
The commentor prefers the Regionalization by fuel type alternative for handling Naval, research reactor, and some foreign research reactor spent nuclear fuel at Idaho National Engineering Laboratory, with the remainder going to the Savannah River Site and, for the INEL-specific recommendations, supports a mix of the Ten-Year Plan and Maximum Treatment, Storage, and Disposal alternatives that would be compatible with Regionalization by fuel type and the Navy's preferred alternative. In addition, the commentor suggests that reprocessing these materials at the Idaho Chemical Processing Plant be considered as an alternative in the EIS, and the debate on reprocessing should not be because of politics.

RESPONSE
Volume 1, Chapter 3, and Volume 2, Chapter 3 show the actions DOE would take to the extent required by this alternative. Activities related to SNF management, including processing and research and development, are covered. See also the response to comment 06.05 (001).

01.01.01.01 (039) Action Alternatives
COMMENT
The commentor opposes the Centralization alternative because it would require extensive shipment to interim storage sites and to ultimate disposal sites.

RESPONSE
The commentor is correct in anticipating the need for further SNF shipments after a decision is made regarding ultimate disposition of DOE SNF in a permanent repository. However, assessment of the impacts of these shipments is outside the scope of this EIS. The scope of Volume 1 of this EIS is limited to storage and related transportation of DOE SNF until 2035. It may take that long to make and implement a decision on ultimate disposition of DOE SNF. Because space in a permanent repository may not be available for 40 years, DOE evaluated EIS a range of reasonable alternatives to safely manage DOE SNF in the interim.

1.01.01.01 (040) Action Alternatives
COMMENT
The commentor recommends that the three existing primarily spent nuclear fuel DOE locations for interim storage be maintained in the preferred alternative.

RESPONSE
The preferred alternative for programmatic SNF management is discussed in Volume 1, section 3.1.

01.01.01.01 (041) Action Alternatives
COMMENT
The commentor prefers the programmatic No Action alternative because the existing DOE spent nuclear fuel storage sites have vulnerabilities, as delineated in the Spent Fuel Working Group Report.

RESPONSE
The need to correct existing SNF storage vulnerabilities was a factor in determining the preferred alternative for programmatic SNF management, as described in Volume 1, section 3.1.

01.01.01.01 (042) Action Alternatives
COMMENT
The commentor supports the 1992/1993 Planning Basis alternative because of the urgency for resolving the Hanford K-basin problems, and because the alternative is less costly, less risky, and involves less transport than most other alternatives.

RESPONSE
The factors mentioned are covered in the preferred alternative for programmatic SNF management, which is described in Volume 1, Chapter 3.

01.01.01.01 (043) Action Alternatives
COMMENT
The commentor asserts that it is environmentally more attractive to manage spent nuclear fuel at the point of origin.

RESPONSE
Volume 1, section 3.1, and Volume 2, section 3.4 describe the preferred alternatives for SNF management. The impacts of all of the alternatives are given in Volume 1, Chapter 5 and Appendix K. The analyses show that, for all of the alternatives analyzed in this EIS, the impacts would be small.
01.01.01 (045) Action Alternatives

COMMENT
The commenter notes that there is only a small difference between the analyses for the Decentralization and the 1992/1993 Planning Basis alternatives.

RESPONSE
The commenter is correct. Actions taken under the Decentralization alternative would be similar to those that would occur under the 1992/1993 Planning Basis alternative.

DOE believes that the range of alternatives analyzed in the EIS is inclusive and in accordance with the philosophy of considering a full range of reasonable alternatives, as required by the provisions of the National Environmental Policy Act (NEPA) and Council on Environmental Quality (CEQ) regulations.

01.01.01.01 (046) Action Alternatives

COMMENT
The commenter opposes the Regionalization and Centralization alternatives based on the generation of high-level and transuranic wastes due to spent nuclear fuel stabilization activities conducted under these alternatives.

RESPONSE
Volume I, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small. Volume 1, section 3.1 describes DOE's preferred alternative for programmatic SNF management; Volume 2, section 3.4 describes the preferred alternative for SNF management, environmental restoration, and waste management at INEL. See also the response to comment 01.01.01.01 (022).

1.1.1.2 Siting Alternatives

01.01.01.02 (001) Siting Alternatives

COMMENT
The commenter states that it is inappropriate to store spent nuclear fuel at the Oak Ridge Reservation because of that area's high rainfall.

RESPONSE
Rainfall, like all other environmental parameters, such as high winds and seismic activity, is one of the factors in the design of SNF storage facilities for a given site. Rainfall is explicitly considered in the analysis of the potential dispersal of radioactive materials, be it by air, surface water, or groundwater.

Such analyses are used to design SNF storage facilities to prevent the dispersal of radioactive materials by any means. Thus, DOE considers that the amount of rainfall, in and of itself, is not a sufficient reason to eliminate a site from consideration as a reasonable alternative for managing SNF.

01.01.01.02 (002) Siting Alternatives

COMMENT
The commenter opposes spent nuclear fuel storage at the Idaho National Engineering Laboratory because of wind patterns.

RESPONSE
DOE's policy is to operate its facilities in compliance with all applicable Federal and state air quality standards and DOE Orders, and to protect human health and the environment. To determine compliance, DOE must take winds into account.

Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses of public exposure to airborne radioactive materials show that impacts would be small for all alternatives considered.

01.01.01.02 (003) Siting Alternatives

COMMENT
The commenter expresses the opinion that the Hanford Site is unsuitable for storing foreign research reactor spent nuclear fuel due to current conditions in the K-basins and the potential impacts of proposed additional activities on those basins if the foreign research reactor spent nuclear fuel is accepted for storage.

RESPONSE
Volume 1, Appendix A, section 2.3 discusses the SNF management program at the Hanford Site, and includes a description of near-term activities to correct problems at existing facilities. Volume 1, Appendix A, section 3.1 discusses facilities and options for SNF management to be analyzed under each of the proposed alternatives. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small.
The commenter states that DOE should consider several regional facilities that accept, in an equitable manner for disposal, spent nuclear fuel, weapons, and waste generated in their regions and not use just the Nevada Test Site for such disposal.

RESPONSE

In response to public comments raised during the scoping process, DOE identified two additional alternative sites: the Oak Ridge Reservation in Tennessee and the Nevada Test Site. The selection process is summarized in the May 9, 1994, amendment to the Implementation Plan for the Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs EIS. It is treated in detail in the Alternative Site Selection Decision Process Report.

The documents identified above state that the Nevada Test Site is not a preferred site for spent nuclear fuel (SNF) management because of the State of Nevada's current role as the host site for the Yucca Mountain Site Characterization Project. See also the response to comment 04.04 (008) on DOE's preferred alternative.

The ultimate disposition of DOE SNF, waste, and weapons is outside the scope of this EIS and is likely to be decided by Congress.

01.01.01.02 (005) Siting Alternatives

COMMENT

The commenter does not want commercial spent nuclear fuel ending up at Bremerton.

RESPONSE

The EIS does not consider management of commercial SNF. Neither DOE nor the Navy is considering this action.

01.01.01.02 (006) Siting Alternatives

COMMENT

Commentors prefer alternatives that do not result in additional nuclear waste or spent nuclear fuel being managed in various locations (the Idaho National Engineering Laboratory, the Nevada Test Site, the Savannah River Site, the Hanford Site, and the Puget Sound Naval Shipyards). In addition, commentors express opinions, including:

- That they have enough waste and/or problems at the site
- That it is irrational to add more nuclear waste to what is there
- That past practices, safety, transportation, and/or mission conflict with proposed actions for the site
- That temporary storage may become permanent
- That permanent disposal/disposition is needed
- That better sites that present less risk are available
- That low population density, lack of government action, profit motivation, isolation, and/or lack of visibility is a poor justification
- That there is a risk to water resources, fragile ecosystems, or the environment
- That increased spent nuclear fuel management activity will be detrimental to diversification of the site mission and local economy
- That spent nuclear fuel should be managed at its current site
- That Pit 9 Project waste should not be reburied at the Idaho National Engineering Laboratory

RESPONSE

Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small. Volume 1, section 3.1 and Volume 2, section 3.4 describe the preferred alternatives for programmatic SNF management and SNF management, environmental restoration, and waste management at the INEL respectively. See the response to comment 07.02.01 (003) for information regarding the Pit 9 Project. See the responses to comments 04.04 (008) and 04.04 (011) for DOE's preferred alternatives.

01.01.01.02 (008) Siting Alternatives

COMMENT

Commentors express a preference for alternatives that do not result in additional nuclear waste or spent nuclear fuel being managed in South Carolina. In addition, commentors express one or more of the following opinions:

- That they have enough waste and/or problems at the site
- That such material be stored in areas of low population density rather than areas of high population density
- That past practices, safety, transportation, and/or mission conflict with proposed actions for the site
That temporary storage may become permanent
That permanent disposal/disposition is needed
That better sites that present less risk are available
That low population density, lack of government action, profit motivation, isolation, and/or lack of visibility is a poor justification
That there is a risk to water resources, fragile ecosystems, or environment
That increased spent nuclear fuel management activity will be detrimental to diversification of the site mission and local economy
That spent nuclear fuel should be managed at its current site or where it is being generated/received

RESPONSE
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small.

Volume 1, section 3.1, and Volume 2, section 3.4 describe the preferred alternatives for spent nuclear fuel management. See the responses to comments 04.04 (008) and 04.04 (011).

01.01.01.02 (010) Siting Alternatives

COMMENT
The commenter states that 40 years of temporary storage of spent nuclear fuel at the Idaho National Engineering Laboratory is hardly temporary. In addition, the commenter states that it is in the nation's best interest to create storage solutions for existing wastes, and that additional waste should not be sent to Idaho.

RESPONSE
Volume 1 of this EIS considers alternative approaches to safely, efficiently, and responsibly manage existing and projected quantities of SNF until 2035. This amount of time may be required to make and implement a decision on the ultimate disposition of SNF. This EIS provides the environmental information to support decisions that will facilitate a transition from DOE's current practices and ultimate disposition of SNF. The Navy and DOE intend to make the transition from fuel management under the alternatives considered in this EIS to ultimate disposition as quickly as practicable.

For more information on interim storage, see the response to comment 06.06 (003).

01.01.01.02 (011) Siting Alternatives

COMMENT
Commentors express a preference for alternatives that do not result in additional nuclear waste or spent nuclear fuel being managed in Tennessee. In addition, commentors express one or more of the following opinions:

- That they have enough waste and/or problems at the site
- That thousands of shipments of spent nuclear fuel to the Oak Ridge Reservation for the Regionalization alternative are not justified given that 98 percent of the spent nuclear fuel inventory now is stored at the Hanford Site, the Idaho National Engineering Laboratory, and the Savannah River Site
- That the Centralization alternative for the Oak Ridge Reservation makes no sense given the large number of shipments required that pose risks to persons in urban and suburban populations
- That such material be stored in areas of low population density rather than areas of high population density
- That past practices, safety, transportation, and/or mission conflict with proposed actions for the site
- That temporary storage may become permanent
- That permanent disposal/disposition is needed
- That better sites that present a lower risk are available
- That low population density, lack of government action, profit motivation, isolation, and/or lack of visibility is a poor justification
- That there is a risk to water resources, fragile ecosystems, or environment
- That increased spent nuclear fuel management activity will be detrimental to diversification of the site mission and local economy
- That spent nuclear fuel should be managed at its current site or where it is being generated/received

RESPONSE
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small. Volume 1, section 3.1, and Volume 2, section 3.4 describe the preferred alternatives for spent nuclear fuel management. See also the responses to comments 04.04 (008) and 04.04 (011).
01.01.01.02 (012) Siting Alternatives

COMMENT
The commentor states that the Idaho National Engineering Laboratory is not a suitable site to receive and store additional spent nuclear fuel, citing seismic risk, groundwater hydrology, location relative to sources and likely repositories, and present site facility problems.

RESPONSE
Volume 1, Appendix D, and Volume 2, Chapter 5 discuss the impacts of SNF and waste management on INEL. These impacts would be small under all the alternatives considered in this EIS.

01.01.01.02 (013) Siting Alternatives

COMMENT
The commentor expresses a preference for alternatives that do not result in additional nuclear waste being managed at the site. The commentor objects to waste being “reburied” in Idaho.

RESPONSE
The commentor’s objection to Pit 9 activities at the Radioactive Waste Management Complex (RWMC) at INEL is noted. Although Volume 2 of this EIS bounds all environmental restoration activities at INEL during the period 1995 through 2005, specific decisions regarding Pit 9 are governed by the Comprehensive Environmental Response, Compensation, and Liability Act, which has associated public involvement processes through which to obtain public input.

01.01.01.02 (014) Siting Alternatives

COMMENT
The commentor expresses a general preference for siting spent nuclear fuel management activities at the Oak Ridge Reservation. The commentor further notes that the capability exists at the Oak Ridge Reservation to manage spent nuclear fuel and that the jobs would be welcome.

RESPONSE
The commentor's preference and opinion are noted.

01.01.01.02 (015) Siting Alternatives

COMMENT
The commentor expresses a preference for siting spent nuclear fuel management activities at the Oak Ridge Reservation. The commentor further notes that the capability exists at the Oak Ridge Reservation to manage spent nuclear fuel and that the jobs would be welcome.

RESPONSE
The commentor's preference and opinion are noted.

01.01.01.02 (016) Siting Alternatives

COMMENT
The commentor expresses a preference for siting spent nuclear fuel management activities at the Oak Ridge Reservation. The commentor further notes that the capability exists at the Oak Ridge Reservation to manage spent nuclear fuel and that the jobs would be welcome.

RESPONSE
The commentor's preference and opinion are noted.

01.01.01.02 (017) Siting Alternatives

COMMENT
The commentor expresses a preference for siting spent nuclear fuel management activities at the Oak Ridge Reservation. The commentor further notes that the capability exists at the Oak Ridge Reservation to manage spent nuclear fuel and that the jobs would be welcome.

RESPONSE
The commentor's preference and opinion are noted.

01.01.01.02 (018) Siting Alternatives

COMMENT
The commentor expresses a preference for siting spent nuclear fuel management activities at the Oak Ridge Reservation. The commentor further notes that the capability exists at the Oak Ridge Reservation to manage spent nuclear fuel and that the jobs would be welcome.

RESPONSE
The commentor's preference and opinion are noted.

01.01.01.02 (019) Siting Alternatives

COMMENT
The commentor expresses a preference for siting spent nuclear fuel management activities at the Oak Ridge Reservation. The commentor further notes that the capability exists at the Oak Ridge Reservation to manage spent nuclear fuel and that the jobs would be welcome.

RESPONSE
The commentor's preference and opinion are noted.

01.01.01.02 (020) Siting Alternatives

COMMENT
The commentor expresses a preference for siting spent nuclear fuel management activities at the Oak Ridge Reservation. The commentor further notes that the capability exists at the Oak Ridge Reservation to manage spent nuclear fuel and that the jobs would be welcome.

RESPONSE
The commentor's preference and opinion are noted.

01.01.01.02 (021) Siting Alternatives

COMMENT
The commentor expresses a preference for siting spent nuclear fuel management activities at the Oak Ridge Reservation. The commentor further notes that the capability exists at the Oak Ridge Reservation to manage spent nuclear fuel and that the jobs would be welcome.

RESPONSE
The commentor's preference and opinion are noted.

01.01.01.02 (022) Siting Alternatives

COMMENT
The commentor expresses a preference for siting spent nuclear fuel management activities at the Oak Ridge Reservation. The commentor further notes that the capability exists at the Oak Ridge Reservation to manage spent nuclear fuel and that the jobs would be welcome.

RESPONSE
The commentor's preference and opinion are noted.

01.01.01.02 (023) Siting Alternatives

COMMENT
The commentor expresses a preference for siting spent nuclear fuel management activities at the Oak Ridge Reservation. The commentor further notes that the capability exists at the Oak Ridge Reservation to manage spent nuclear fuel and that the jobs would be welcome.

RESPONSE
The commentor's preference and opinion are noted.

01.01.01.02 (024) Siting Alternatives

COMMENT
The commentor prefers alternatives that do not result in additional nuclear waste being managed at the Idaho National Engineering Laboratory in Idaho and suggests that existing waste at the site be removed as soon as possible.

RESPONSE
General solutions for managing SNF are discussed in Volume 1, section 1.1.3 and Appendix J of the EIS. Therein it is noted that technologies for final disposition of SNF cannot be specified in advance of repository acceptance requirements. These requirements are several years from completion and approval, but a combination of the technologies described in Volume 1, Appendix J may satisfy the eventual acceptance criteria. Furthermore, consideration is given by the alternatives analyzed in the EIS to providing or maintaining processing flexibility that may prove necessary to meeting the acceptance requirements. Consequently, although the ultimate disposition of SNF is a high priority for DOE, the details of disposition activities have not been finalized and are beyond the scope of this EIS. See also the responses to comments 04.04 (008) and 04.04 (011).

01.01.01.02 (025) Siting Alternatives

COMMENT
The commentor opposes Idaho becoming a nuclear waste dump and states the Idaho National Engineering Laboratory is not the place for a repository. The commentor adds that this is not the proposal being made in the Draft EIS.

RESPONSE
DOE agrees that the possibility of Idaho becoming a nuclear waste "dump" or the INEL becoming a repository is not the proposed action under consideration in this EIS.

On October 22, 1990, DOE published a Notice of Intent in the Federal Register announcing its intent to prepare a programmatic EIS (DOE PEIS) addressing environmental restoration and waste management (ER&WM) (including SNF management) activities across the entire DOE complex. DOE then invited the public to submit written comments on the scope of the Department of Energy Programmatic Environmental Restoration and Waste Management EIS, which is now titled the Waste Management Programmatic EIS, held 23 scoping meetings in Idaho and across the country, and prepared a draft Implementation Plan for the DOE PEIS reflecting the comments provided. DOE held additional public
meetings on the draft Implementation Plan and recorded public comments given at these meetings. The intent of the DOE PEIS was to support complex-width decisions regarding management of ER&WM programs, including management of SNF.

On October 5, 1992, DOE published a Notice of Intent in the Federal Register announcing its intent to prepare an EIS addressing environmental restoration and waste management and SNF activities at INEL. DOE held five scoping meetings in Idaho to solicit comments on the proposed scope and recorded public comments provided at those meetings. The purpose of this INEL EIS, which tiered from the DOE PEIS in accordance with NEPA regulations, was to support site-specific decisions on INEL ER&WM programs, including SNF management at INEL.

On June 28, 1993, as an outgrowth of civil lawsuits involving DOE, the Public Service Company of Colorado (owner of the Fort St. Vrain Nuclear Generating Station) and the State of Idaho, the U.S. District Court for the District of Idaho ordered DOE to include in its EIS considerations of major Federal actions involving transporting, receiving, processing, and storing SNF. Accordingly, the scope of the INEL ER&WM EIS was expanded to include a programmatic EIS for SNF management. All of these actions, along with extensive public comments on each, defined the scope of the EIS. DOE's overall approach and companion EIS evaluations satisfy the procedural requirements of NEPA and should provide adequate consideration of the important impacts.

Volume 1, section 1.2 of the EIS describes actions related to this EIS. Volume 1 of this EIS addresses the environmental impacts of the plans for managing DOE SNF. Volume 1, Appendix B defines the scope and impact of this management program in Idaho. Volume 2 of this EIS was coordinated with and is consistent with both the Waste Management Programmatic EIS and Volume 1 of this EIS for SNF management, because the alternatives evaluated relate to site-specific INEL activities. The Waste Management Programmatic EIS is expected to summarize and consider the impacts of the alternatives evaluated in the EIS regarding SNF and waste management as part of its analysis of cumulative environmental impacts.

DOE considers the evaluation of cumulative impacts in Volume 1, Chapter 5 and site-specific Appendices A through F of this EIS to adequately encompass all reasonably foreseeable actions or activities at any of the 10 sites evaluated for the management of SNF between 1995 and 2035. The cumulative impacts of proposed environmental restoration and waste management at INEL between 1995 and 2005 are addressed in Volume 2, Chapter 5, including the management of SNF at INEL. The integration of programmatic management of SNF into this EIS allows reviewers and decisionmakers to evaluate the environmental impacts of programmatic management alternatives as they relate to the site-specific INEL management of SNF under each alternative being considered.

Pertinent environmental assessments and other EISs were reviewed and considered in the preparation of this EIS, as appropriate, to ensure consistency of information and evaluation of cumulative impacts.

01.01.01.02 (026) Siting Alternatives

COMMENT

The commenter states that the Idaho National Engineering Laboratory does not have adequate infrastructure to support any but the No Action alternative.

RESPONSE

The EIS demonstrates that INEL would be able to support SNF management under any of the alternatives. Under some alternatives, additional construction is needed. Volume 1, Appendix B, section 2.3 discusses the SNF management program at INEL. Volume 2, Appendix C discusses the projects and facilities required to successfully implement this program. This detailed information is summarized in Volume 1, Chapters 1 and 2. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small.

01.01.01.02 (028) Siting Alternatives

COMMENT

The commenter opposes transporting nuclear waste to the Idaho National Engineering Laboratory and supports storing waste at production sites.

RESPONSE

Volume 1, section 3.1, and Volume 2, section 3.4 identify the preferred alternatives for SNF management and discuss the actions DOE would take to the extent required by these alternatives. Research and development activities would be included.

01.01.01.02 (033) Siting Alternatives

COMMENT

The commenter suggests that the use of the language "not a preferred site" when referring to the Nevada Test Site implies that the Oak Ridge Reservation is by definition a "preferred site," when it is not.

RESPONSE

DOE believes this language is appropriate, because it accurately characterizes the inclusion of the Nevada Test Site (NTS) for the purpose of analyzing a site that lacks SNF infrastructure and experience.
As can be seen in the EIS, the NTS "nonpreferred" status still allows for full consideration of alternatives at all alternative sites. See also the response to comment 04.04 (008) on DOE's preferred alternative for programmatic SNF management, and the responses to comments 04.03.01 (028 and 032).

01.01.02 (035) Siting Alternatives

COMMENT
The commentor opposes any form of the Regionalization or Centralization alternatives at the Oak Ridge Reservation.

RESPONSE
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small. Volume 1, section 3.1 describes DOE's preferred alternative for programmatic SNF management. Volume 2, section 3.4 describes the preferred alternative for SNF management, environmental restoration, and waste management at INEL.

1.1.2 INEL ER&WM Programs

01.01.02 (001) INEL ER&WM Programs

COMMENT
Commentors favor a hybrid of the Volume 2 Ten-Year Plan and Maximum Treatment, Storage, and Disposal alternatives.

RESPONSE
The DOE preferred alternative for SNF management, environmental restoration, and waste management programs at INEL is identified in Volume 2, section 3.4. The preferred alternative is a modification or hybrid of the alternatives described in the Draft EIS. See the response to comment 04.04 (011).

01.01.02 (002) INEL ER&WM Programs

COMMENT
The commentor expresses a preference for the Ten-Year Plan alternative with some stipulations, including opposition to the incineration process and more options for low-, high-, and mixed-level wastes besides incineration. The commentor further states that a separate EIS should be developed for any additional incinerators at the Idaho National Engineering Laboratory and assumes an EIS has been done for current incinerators.

RESPONSE
Treatment options, including options other than incineration, for low-level, high-level, and mixed radioactive and hazardous wastes are evaluated in the EIS and are described in Volume 2, section 3.1.2. More detail on specific treatment technologies is provided in Volume 2, Appendix C. Although specific treatment technologies have not been selected for many of the waste streams, combinations of these technologies may be required for effective treatment of some waste streams. Site treatment plans being developed for waste streams will be reviewed and approved by the State of Idaho. Combinations of treatment technologies, or hybrids, are considered bounded by the analyses in this EIS.

Low-level waste has been treated at INEL through incineration at the Waste Experimental Reduction Facility (WERF). As described in Volume 2, section 2.2.7, operation of WERF was suspended in 1991 to upgrade the facility. During the shutdown, the Environmental Assessment, Idaho National Engineering Laboratory Low-Level and Mixed Waste Processing was prepared, which resulted in a finding of no significant impact (FONSI). DOE is currently undertaking supplemental volume reduction activities at WERF with off-site incineration commercial facilities. This EIS includes environmental impacts due to operation of WERF, including the incineration activity. Decisions on resumption of incineration of low-level waste and mixed waste at INEL will be addressed in the Record of Decision (ROD) for this EIS, which will supersede the previous NEPA documentation. Any new specific projects involving incineration will undergo NEPA review, and the need for any additional NEPA documentation, including an EIS, will be determined. Incineration of high-level waste is not currently under consideration as a treatment option.

01.01.02 (003) INEL ER&WM Programs

COMMENT
The commentor states that the continued receipt of transuranic waste on a case-by-case basis under the Decentralization alternative is not "no action."

RESPONSE
The purpose of the No Action alternative is to provide a baseline against which the action alternatives can be measured. The baseline range of existing ongoing activities for a site such as INEL includes many kinds of actions. Termination of a certain set of these activities would be more of a "stop action" alternative, which would complicate defining the baseline.
COMMENT
The commenter objects to waste being reburied at the Idaho National Engineering Laboratory, the Pit 9 Project. The commenter expresses a preference for alternatives that do not result in additional nuclear waste or spent nuclear fuel being managed at the Idaho National Engineering Laboratory.

RESPONSE
Volume 1, section 3.1 identifies the preferred alternative for programmatic SNF management and the actions that would be undertaken by DOE to the extent required by this alternative. Research and development activities would be included.

Specific cleanup decisions, such as the one made for the Pit 9 interim action cleanup, are made under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) based on the INEL Federal Facility Act/Consent Order (FFA/CO) between DOE, the Environmental Protection Agency (EPA) Region X, and the State of Idaho and are not within the scope of this EIS. The objective of cleanup decisions under CERCLA and the FFA/CO, such as for Pit 9, is to reduce the potential for exposure to contamination to ensure that human health and the environment are adequately protected. This is done by establishing cleanup objectives and standards specifically to ensure adequate protection and compliance with applicable environmental standards and guidance. Approximately half of the soil and other material in Pit 9 is estimated to contain less than 10 nanocuries per gram of transuranic elements; after initial excavation, this material would be returned to the pit following assay commensurate with current disposal practices for low-level radioactive wastes at the RWMC, as regulated by DOE Order 5820.2A, Radioactive Waste Management. The remaining half would be removed and treated, both to reduce transuranic concentrations to less than 10 nanocuries per gram and to satisfy risk-based cleanup criteria established in the ROD. Following treatment, this soil and other materials meeting the criteria will be returned to Pit 9 as low-level radioactive waste. The treated concentrate will be in a stable vitrified form. Although an in-depth analysis of risk was not performed for the aboveground storage alternative, it was not preferred because the waste would be stored in an untreated and potentially unstable form for an undetermined period of time until an appropriate treatment method could be found.

To minimize airborne releases, projects involving radioactive particulates at INEL would be conducted within a double-confinement structure. Conservative assumptions normally are used to estimate releases to the atmosphere, such as modeling only two filters in series when at least three are planned for actual operations. See also the response to comment 01.01.01.02 (006).

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01.01.02 (007) INEL ER&WM Programs
COMMENT
The commentor supports the Volume 2 Minimum Treatment, Storage, and Disposal alternative and its development, and supports technology resulting in less, rather than more, waste being generated.

RESPONSE
Volume 1, section 3.1 and Volume 2, section 3.4 describe the preferred alternatives for spent nuclear fuel management. See the response to comments 04.04 (008) and 04.04 (011).

1.1.3 Others

01.01.03 (001) Other
COMMENT
Commentors support finding a safe area in which to store spent nuclear fuel.

RESPONSE
DOE agrees with the comment.

1.2 General Preferences

01.02 (001) General Preferences
COMMENT
Commentors favor the options that would require the least amount of transportation, and oppose transportation of radioactive material, and a particular option.

RESPONSE
DOE complies with U.S. Department of Transportation regulations for transporting radioactive material. These regulations are designed to protect workers and the public by minimizing the risks associated with transporting radioactive material.
In addition, the EIS evaluates a range of reasonable alternatives, from no action, which involves limited transport of radioactive materials, to centralization, which involves extensive transport of radioactive material. The analysis in the EIS shows that the potential risks from transportation would be small for all the alternatives. Nevertheless, the public comment to minimize transportation is one of the factors considered in the DOE decision-making process that will lead to a ROD. Public opposition to alternatives that would involve more, versus less, transportation is also a factor that has been considered in the decision-making process.

A discussion of SNF highway and rail transportation impacts and potential accident impacts is in Volume 1, Chapter 5 and Appendices A through F. DOE follows the U.S. Department of Transportation requirements for off-site transportation of SNF, including the use of licensed shipping containers that meet U.S. Department of Transportation and Nuclear Regulatory Commission performance requirements. As a result, the potential for exposing the public to radiation hazards is extremely low. DOE further minimizes accident risks by following training and route-selection guidelines and uses other procedural controls for hazardous and radioactive shipments. In the unlikely event of an accident, emergency response measures will be taken by DOE and local governmental authorities. As described in the EIS Summary under Public and Worker Health Effects, the overall risk from transportation would be small.

### 1.2.1 SNF Management

#### 01.02.01 (002) SNF Management

**COMMENT**
The commentor favors upgrading existing temporary storage facilities and expediting ultimate disposition over developing a centralized, temporary storage site.

**RESPONSE**
Volume 1, section 3.1 summarizes the alternatives for managing SNF. These alternatives range from a large number of sites to a single centralized site. NTS, which is close to the Yucca Mountain site, is included in the evaluation. Yucca Mountain is being studied as the potential site for the first geologic repository. If the site is found suitable, acceptance of commercial SNF is expected to begin in 2010. DOE high-level waste acceptance is planned for 2015; the date for acceptance of DOE SNF at the repository has not been finalized.

#### 01.02.01 (003) SNF Management

**COMMENT**
The commentor opposes sending N-Reactor spent nuclear fuel or other weapons-grade spent nuclear fuel to Britain for reprocessing.

**RESPONSE**
A discussion of potential foreign reprocessing of N-Reactor SNF is in Volume 1, Appendix A, Attachment B.

#### 01.02.01 (005) SNF Management

**COMMENT**
Commentors find it “frightening” and “absurd” that DOE, the Department of Defense, and the Navy have been unable to come up with a feasible and workable alternative.

**RESPONSE**
DOE believes it has evaluated a full range of reasonable alternatives. Volume 1, section 3.1 describes the preferred alternative for programmatic SNF management. See also the response to comment 04.04 (008).

The programmatic action that DOE ultimately selects is not necessarily limited to one of the alternatives. For example, the ROD could incorporate actions from one or more of the five alternatives analyzed. Moreover, the programmatic decisions will not identify all site-specific SNF management options. If appropriate, the decisions or implementation would be made after additional site-specific NEPA evaluation.

#### 1.2.1.1 Action Alternatives

#### 01.02.01.01 (001) Action Alternatives

**COMMENT**
The commentor prefers that spent nuclear fuel be managed at the nearest good site and not spread out.

**RESPONSE**
The EIS evaluates 10 sites as reasonable alternatives for some level of SNF management activities. The analysis in the EIS considers a number of factors, including risk to the public from both operations and reasonably foreseeable accident conditions. Discussions on public health and safety can be found in the Occupational and Public Health and Safety sections in Volume 1 and its site-specific Appendices A through F, and in Volume 2, section 5.12. The EIS concludes that there would be no significant risks to the public or the environment due to SNF management activities at any of the 10 sites considered.
01.02.01.01 (002) Action Alternatives

COMMENT
The commenter prefers alternatives that manage spent nuclear fuel at its current site or where it is generated or received, which will help keep pressure on waste reduction and disposal activities.

RESPONSE
See the response to comment 04.04 (008).

01.02.01.01 (003) Action Alternatives

COMMENT
The commenter states that this EIS addresses nothing new in establishing a viable waste policy and that moving nuclear wastes around only delays the problem to the next generation.

RESPONSE
DOE is committed not only to developing Federal geologic repositories for permanently isolating SNF, but to providing safe interim storage pending availability of permanent disposal facilities. SNF transportation is necessary to varying degrees under the alternatives DOE is analyzing for providing safe interim storage and management of SNF. The alternatives have definite purposes for relocating SNF, such as storing similar fuel types within a single secure facility. Thus, the alternatives attempt to balance transportation concerns with other worthy considerations, including nonproliferation, worker safety, and cost effectiveness.

The potential impacts of storing radioactive materials associated with SNF are discussed in Volume 1. Chapter 5 of the EIS. Environmental consequences of programmatic SNF management are presented for all alternatives in Volume 1, section 3.1, and mitigation measures are discussed in Volume 1, section 5.7. DOE has a program for safely managing and storing SNF and other radioactive materials at each of the sites considered in the EIS. DOE's policy is to design, construct, and operate its facilities to provide a level of safety and safety assurance that meets applicable Federal, state, and local requirements and regulations and DOE Orders. DOE will manage SNF in a manner that ensures protection of the environment and the health and safety of the public and site employees.

01.02.01.01 (005) Action Alternatives

COMMENT
The commenter supports alternatives that commit DOE to accept spent nuclear fuel from university reactors, specifically the Decentralization, Regionalization, and Centralization alternatives, and requests annual shipments.

RESPONSE
Volume 1, section 3.1 describes the preferred alternative for programmatic SNF management; Volume 2, section 3.4 describes the preferred alternative for SNF management, environmental restoration, and waste management at INEL. See the responses to comments 04.04 (008) and 04.04 (011).

01.02.01.01 (006) Action Alternatives

COMMENT
The commenter states that under the No Action alternative, universities will have to store spent nuclear fuel without the infrastructure of an operating reactor.

RESPONSE
Volume 1, section 3.1 identifies the preferred alternative for programmatic SNF management and the actions that would be undertaken by DOE to the extent required by this alternative. Research and development activities would be included.

01.02.01.01 (007) Action Alternatives

COMMENT
The commenter objects to the No Action alternative because of the increased potential for radiation exposures and the reduction of safety margins related to degrading spent nuclear fuel. The commenter also notes that there are indirect impacts associated with no research on appropriate technologies for stabilization under the No Action alternative.

RESPONSE
DOE formed a No Action alternative that would provide for minimum safe management of SNF and serve as a basis for comparison so that bounding impacts could be obtained through analysis of the other alternatives. This analysis is consistent with CEQ regulations and guidance for the No Action alternative.

1.2.1.2 Siting Alternatives

01.02.01.02 (001) Siting Alternatives

COMMENT
Commentors express the opinion that spent nuclear fuel storage at a particular site is unacceptable because there is already too much present.

RESPONSE
Potential sites were based in part on land ownership and whether current or former SNF management activities were conducted. These sites then were evaluated by using statutory and regulatory restrictions,
environmental factors, socioeconomic and transportation issues, and implementation considerations. The sites discussed in the EIS are possible alternative sites for siting SNF storage facilities. Sites that will be used for SNF or waste storage are to be identified in the ROD. The NEPA process requires that a full range of reasonable alternatives, including alternative sites, be considered and evaluated in the EIS. See the response to comment 03.07 (003).

01.02.01.02 (002) Siting Alternatives
COMMENT
The commentor is skeptical of DOE's assertions that it can store spent nuclear fuel with negligible environmental impacts and that its entire inventory can be stored on a site only tens of acres in size.

RESPONSE
The Alternative Site Selection Process Report reasonably assumes that "for the scope of interim storage of newly generated spent nuclear fuel (SNF), the minimum site size is on the order of tens of acres" based on the current interim storage of Naval, test reactor, and Fort St. Vrain SNF. However, it states that "for the scope of interim storage of currently stored and newly generated SNF, under the Regionalization and Centralization alternatives, the minimum site size is on the order of hundreds of acres, based on monitored retrievable storage siting requirements for commercial SNF. The minimum site size would be in the thousands of acres if large-scale stabilization activities were undertaken in addition to interim storage. Based on the nature and complexity of the processes involved and associated infrastructure required.

01.02.01.02 (004) Siting Alternatives
COMMENT
The commentor strongly opposes considering the Nevada Test Site as a potential site for spent nuclear fuel management, stating that the Western Shoshone National Council must approve such activities under the 1863 Treaty of Ruby Valley.

RESPONSE
The issue of Western Shoshone claims of ownership of a large portion of Nevada, including the Federal and owned and administered lands comprising the NTS and the potential repository site at Yucca Mountain, has been a matter of contention and extensive litigation for many years. In that litigation, the U.S. Supreme Court held that the Western Shoshone had received "payment" in 1979 for the lands the Tribe still claimed, thus extinguishing any rights or title the Tribe may have had at that point in time. United States vs. Dann, 470 U.S. 39, 105 S. Ct. 1058 (1985).

In January 1989, the Ninth Circuit of the U.S. Court of Appeals, citing the Supreme Court decision, emphatically reiterated that Western Shoshone title to these lands had been extinguished, and further ruled that the extinguishment took place in 1872.

United States vs. Dann, 873 F. 2d 1189 (9th Cir. 1989). In October 1989, the Supreme Court declined to hear the case on appeal, thus leaving to stand as law the Ninth Circuit opinion concerning the extinguishment of Western Shoshone Tribal rights. In view of these legal precedents, DOE disagrees with the continued assertion of Western Shoshone ownership of NTS or the potential Yucca Mountain repository site.

01.02.01.02 (005) Siting Alternatives
COMMENT
The commentor prefers alternatives that do not result in additional nuclear waste being managed at the Oak Ridge Reservation in Tennessee, and specifically references spent nuclear fuel coming from the State of Washington.

RESPONSE
See the response to comment 04.04 (008).

01.02.01.02 (006) Siting Alternatives
COMMENT
Commentors express the opinion that spent nuclear fuel should be stored in areas of low population density to minimize potential health risks.

RESPONSE
One purpose of this EIS is to evaluate a number of alternatives to aid decisionmakers in selecting the interim storage site(s). The sites have been evaluated based on a number of factors, including potential risks to the public. As stated in the EIS, the Atomic Energy Act of 1954 authorizes DOE to establish standards to protect health or minimize dangers to life or property. Radiation protection standards are based on controlling radioactive releases to levels as low as reasonably achievable in recognition of the potential health risk from radiation exposure.

Analyses in the Health and Safety sections of both volumes of the EIS evaluate potential impacts to the off-site public from radiological and nonradiological hazards. These analyses used population data, including proximity to the sites considered. For all alternatives, impacts would be small.

01.02.01.02 (008) Siting Alternatives
COMMENT
The commentor states that production of "nuclear waste" must stop and is opposed to receiving any more in the great Northwest so that the port cities and the Snake and Columbia Rivers are not jeopardized. The commentor prefers alternatives that do not result in additional nuclear waste being managed. The
COMMENT also generally questions the need to risk water resources, fragile ecosystems, the environment, etc.

RESPONSE
This EIS addresses management of DOE SNF pending ultimate disposition. Most SNF to be managed over the next 40 years exists today, and ceasing activities that generate SNF would not significantly alter the actions considered in this document. Specific environmental consequences of SNF management are presented for all alternatives in Volume 1, section 5.1. Most of DOE's SNF was generated in DOE production and experimental reactors that have ceased to operate. Additional information on pollution prevention practices is in Volume 2, section 2.2.7.

01.02.01.02 (011) Siting Alternatives
COMMENT
Commentors express the opinion that spent nuclear fuel management activities should not be located in areas of high population density.

RESPONSE
Although SNF management activities can safely coincide with high-population or otherwise sensitive areas, it is prudent to strive to avoid such areas where feasible in siting new activities or missions that could present some risk to the public, however slight. However, public perceptions of risk from DOE and/or Navy activities tend to significantly exceed the actual risks. Some individuals oppose one or more of the alternatives identified by DOE and the Navy for transporting, receiving, processing, and storing spent nuclear fuel. Nevertheless, some alternative must be selected, because DOE has a considerable amount SNF. To select an alternative, the Navy is cooperating with DOE in this comprehensive EIS on SNF management, including Naval SNF. This EIS evaluates alternatives for managing SNF pending ultimate disposition. The December 22, 1993, Court Order requires the EIS to be completed and issued by April 30, 1995, and a ROD to be issued by June 1, 1995.

01.02.01.02 (012) Siting Alternatives
COMMENT
The commentor prefers alternatives that do not result in additional nuclear waste being managed at the site in their state. The commentor questions how DOE originally chose the Idaho National Engineering Laboratory, the Hanford Reservation, and the Savannah River Site for its activities 40 years ago. The commentor further points out that the National Environmental Policy Act process did not exist then. The commentor states that no scientific process was used years ago in choosing Idaho National Engineering Laboratory for waste storage, and the EIS fails to analyze different storage types or the need for, and impact of, processing.

RESPONSE
The commentor is correct that the National Environmental Policy Act of 1969 did not exist when DOE's predecessors began activities at the three sites mentioned by the commentor. The basis for decisions by the Federal Government to select these locations for siting various activities is beyond the scope of this EIS. The commentor is referred to the public information officer at each of these and other sites of interest for historical information pertaining to the sites.

Volume 1, section 1.1.3 and Appendix J discuss wet and dry storage. Within alternatives, estimated impacts of the particular storage type were included as input to modeling used to determine the alternative's impact; therefore, the consequences related to a particular storage type are included. DOE believes that assuming a potential need for processing is justified because it represents a bounding condition for potential impacts from SNF management, and because some processing may be required to prepare some SNF for interim storage. The repository criteria, while not specifically defined, can be expected to contain certain criteria that, for some fuels, can be met only by some form of processing.

Processing and reprocessing are addressed as an option under the Volume 2 Maximum Treatment, Storage, and Disposal alternative at INEL. Refer to Project Summary SNF6 in Volume 2, Appendix C. Additionally, information on historic emissions from reprocessing was used as input for the emissions modeling because it considered bounding for any potential future processing, including processing using existing or new facilities or processes. The models are considered bounding because DOE will design facilities and control operations to ensure that emissions are within the regulatory limits and that historic emissions are not exceeded. In 1992, DOE instituted a policy that phased out reprocessing for weapons production. That policy remains in effect.

01.02.01.02 (013) Siting Alternatives
COMMENT
The commentor opposes a nuclear repository in Idaho.

RESPONSE
Volume 1, section 3 describes the alternatives for managing SNF considered in this programmatic EIS. None of the alternatives considered in this EIS would create a nuclear waste dump or repository in Idaho or at any of the other sites considered during the period of this EIS.
01.02.01.02 (014) Siting Alternatives

COMMENT
One commentator cites a quotation that states it is unrealistic to dump fuel into Savannah River Site facilities that were never designed to store nuclear waste. Another commentator expresses the opinion that storing spent nuclear fuel at the Savannah River Site is an inappropriate mission for that site.

RESPONSE
Volume 1, Appendix C, sections 2.3 and 2.5 describe the SNF management program at the Savannah River Site (SRS) and identify facilities that could be used to manage SNF under the alternatives considered in this programmatic EIS. Analyses of the alternatives and facilities in this EIS show that the impacts for all of the alternatives considered would be small.

COMMENT
The commentor expresses the opinion that DOE is continuing to bring SNF into the state for storage and should consider other areas for storing spent nuclear fuel, instead of further affecting this area.

RESPONSE
Several DOE sites do manage a significant percentage of DOE SNF and waste. This is due to each site’s established capability to safely manage such materials (for example, safeguards and security, a skilled work force, facilities, and historic mission) and associated support infrastructure (for example, waste management, emergency response, and stakeholder involvement programs). Decisions about where to site and conduct such programs also are influenced by a system of checks and balances designed to be beyond DOE’s control, such as Congressional funding allocations, state and local permitting requirements, and potential judicial scrutiny.

Additionally, NEPA provides opportunities to involve the public in and promote informed decisionmaking regarding major Federal decisions. Accordingly, this EIS objectively evaluates 10 sites as reasonable siting alternatives for some level of SNF management. The EIS analyses include environmental considerations, socioeconomic impacts, and potential risks to the public from both operations and reasonably foreseeable accidents for a number of options for managing SNF. The EIS concludes that there would be no significant risks to the public or to the environment due to SNF management activities at any of the 10 sites considered.

Public comments were considered in the preparation of this EIS, upon which a decision will be based. Although the EIS provides decisionmakers with an informed basis for making a decision from the perspective of environmental impacts and public comments, decisions also will be based on such considerations as cost, programmatic needs of DOE and the Navy, and implementability. DOE intends to develop and implement a national SNF management strategy that best serves the nation’s overall needs. See also the response to comment 04.04 (008).

01.02.01.02 (017) Siting Alternatives

COMMENT
Commentors express fear about Idaho or Tennessee becoming a dumping ground for nuclear waste.

RESPONSE
The above concern is not appropriate for consideration in the NEPA process. The U.S. Supreme Court held, in Metropolitan Edison v. People Against Nuclear Energy, 103 S. Ct. 1556 (1983), that psychological effects caused by risk are not within the scope of the NEPA process. Therefore, analyses of moral, emotional, and psychological (including fear, dread, mental anguish, hatred, etc.) issues are not included in the EIS. However, public perceptions of risk from DOE and/or Navy activities tend to significantly exceed the actual risks.

01.02.01.02 (020) Siting Alternatives

COMMENT
The commentator expresses an opinion about delays in determining the manner of ultimate disposition and takes a position against long-term storage of spent nuclear fuel at the Puget Sound Naval Shipyard, favoring the Hanford Site or the Idaho National Engineering Laboratory.

RESPONSE
Volume 1, section 3.1 identifies the preferred alternative for programmatic SNF management and the actions that DOE would take to the extent required by this alternative. Research and development activities would be included.

1.2.2 INEL ER&WM Programs

01.02.02 (001) INEL ER&WM Programs

COMMENT
Commentors state that converting high-level liquid waste to more stable calcine, followed by preparation for final disposal, must be an integral part of any alternative selected for managing high-level liquid waste.
01.02.02 (002) INEL ER&WM Programs

Comment
The commenter prefers a nonnuclear role for Idaho National Engineering Laboratory.

Response
A change in the current mission of INEL is not considered as an alternative because this EIS will not decide the future mission of INEL. The purposes of this EIS are to determine the manner in which DOE and the Navy will manage SNF during the next 40 years pending ultimate disposition, and to assess the environmental impacts to INEL from environmental restoration and waste management activities. The EIS was prepared consistent with those purposes.

01.02.02 (004) INEL ER&WM Programs

Comment
The commenter supports cleaning up the Idaho National Engineering Laboratory and opposes expansion of waste disposal.

Response
The purposes of this EIS are to determine the manner in which DOE and the Navy will manage SNF during the next 40 years pending ultimate disposition, and to assess the environmental impacts to INEL from environmental restoration and waste management activities. The EIS was prepared consistent with those purposes.

01.02.02 (005) INEL ER&WM Programs

Comment
The commenter proposes a number of actions for waste management and environmental restoration at the Idaho National Engineering Laboratory.

Response
Some of the actions suggested by the commenter fall within the various alternatives currently evaluated in Volume 2 of the EIS, and constitute a hybrid alternative covered by the existing analysis of the environmental impacts. Other suggested actions are outside the scope of the proposed action in this EIS, either because they are outside the subject or are the proposed action or are outside the 10-year period (1995 to 2005) for the INEL site-specific portion covered in Volume 2 of the EIS. See also the response to comment 07.02.01 (003).

01.02.02 (006) INEL ER&WM Programs

Comment
The commenter opposes the construction of the Mixed/Low Level Waste Disposal Facility above Idaho's sole-source aquifer in a floodplain.

Response
This project is a part of the Ten-Year Plan and Maximum Treatment, Storage, and Disposal alternatives. The INEL accident assessment summarized in Volume 2, section 4.15 considers flooding and other natural phenomena as potential initiators of facility accidents. Some potential accident initiators were selected for detailed analysis because they were comparatively likely, and some initiators were selected for detailed analysis because of their potentially large consequences. The consequence of a seismic failure of the high-level waste tanks was selected for detailed analysis over a flooding scenario because the large radioactive inventory in the high-level waste tanks has a greater potential for consequences to water resources than a flood. The analyses showed that the risks to the aquifer and all other risks would be small.

The Mixed/Low Level Waste Disposal Facility would be designed, constructed, and operated in accordance with all applicable regulations. DOE recently constructed new flood and erosion control features at the RWMC. This new construction will reduce the possibility of flooding at the RWMC, as well as minimize any impacts that could occur should the area receive a large volume of water later from runoff or snow melt.

1.2.3 Others

01.02.03 (001) Others

Comment
Commentators suggest that nuclear waste be managed on one of the Marshall Islands.

Response
The NEPA process requires that a full range of reasonable alternatives, including alternative sites, be considered and evaluated in an EIS. Potential sites were selected based in part on land ownership and whether current or former SNF management activities were conducted. The potential sites then were evaluated by using statutory and regulatory restrictions, environmental factors, socioeconomic and
transportation issues, and implementation considerations. The Marshall Islands were not considered a reasonable siting alternative and, therefore, were not included in this EIS.

01.02.03 (002) Others

COMMENT

Commentators favor managing spent nuclear fuel at a specific DOE site or sites.

RESPONSE

Volume 1, section 3.1 of the EIS describes DOE’s preferred alternative for programmatic SNF management; Volume 2, section 3.4 describes the preferred alternative for SNF management, environmental restoration, and waste management at INEL. See the responses to comments 04.04 (008) and 04.04 (011).

01.02.03 (003) Others

COMMENT

The commentor states that a reasonable alternative is to leave Fort St. Vrain fuel in Colorado.

RESPONSE

The EIS does analyze alternatives that leave Fort St. Vrain fuel in Colorado. Volume 1, section 3.1 of the EIS describes DOE’s preferred alternative for programmatic SNF management; Volume 2, section 3.4 describes the preferred alternative for SNF management, environmental restoration, and waste management at INEL. See the responses to comments 04.04 (008) and 04.04 (011).

1.3 Miscellaneous

01.03 (001) Miscellaneous

COMMENT

The commentor states that DOE is emphasizing transportation of spent nuclear fuel without considering the goals and consequences of doing so. The commentor respectfully asks what DOE will do with the additional inventory at the Idaho National Engineering Laboratory. The commentor states that the EIS does not adequately address correction of problems at existing sites and at receiving locations.

RESPONSE

DOE is committed not only to developing Federal geologic repositories for permanent isolation of SNF but to providing safe interim storage pending availability of permanent disposal facilities. Transporting SNF is necessary to varying degrees under the alternatives DOE is analyzing for providing safe SNF interim storage and management. The alternatives have definite purposes for relocating SNF such as storing similar fuel types within a single secure facility. Thus, the alternatives attempt to balance

transportation concerns with other worthy considerations, including nonproliferation, worker safety, and cost effectiveness. DOE recognizes that some alternatives increase the inventory at some locations, but believes that such consolidation may improve SNF management. The environmental impacts of such management alternatives are the subject of this EIS.

The potential impacts of storing radioactive materials associated with SNF are discussed in Volume 1, Chapter 5 of the EIS. The environmental consequences of managing SNF are presented for all alternatives in Volume 1, section 5.1, and mitigation measures are discussed in Volume 1, section 5.7. DOE has a program to safely manage and store SNF and other radioactive materials at each of the sites considered in the EIS. DOE’s policy is to design, construct, and operate its facilities in a way that provides a level of safety and safety assurance that complies with applicable Federal, state, and local requirements and regulations and DOE Orders. DOE will manage SNF to ensure protection of the environment and the health and safety of the public and site employees. See also the response to comment 01.01.01 (022).

01.03 (003) Miscellaneous

COMMENT

The commentor states that the Waste Experimental Reduction Facility and the Process Experimental Pilot Plant operated without an EIS to incinerate waste and were in violation of the Resource Conservation and Recovery Act.

RESPONSE

Environmental assessments were prepared for both WERF and the Process Experimental Pilot Plant. The Process Experimental Pilot Plant operated only in a trial burn mode, and DOE discontinued the project. Volume 2 of this EIS analyzes the cumulative impacts of operating the WERF incinerator for treatment of mixed low-level waste. Incineration is a best demonstrated available technology for many of the hazardous wastes that could be treated at WERF.

Mixed low-level waste has been incinerated at WERF only for trial burns. WERF is an interim-status facility under RCRA. The permit status of WERF is discussed in Volume 2, Chapter 7.
2. NEPA-RELATED COMMENTS

02 (001) NEPA-Related Comments

COMMENT

Commentors state that decisions have already been made; that the [EIS] process is an attempt to openly and officially make the Idaho National Engineering Laboratory a de facto atomic dump; and that the EIS was designed to support this previously arrived-at official decision.

RESPONSE

Council on Environmental Quality (CEQ) regulations at 40 CFR 1506.1(a) state that until an agency issues a Record of Decision, no action shall be taken that would either have an adverse impact on the environment, or limit the choice of reasonable alternatives.

No final decisions within the scope of this EIS have been made or will be made until a Record of Decision (ROD) for the EIS is issued.

2.1 EIS Presentation and Distribution

02.01 (002) EIS Presentation and Distribution

COMMENT

Commentors express opinions about the writing and organization of the EIS Summary, stating that the summary is confusing, seems to obscure rather than clarify information, and contains internal contradictions. Commentors recommend a different format for the Summary.

RESPONSE

The EIS follows the format specified by CEQ regulations at 40 CFR 1502.10. The Summary highlights the most significant aspects of the EIS and is written and organized in a manner and format consistent with the EIS for the purpose of providing a relatively brief overview.

Because summaries must be short, they cannot provide all supporting information. Volume 1, Chapter 3 and Volume 2, Chapter 3 provide substantially more information on the alternatives. For example, the more extensive description of the alternatives explains why all high-level waste cannot be transferred to the Idaho National Engineering Laboratory (INEL).

The statements identified as contradictory by the commentors are that the document does not support choices of technologies for ultimate disposition of spent nuclear fuel (SNF) but will support the transition between current management practices and ultimate disposition. These statements are not contradictory. As pointed out in Volume 1, Chapter 1, technologies and facilities will depend to some extent on waste acceptance criteria for the ultimate disposition site. Thus, the final technologies cannot be determined until some uncertainties are resolved.

02.01 (003) EIS Presentation and Distribution

COMMENT

Commentors state that the Spent Fuel Working Group Report is not referenced in the EIS and ask how the report was taken into account in the EIS.

RESPONSE

The Spent Fuel Working Group Report on Inventory and Storage of the Department's Spent Nuclear Fuel and other Reactor Irradiated Nuclear Materials and Their Environmental, Safety and Health Vulnerabilities and its corresponding action plans are referenced in Volume 1, Chapter 9 and Volume 2, Chapter 9. The report, also called the spent nuclear fuel vulnerability assessment, and its relationship to this EIS are discussed in Volume 1, Chapter 1 and Volume 2 section 2.2.5.

Volumes 1 and 2, Chapter 3 have been modified to describe how the information in the spent nuclear fuel vulnerability assessment was used in the preferred alternative decision process.

02.01 (004) EIS Presentation and Distribution

COMMENT

The commentor suggests that a statement regarding fuel for Naval and DOE reactors should be changed to "highly" enriched uranium.

RESPONSE

The statement in Volume 1, section 3.2.1 has been revised to read "... the fuel for Naval and some DOE reactors utilizes highly enriched uranium..."

02.01 (005) EIS Presentation and Distribution

COMMENT

The commentor states that Volume 1, Table 1-4 should list the EIS on a Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Spent Nuclear Fuel.

RESPONSE

Volume 1, Table 1-4 does list that EIS. It is the fourth entry under the DOE Headquarters classification.
EIS Presentation and Distribution

COMMENT
The commentor requests that the EIS use suitable names instead of letters to designate alternatives, which would make it easier to read and understand the comparisons of alternatives.

RESPONSE
DOE uses names in addition to letters when appropriate to describe or discuss alternatives, particularly in the Summary and main volumes of the document. Regarding readability, appendices provide more detailed data to support the main volumes and contain more detailed technical information. The comparisons of alternatives are also provided in Volume 1 and the Summary. The Summary provides graphics for easy comparison of alternatives.

COMMENT
The commentor states that the cubic meters is the measurement scale the DOE uses for SNF. DOE believes that it has provided accurate scientific analyses and has fulfilled its obligations and responsibilities in accordance with NEPA.

RESPONSE
The commentor is referred to Volume 1, section 7.2.4 for a discussion of hazardous and radioactive materials transportation regulations. This section discusses both DOT and Nuclear Regulatory Commission (NRC) regulations. In Volume 2, DOT and NRC transportation regulations are discussed in section 7.2.5. Volume 1, Appendix I contains additional information about transportation regulations.

COMMENT
The commentor states that the Department of Transportation and the Nuclear Regulatory Commission transportation regulations are not discussed.

RESPONSE
The commentor identifies that the EIS addresses environmental and scientific issues that are relevant to the proposed actions or alternatives. DOE believes that it has provided accurate scientific analyses and fulfilled its obligations and responsibilities in accordance with NEPA.

COMMENT
The commentor asks that the EIS include a clear explanation of the weightings applied to various impacts to make a conclusion.

RESPONSE
The commentor identifies that the EIS identifies all impacts, as required by the National Environmental Policy Act (NEPA). The decisionmakers must consider the environmental impacts in making their final decision.

Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small. While there are differences in the impacts among the alternatives, these differences by themselves are not sufficient to distinguish between the alternatives. Therefore, the final decision will include consideration of other relevant factors, including economic and technical considerations and agency statutory mission. The ROD will identify and discuss all such factors, which will be balanced by DOE in making its decision, and will state how those considerations entered into its decision.
02.01 (012) EIS Presentation and Distribution

COMMENT
The commentor asks that a glossary be included in the EIS.

RESPONSE
In Volume 1, the glossary is in Appendix H, and in Volume 2, the glossary is in Appendix E.

02.01 (013) EIS Presentation and Distribution

COMMENT
The commentor is unclear what the term "rolled up" means.

RESPONSE
The term describes the process of taking data or text from one or more areas of the EIS and combining the information into a summary section.

02.01 (014) EIS Presentation and Distribution

COMMENT
The commentor states that different formats for tables, figures, and charts and different computer codes were used for each site, which makes comparing the alternatives difficult.

RESPONSE
The site-specific appendices to Volume 1 were prepared by contributors at the individual DOE sites. Calculational methods were defined by a set of technical guidelines that provided common guidance to all site contributors. Volume 1, Chapter 5 compares the alternatives by using figures and tables that summarize all the data for each alternative. These charts use the same format and units. Thus, the commentor should be able to compare one alternative with another by comparing the respective summary pages.

02.01 (015) EIS Presentation and Distribution

COMMENT
The commentor states that the EIS numbering system used is confusing and suggests a sequential numbering system that distinguishes between volumes.

RESPONSE
The EIS is divided into two separate volumes, one dealing with programmatic proposed action (Volume 1), and one dealing with a INEL site-specific proposed action (Volume 2). Each page is labeled with either Volume 1 or Volume 2 and, if appropriate, an appendix designation. The front of each volume contains a reader's guide that describes the organization of this complex document. Additionally, DOE prepared a user's guide as a road map for reviewing the documents.

02.01 (016) EIS Presentation and Distribution

COMMENT
The commentor states that the results of the Waste Management Programmatic EIS and the Reconfiguration EIS have not been included in this EIS, thereby precluding accurate characterization of environmental impacts.

RESPONSE
Volume 2, section 2.1.3 discusses DOE EISs that are related to this EIS; the two identified by the commentor are included in the discussion. Writers and analysts coordinated with those developing the other EISs to ensure consistency. This EIS bounds the potential impacts of nationwide SNF management and SNF management, environmental restoration, and waste management programs at INEL. DOE considered the environmental impacts of past, present, and reasonably foreseeable future activities in the EIS's cumulative impact analysis.

02.01 (017) EIS Presentation and Distribution

COMMENT
The commentor notes that the Idaho National Engineering Laboratory has an entire volume, which seems to give it special status, and that a better balance should be achieved.

RESPONSE
This EIS is comprised of two separate evaluations: one programmatic and one site-specific.

Volume 1 covers the proposed action for DOE complex-wide programmatic SNF management. Volume 2 is site-specific and covers INEL environmental restoration and waste management programs (including a proposed action involving site-specific spent nuclear fuel management). Although additional decisions are pending at INEL, as reflected in Volume 2, this does not give INEL special status.

02.01 (018) EIS Presentation and Distribution

COMMENT
The commentor states that in Volume 1, Appendix C, there are detailed inventory tables of anticipated chemicals, but none for radionuclides, and that the radionuclide inventories should be provided.

RESPONSE
The necessary information concerning radionuclides related to SNF management is available in Appendix C, Tables 4-9, 5-7, and 5-9. DOE reviewed the tables in Appendix C, and decided that no format change was warranted. The information comes from annual environmental monitoring reports and technical reports. The information should remain consistent with previously published reports.
COMMENT
The commenter requests a full accounting of all the spent nuclear fuel in America that must be stored. The commenter also requests a graphic showing a football field of fuel.

RESPONSE
As noted in Volume 1, management of commercial SNF is outside the scope of this EIS, so that category of fuel is not tabulated. A full inventory of DOE SNF is in Volume 1, section 1.1 (Tables 1-1 and 1-2). DOE believes that it is more appropriate in the EIS to show the locations of SNF and the amounts stored at each site, rather than to display the total amount graphically, as was done in a fact sheet distributed to the general public.

COMMENT
The commenter states that a paragraph in Appendix F describing the Y-12 Plant mission is confusing and that a replacement should be found.

RESPONSE
Additional discussion of the Y-12 Plant mission is provided in Volume 1, Appendix F, Part Three, throughout Chapter 2.

COMMENT
The commenter states that the EIS could be improved by providing additional specific information, including comparative cost analyses, tribal and treaty issues, site hydrology, and strategic land-use planning.

RESPONSE
NEPA does not require the preparation of a comparative cost analysis. However, for long-term planning purposes, some of which are beyond the scope of this EIS, DOE prepared a cost evaluation report, which is summarized in Volume 1, Chapter 3.

Tribal and treaty issues, site hydrology, and strategic land-use planning are all important and are addressed in Volume 2, sections 4.4.2, 4.8, and 4.2.1, respectively. Potential impacts from proposed and alternative actions can be found in sections 5.4, 5.8, and 5.2, respectively.

Assumptions for future land uses at INEL will be made to determine the appropriate level of cleanup under the Federal Facility Agreement/Consent Order (FFA/CO), and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process. In August 1994, the DOE Idaho Operations Office issued for public comment the Idaho National Engineering Laboratory Long-Term Land Use Future Scenarios (Draft). This document sets forth various land-use scenarios that could be assumed for short-term and long-term activities at INEL. Public comments on the document were received and are currently being reviewed and incorporated as appropriate. A final Long-Term Land Use Future Scenarios document will be issued by DOE after the INEL Site-Specific Advisory Board reviews the document and submits comments. The Board expects to provide comments in the spring of 1995.

COMMENT
The commenter states that the word "negligible" does not accurately describe the environmental impacts discussed in the EIS.

RESPONSE
Based on the best information available, this EIS concludes that environmental impacts would be small under all the alternatives. Analyses in this EIS were prepared and reviewed by technical experts in each discipline. Analyses and conclusions are supported by studies, reports and literature, for which references are provided. DOE revised the EIS to eliminate the use of the word "negligible."
02.01 (024) EIS Presentation and Distribution

COMMENT

Commentors request that detailed discussions of the various sites' Federal Facility Agreements and Consent Orders and the effects of the EIS alternatives on the agreements and orders be provided in the EIS.

RESPONSE

DOE's policy is to comply with all applicable Federal and state laws and regulations, Presidential Executive Orders, and DOE Orders, as stated in Volume 1, section 2.2. This policy also applies to Federal Facility Agreements and Consent Orders. The No Action alternative in this EIS, which provides a baseline for comparing of the environmental impacts of the other alternatives, would not meet all regulatory requirements. DOE considered regulatory compliance, and compliance with existing agreements and consent orders in its process to identify the preferred alternatives. Detailed discussions of site-specific regulatory frameworks, sufficient to aid the EIS decision-making process, are provided in Volume 1, Appendices A through F, sections 2.2.

02.01 (025) EIS Presentation and Distribution

COMMENT

The commentor states that the spent nuclear fuel EIS does not explicitly indicate how stakeholder concerns or values are accounted for as alternatives are compared. The commentor suggests that numerical information condensed in tables and charts would be more helpful if immediately preceded by an explicit discussion of the values underlying the comparisons.

RESPONSE

Public concerns, among other considerations, are important to the decision-making process for this EIS. Volume 1, section 1.4 and Volume 2, section 2.1 both describe how public involvement was used and will continue to be used in making these decisions.

Tables and charts are included to make this document more informative. Where necessary, the tables and charts are discussed to provide additional information.

02.01 (026) EIS Presentation and Distribution

COMMENT

Commentors express the opinion that the EIS is too long, too bulky, and too hard to read or understand. They consider length and wordiness to detract from the document's message or to make it difficult for people to comment meaningfully. Some commentors suggest that the EIS cost too much to prepare.

RESPONSE

While the EIS contains a large amount of technical information, an effort was made to prepare a document that the public could easily read and understand.

The EIS was prepared in a layered fashion with respect to the technical depth of the information. The Summary is intended to summarize the information, in a concise format that would be generally understandable by non-technical persons. The first three chapters of each volume present expanded information with more technical detail, but are still in summary form. The remaining chapters in each volume summarize the technical information needed to support a decision. The appendices are technically detailed and provide sufficient information for a thorough technical review.

The size and cost of preparing this EIS were caused by a number of factors. The EIS covers a broad range of proposed actions and alternatives. Volume 1 considers reasonable programmatic DOE complex-wide alternative approaches to safely, efficiently, and responsibly manage existing and projected quantities of SNF until 2035, as well as the No Action alternative. Volume 2 addresses reasonable alternative approaches for managing DOE's environmental restoration, waste management, and SNF management activities over the next 10 years at INEL, as well as the No Action alternative. To adequately address all the environmental factors potentially impacting the wide range of related decisions necessarily results in a large document.

02.01 (027) EIS Presentation and Distribution

COMMENT

The commentor states that the Draft EIS fails to identify a proposed action and to provide a detailed analysis of the environmental impacts of that action.

RESPONSE

The proposed action for Volume 1 of this EIS is the safe management of SNF pending final disposition. The proposed action for Volume 2 of this EIS is to develop appropriate facilities and technologies for waste and SNF management at INEL and to effectively manage wastes resulting from environmental restoration, SNF management, and other activities at INEL.

In response to public comments, Volume 1, Chapter 2 and Volume 2, Chapter 1 were revised to more clearly identify the proposed action.
02.01 (028) EIS Presentation and Distribution

COMMENT
The commentor recommends a different format for the EIS, including supplementing it with additional information.

RESPONSE
The EIS follows the format established by CEQ at 40 CFR 1502.10 which state that an EIS must describe the purpose and need for agency actions; alternatives, including no action; the affected environment; and the environmental consequences associated with the proposed action and alternatives. Volumes 1 and 2 of this EIS meet these requirements. In each volume, Chapter 2 describes the purpose and need for the proposed action; Chapter 3 describes the alternatives being considered; Chapter 4 describes the affected environment; and Chapter 5 describes the environmental consequences.

In response to comments from the public, the EIS was modified to provide information important to the decisionmaker or to make necessary editorial changes.

02.01 (029) EIS Presentation and Distribution

COMMENT
The commentor states that the EIS Summary does not explain why the scope of the EIS was expanded.

RESPONSE
The commentor is correct. However, an explanation of the evolution of the EIS is in Volume 2, section 2.1.4.

02.01 (030) EIS Presentation and Distribution

COMMENT
The commentor states that, with respect to spent nuclear fuel management, the EIS provides only a cursory, disjointed presentation that undermines the rational, informed decision-making process envisioned by the National Environmental Policy Act.

RESPONSE
NEPA, 42 USC Section 4321 et seq., and CEQ regulations at 40 CFR Part 1500 et seq. require that an EIS describe the purpose and need for agency action; alternatives, including no action; the affected environment; and environmental consequences associated with the proposed action and alternatives. Volumes 1 and 2 of this EIS meet these requirements. In each volume, Chapter 2 describes the purpose and need for the proposed action; Chapter 3 describes the alternatives being considered; Chapter 4 describes the affected environment; and Chapter 5 describes the environmental consequences.

CEQ regulations at 40 CFR 1500.1(b) state that environmental information presented to the public in NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail. To achieve this, 40 CFR 1502.21 states that the agency shall incorporate materials into an EIS by reference when the effect will be to cut down on the bulk of the document. One mechanism for incorporation by reference is discussed in the regulation on “tiering” at 40 CFR 1520.20, which encourages agencies to eliminate repetitive discussion of the same issues and to focus on the actual issues ready for discussion at each level of environmental review.

In consideration of the volume of information presented in the Draft EIS, DOE extended the public comment period to 90 days, which is twice that required under NEPA, and conducted 33 public hearings at 20 locations across the nation, 8 of which were held in Idaho. In addition, DOE accepted public comments in writing, via a hearing exhibit, and via a toll-free telephone line well published throughout the comment period. DOE is confident that it has considered all public comments received on the Draft EIS, responded in Volume 3, Response to Public Comments, and issued a Final EIS that incorporates all meaningful comments, as appropriate.

02.01 (031) EIS Presentation and Distribution

COMMENT
The commentor suggests that DOE include a "reference guide" in the EIS, including descriptions of all past accidents as well as complete historical monitoring records, to depict the totality of the Idaho National Engineering Laboratory's past and current impact on the environment.

RESPONSE
Documents relating to past accidents and reports of monitoring at INEL and in neighboring communities are available to the public by request and in reading rooms. In many cases they are listed as references in this EIS.

Because the purpose of this EIS is to examine the environmental impacts of various proposed future activities, a baseline of present-day activities and their impacts was established for comparison among and between alternatives. Documentation used to arrive at the baseline is listed as reference material.

02.01 (032) EIS Presentation and Distribution

COMMENT
The commentor suggests the EIS requires wider distribution.
RESPONSE
The Draft and Final EISs were distributed to more than 100 libraries and DOE reading rooms and Navy information locations. All members of the public who commented on the Implementation Plan and Draft EIS were contacted to ask if they wanted a copy of the Final EIS.

02.01 (033) EIS Presentation and Distribution
COMMENT
The commenter indicates that Attachments A through F were not included in Volume 1, Appendix D of the EIS, thus precluding proper review.
RESPONSE
Attachments A through F were included in Appendix D, Part B of the Draft EIS. Appendix D consists of two volumes (Part A and Part B) due to its length. Part B was sent on request, and was available in the public reading rooms and information locations.

2.2 Segmentation
02.02 (001) Segmentation
COMMENT
The commenter states that the spent nuclear fuel EIS does not consider connected actions, as defined in 40 CFR 1508.25(a), with regard to this and other construction projects slated to begin at the Oak Ridge Reservation in calendar year 1994-1995.
RESPONSE
The actions mentioned by the commenter do not qualify as "connected actions," as defined in 40 CFR 1508.25(a), because they are not connected to the programmatic decision on SNF and they were scheduled to proceed before the time period addressed in the EIS. The projects mentioned are, however, potential cumulative actions. Forseeable construction projects were considered in the assessment of cumulative impacts for the Oak Ridge Reservation (ORR) in Appendix F, Part Three, section 5.16. Discussion of cumulative impacts in this EIS is sufficient to satisfy the requirements at 40 CFR 1508.25. For example, specific references to construction projects slated to begin at ORR in 1994-1995 are considered to be in the baseline characterization. Reasonably foreseeable future construction projects were identified to qualitatively assess potential programmatic cumulative environmental consequences. Specific reference to and quantification of individual construction projects would be analyzed in a site-specific EIS if ORR is considered as a candidate site for SNF management.

02.02 (002) Segmentation
COMMENT
The commenter states that DOE has segmented the environmental evaluations of several major activities, including receipt of foreign research reactor fuel, in a manner that will cause significant environmental impacts to not be evident. The commenter notes that the National Environmental Policy Act regulations state that "connected actions" and cumulative actions must be analyzed, and that similar actions should be addressed in one EIS when it is the best way to adequately address the impacts.
RESPONSE
This EIS is designed to provide information for a decision or decisions on where to manage all of DOE's existing and reasonably foreseeable SNF inventory. As such, the programmatic document is substantially independent of the proposal analyzed in the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft) (FRR EIS). DOE can decide on a contingency basis where to manage its SNF inventory without deciding whether and how to manage foreign research reactor fuel. However, while a decision on whether and how to manage foreign research reactor fuel containing uranium of United States origin has not been and will not be made until the completion of the FRR EIS, the potential impacts of the proposal are included in this programmatic document to ensure that the potential impacts of implementing the proposed policy are considered in any programmatic SNF management decision.

The purpose of the FRR EIS is to analyze the impacts of a proposed United States policy to accept foreign research reactor (FRR) SNF containing uranium of United States origin. Analyzing the proposed policy in a separate EIS allows members of the public to focus their attention on the threshold question of whether to accept FRR SNF as part of the DOE inventory. Analyzing the policy imperatives underlying the proposed policy as part of this programmatic EIS would add significantly to the length of the programmatic document, which is already very lengthy and complex. The SNF analyzed in the FRR EIS is less than 1 percent of the SNF covered in this EIS. If under the FRR EIS the decision is made to accept all FRR SNF containing uranium of United States origin, the effect would not be significant to decisions made under the this EIS.

The DOE Waste Management Programmatic Environmental Impact Statement will evaluate the proposed action of formulating and implementing waste management alternatives. The principal focus of that EIS is to evaluate potential configurations for waste management capabilities. Although DOE had proposed to consider the storage of SNF in the Waste Management Programmatic Environmental Impact Statement, on June 28, 1993, the United States District Court for the District of Idaho ordered DOE to prepare a comprehensive, site-wide EIS on the environmental effects of all major Federal actions.
The scope of the EIS Court Order included evaluating alternatives of transporting, receiving, processing, and storing SNF at sites other than INEL. In view of the breadth of the Court Order, DOE proposed on September 3, 1993, to expand the scope of the Idaho National Engineering Laboratory Environmental Restoration and Waste Management Environmental Impact Statement to include analysis of SNF management that was being prepared for the Waste Management Programmatic Environmental Impact Statement.

2.02 (003) Segmentation

COMMENT

Commentors question how this EIS fits in with and is connected to the other DOE site-specific EISs being prepared.

RESPONSE

DOE is or will be preparing a number of programmatic and site-specific EISs. The linkage between these programmatic and site-specific EISs is discussed in Volume 1, section 1.2 and Volume 2, section 2.1.3 of this EIS. Other DOE EISs being prepared, including the DOE Waste Management Programmatic EIS, use this EIS as a basis for assessing cumulative impacts.

2.02 (005) Segmentation

COMMENT

The commenter opposes Idaho becoming a nuclear waste dump and states that the Idaho National Engineering Laboratory is not the place for a repository. The commenter adds that this is not the proposal made in the Draft EIS.

RESPONSE

DOE agrees that the possibility of Idaho becoming a nuclear waste "dump" or INEL becoming a repository is not the proposed action being considered in this EIS. See the response to comment 01.01.01.02 (025).

2.3 Scope

2.03 (001) Scope

COMMENT

Commentors want cost evaluation to be part of this EIS.

RESPONSE

DOE prepared a spent nuclear fuel cost evaluation report for long-term planning purposes, some of which are beyond the scope of this EIS. Volume 1, section 3.3 summarizes the costs for implementing actions under each alternative considered in this EIS.

2.03 (002) Scope

COMMENT

Several commentors suggest that spent nuclear fuel from the Navy program and from foreign research reactors needs to be addressed in separate EISs.

RESPONSE

As DOE is responsible for managing SNF from research and Naval reactors, it is appropriate to evaluate potential environmental impacts in this programmatic EIS. DOE is preparing a separate EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft). See also the response to comment 02.02 (002).

2.03 (004) Scope

COMMENT

Commentors are of the opinion that the EIS is not comprehensive enough.

RESPONSE

NEPA, 42 USC Section 4321 et seq., and CEQ regulations at 40 CFR Part 1500 et seq, require that an EIS describe the purpose and need for the proposed action; alternatives, including no action; the affected environment; and the environmental consequences associated with the proposed action and alternatives. Volumes 1 and 2 of this EIS meet these requirements. In each volume, Chapter 2 describes the purpose and need for the proposed action; Chapter 3 describes the alternatives being considered; Chapter 4 describes the affected environment; and Chapter 5 describes the environmental consequences.

Input on the scope of the EIS was solicited from the public during the scoping periods held for the Waste Management Programmatic EIS and the Idaho National Engineering Laboratory Environmental Restoration and Waste Management EIS. Input was also solicited from the public during a 90-day public comment period, which allowed commentors to send written comments, give oral comments and send facsimile comments over a toll-free telephone line, or attend one or more of the 33 public hearings held in 20 locations around the United States.

All supporting documents referenced in this EIS are on file and are available to the public.
02.03 (005) Scope

COMMENT

The commenter states that discussions of spent nuclear fuel should not have the confounding effect of being combined with discussions of environmental restoration and waste management at the Idaho National Engineering Laboratory.

RESPONSE

As discussed in Volume 2, section 2.1, DOE did not originally intend to include the decision regarding continued receipt of SNF in its Idaho National Engineering Laboratory Environmental Restoration and Waste Management EIS. However, on June 28, 1993, as an outgrowth of civil lawsuits involving DOE, the State of Idaho, and other parties, the U.S. District Court for the District of Idaho ordered DOE to prepare an EIS that examines alternatives to transporting, receiving, processing and storing SNF at INEL. See Andrus vs. Public Service Co., 824 F. Supp. 1483 (D. Idaho 1993). Because of the quantities and types of fuel currently at INEL, a thorough analysis of these activities required assessing similar activities throughout the DOE complex. Thus, DOE decided to expand its site-specific EIS for INEL to incorporate the programmatic decision regarding the management of SNF within the DOE complex, previously part of DOE’s Waste Management Programmatic EIS. The expanded document is this EIS.

02.03 (006) Scope

COMMENT

The commenter cites a DOE statement that cost and public opinion will be two key factors helping DOE make its spent nuclear fuel management decisions, and states that a programmatic EIS “is not a particularly good vehicle for analyzing or developing these determinants.”

RESPONSE

The analysis in the EIS show that, for all environmental factors considered, the impacts of all alternatives would be small. CEQ regulations allow an agency to make decisions based not only on environmental factors, but also on technical or practical considerations and agency mission, as well as public comments. This is true whether the EIS is a programmatic study, or is more specific to a local site. DOE prepared a spent nuclear fuel cost evaluation report for long-term planning purposes, some of which are beyond the scope of this EIS. Volume 1, section 3.3 summarizes the cost of implementing actions under each alternative.

02.03 (007) Scope

COMMENT

The commenter states that the EIS fails to be conducted within the context of DOE’s reconfiguration programmatic EIS, Environmental Restoration and Waste Management Programmatic EIS, and implementation plan for compliance with the Federal Facilities Compliance Act.

RESPONSE

The relationship between this EIS and other DOE NEPA documents is addressed in Volume 1, section 1.2 of this EIS, which was updated and enhanced to better describe the interrelationships among these NEPA documents. DOE is coordinating the preparation of the Waste Management Programmatic Environmental Impact Statement with the development of individual site treatment plans under the Federal Facilities Compliance Act.

02.03 (008) Scope

COMMENT

The commenter states that the failure to deal with generation of spent nuclear fuel as creation of a waste that is not being safely stored, temporarily or permanently, is not adequate under the National Environmental Policy Act, because the planning component is left out of the EIS.

RESPONSE

This EIS considers management of DOE SNF pending ultimate disposition. Most SNF to be managed over the next 40 years exists today, and ceasing activities that generate SNF would not significantly alter the actions considered in this document. The EIS and analyses determined that the environmental consequences of interim storage of SNF would be small.

02.03 (009) Scope

COMMENT

The commenter states that DOE has targeted Idaho National Engineering Laboratory as its complex for storing spent nuclear fuel because only it has been analyzed in detail, and that no decision on spent nuclear fuel can be made until each potential site has completed a site-specific National Environmental Policy Act review.

RESPONSE

To ensure that DOE took a thorough look at alternatives for managing SNF at sites other than INEL, Volume 1 of this EIS assesses, at a programmatic level, the environmental impacts of conducting SNF management activities at five DOE sites and at five Naval sites for Navy SNF. The analyses, as summarized in Volume 1, Chapter 5, indicate that conducting SNF management activities at any of the candidate sites would result in small environmental impacts over 40 years. The level and depth of these
The commentor raises issues about the impact of storing long half-life materials and of potential accidents on quality of life.

**RESPONSE**
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small. See also the response to comment 01.02.01.02 (017).

Volume 1, Chapter 4 addresses discrete resource categories that incorporate aspects of quality-of-life issues, such as air and water quality, noise, socioeconomic, and transportation. To the extent that quality of life is related to environmental impacts, these concerns are discussed in the EIS.

**02.03 (011) Scope**
COMMENT
The commentor states that because waste processing is not considered in this EIS, it seems irrational to discuss waste management and spent nuclear fuel management within the same document, which is also true for the environmental restoration of past activities.

**RESPONSE**
CEQ requires that the cumulative impacts of all connected and related activities be assessed in an EIS. To segregate environmental restoration from other waste management activities would preclude this required analysis. Volume 1 analyzes the programmatic management of SNF nationwide, whereas Volume 2 analyzes site-wide environmental and restoration, waste management (including waste treatment), and SNF management programs at INEL for the next 10 years. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5, summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the environmental impacts of all alternatives considered would be small.

**02.03 (014) Scope**
COMMENT
The commentor states that the EIS scope is so broad that it fails to focus on Idaho's concern in the lawsuit and on the intent of the Court Order, i.e., whether the Idaho National Engineering Laboratory is a suitable site for continued receipt of Navy and Fort St. Vrain spent nuclear fuel.

**RESPONSE**
Because of the wide-ranging types and significant quantity of SNF managed by DOE at INEL, DOE determined that the court-ordered examination of alternatives for SNF at INEL requires the review of capabilities across the entire DOE complex. Therefore, on September 3, 1993, DOE issued a Notice of Opportunity in the Federal Register announcing its intent to expand the scope of the ongoing INEL EIS to include a DOE complex-wide review of the alternatives for managing SNF, including Naval SNF. The notice also announced the public's opportunity to comment on the expanded scope. Public comments received in response to the Notice of Opportunity, as well as public comments provided in the
original scoping processes for both the SNF and INEL EIS and on the DOE Environmental Restoration and Waste Management Programmatic EIS, were considered in developing the Implementation Plan for this EIS.

The EIS supports two sets of decisions: Volume 1, programmatic actions for SNF management during a 40-year planning horizon; and Volume 2, specific decisions about SNF management and environmental restoration, waste management activities at INEL. This structure satisfies the requirements of the Court Order.

02.03 (015) Scope

COMMENT
The commentor states that both foreign research reactor and commercial spent nuclear fuel should be included in the scope of this EIS.

RESPONSE
Foreign research reactor spent nuclear fuel (FRR SNF) is included in the analyses in this EIS to ensure that the potential environmental impacts of implementing the proposed policy regarding FRR that would be based on the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft) (FRR EIS) are considered in any programmatic SNF management decision. A discussion of the relationship between this EIS and the FRR EIS is in Volume 1, section 1.2.4. See also the response to comment 02.02 (002).

Regarding commercial SNF, DOE manages only a small quantity of special-case commercial SNF, which is addressed in this EIS. It is inappropriate to consider commercial SNF, in general, in this EIS because this material is not managed by DOE. Under the Nuclear Waste Policy Act, as amended, DOE is responsible for managing the program for development of geologic repositories for permanent disposal of SNF and high-level radioactive waste. A separate EIS is required under Nuclear Waste Policy Act, as amended, to accompany the recommendation of a repository site to the President.

02.03 (017) Scope

COMMENT
The commentor states that the EIS has no discussion of how DOE will manage environmental restoration, waste management, and spent nuclear fuel beyond 10 years.

RESPONSE
The EIS supports two sets of decisions: Volume 1, programmatic actions for SNF management during a 40-year planning horizon; and Volume 2, specific decisions for environmental restoration, waste management, and spent nuclear fuel management activities at INEL. Volume 2 evaluates only the projects that are reasonably foreseeable and may fall within a 10-year period. DOE expects that over the course of the next 40 years, additional projects for managing waste and spent nuclear fuel will be necessary. The need for appropriate NEPA reviews will be evaluated as the projects are defined. Both volumes of this EIS will be evaluated and updated when new projects are planned or as additional information becomes available.

02.03 (018) Scope

COMMENT
The commentor states that the EIS should evaluate all of DOE’s special materials, such as reactor control rods, in a similar manner to spent nuclear fuel.

RESPONSE
Managing wastes, such as radioactive or contaminated components from SNF management activities, is considered in Volume 1 and its site-specific Appendices A through F. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the environmental impacts of all alternatives considered would be small.

For example, the ends of the fuel modules removed from Naval SNF modules at the Expanded Core Facility in Idaho are structural materials that support and direct the flow of cooling water during operation. This structural material is removed by cutting through portions of the fuel modules that contain no fuel. The material removed from the ends of the fuel modules does not contain any fuel or fission products from fuel, and therefore, cannot be considered SNF. They do not contain transuranic elements of fission products; thus, they cannot be considered high-level waste or transuranic waste. The amounts of radioactivity in the end boxes cause them to be classified as low-level waste or transuranic waste. Consequently, the material removed from the ends of the modules at the Expanded Core Facility is categorized as low-level waste due to the amount of radioactivity present in it. The disposal of this structural material at the Radioactive Waste Management Complex at INEL is accomplished in accordance with all applicable regulations.

Management of DOE radioactive materials and waste such as those cited by the commentor is covered under the Waste Management Programmatic EIS, that is currently being developed.
02.03 (019) Scope
COMMENT
The commentor states that a permanent repository for spent nuclear fuel is not likely to exist in 40 years and recommends that the maximum storage interval and the time span covered by the EIS be extended to 60 to 80 years.
RESPONSE
This EIS considers management of DOE SNF pending ultimate disposition. DOE believes that decisions on ultimate disposition will be made and implemented within 40 years; however, DOE is committed to safely managing DOE SNF for whatever time interval is necessary. DOE will review this EIS periodically and update it as appropriate during this period.

02.03 (020) Scope
COMMENT
The commentor references the problems identified in the Spent Fuel Working Group Report and states that DOE has an obligation to address non-Navy spent nuclear fuel types and associated environmental impacts. The results should be considered in the EIS and the Record of Decision.
RESPONSE
This EIS deals with non-Navy fuel, such as production reactor fuel at the Hanford Site and the Savannah River Site, and university research reactor fuel. In response to the report referred to by the commentor, DOE issued action plans to correct vulnerabilities. The relationship of this EIS to the spent nuclear fuel vulnerability assessment and its action plans is discussed in the appropriate site appendices of Volume 1. Discussions for the Oak Ridge Reservation, the Savannah River Site, and the Hanford Site were expanded in the Final EIS based on public comments.

02.03 (021) Scope
COMMENT
The commentor states that the focus of the EIS is on shipping, instead of the impacts of spent nuclear fuel on the environment.
RESPONSE
As stated in Volume 1, Chapter 2, the evaluations in Volume 1 focus on strategies for where to conduct SNF management activities. These activities may, of necessity, involve moving SNF from generation sites to management locations. Shipping is described in the Summary to highlight a major concern for the public and the decisionmakers. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the environmental impacts of all proposed alternatives would be small.

02.03 (024) Scope
COMMENT
Some commentors state that the EIS does not provide details for foreign research reactor spent nuclear fuel and some request additional detail be included in Volume 1, Appendix E.
RESPONSE
This EIS provides information for a decision or decisions on where to manage all of DOE's existing and reasonably foreseeable SNF inventory. Therefore, this programmatic document is substantially independent from the proposal analyzed in the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft) (FRR EIS). DOE can decide on a contingency basis where to manage its SNF inventory without deciding whether to accept foreign research reactor (FRR) SNF. However, while a decision on acceptance of FRR SNF containing uranium of United States origin has not and will not be made until the completion of the FRR EIS, the potential impacts of the proposal are included in this programmatic document to ensure that the potential impacts of implementing the proposed policy are considered in any programmatic SNF management decision.

The purpose of the FRR EIS is to analyze the various alternatives and impacts of a proposed policy of the United States to manage FRR SNF containing uranium of United States origin. Analyzing the proposed policy in a separate EIS allows members of the public to focus on the specific question of how FRR SNF should be managed, including the alternative of transporting it to the United States for management by DOE.

Volume 1, section 1.2 and Appendix E were expanded to provide additional information on the potential FRR inventory; however, much of the characterization detail requested is in the FRR EIS.

02.03 (025) Scope
COMMENT
Commentors express the opinion that all current and planned non-Idaho National Engineering Laboratory activities on which Idaho National Engineering Laboratory depends, i.e., Waste Isolation Pilot Plant, Yucca Mountain, and high-level waste repositories, have to be fully characterized.
RESPONSE
DOE believes the EIS is complete and accurately reflects the potential environmental impacts of a reasonable range of alternatives. Sufficient information is included (e.g., methods used, source terms, etc.) to allow an independent review of results.
The purpose of this EIS is to evaluate alternatives for managing DOE SNF pending ultimate disposition. DOE believes the analyses in this EIS are adequate to support a decision on this subject.

02.03 (028) Scope
COMMENT
The commenter indicates the need for public education to offset negative media coverage and antinuclear activists, and that spent nuclear fuel and nuclear wastes are a reality that must be faced without fear.
RESPONSE
It is DOE's policy to promote public and stakeholder awareness of its proposed activities, including the purpose and need for the proposed actions and potential environmental impacts. DOE is actively engaged in public outreach programs and related activities above and beyond public involvement processes associated with NEPA to increase awareness of its activities and related issues. See also the response to comment 03.03 (008).

2.3.1 Scoping Process and Hearings

02.03.01 (001) Scoping Process and Hearings
COMMENT
The commenter states that preparing the EIS in a hurry does not allow time to do careful work, examine all the sources or do site-specific work, which results in a product that is not useful as a decision-making tool and that lacks public confidence.
RESPONSE
DOE believes the EIS is complete and accurately reflects the potential environmental impacts of a reasonable range of alternatives. DOE had adequate time to fully evaluate the alternatives. The history and development of this EIS is in Volume 1, section 1.3.

This EIS was prepared using existing information that is available to the public and referenced in the EIS. This information and the methodologies used to analyze environmental impacts in the EIS have been thoroughly reviewed, and commented on by numerous well-informed citizens, state and Federal agencies, local and Tribal officials, and public interest organizations. A great effort was made on this project to collect comments from the public nationwide and to use these comments to prepare this EIS, as appropriate.

02.03.01 (002) Scoping Process and Hearings
COMMENT
The commenter states that during the scoping hearings for this EIS, a number of technical questions were asked that the EIS does not answer. The commenter also raises questions about complete reliance on high-efficiency particulate air filters for preventing emissions of radioactive particulates.
RESPONSE
A total of 970 comments raising 4,321 issues were received during four comment periods in the public scoping phase of this EIS. Of these, 464 were technical issues. Because the primary purpose of scoping is to identify the issues to be addressed in the EIS, DOE did not intend, nor would it have been appropriate, to respond to each technical question raised. The comments in each issue category were summarized and responses were prepared for each category, to explain how the concerns would be addressed in the EIS. In the air quality category, for example, the following topics discussed in the Implementation Plan address concerns raised by the commenter: airborne pollution and contamination; effectiveness of high-efficiency particulate air filters; and impacts and dispersion of airborne pollution and contamination.

A specific commitment was made in the Implementation Plan to consider "filter efficiency, stack emissions, emission control systems, and other air pollution contamination and monitoring equipment." These commitments were kept in Volume 1, section 5.2.5 and in Volume 2, section 5.7. For DOE to respond further to specific technical issues, the commenter would have had to identify what, if any, deficiencies remain.

To minimize airborne releases, projects involving radioactive particulates at INEL would take place within a double-confinement structure. Conservative assumptions normally are used to estimate releases to the atmosphere, such as modeling only two filters in series when at least three are planned for actual operations. Also, although high-efficiency particulate air (HEPA) filters have established particulate removal efficiencies of 99.97 percent (down to diameters of 0.3 micrometers), a conservative efficiency factor of only 99 percent typically is used for operational safety and accident analyses. These filters are capable of removing particles as small as 0.001 micrometers from an airstream, but the manufacturer performs the rating calibration at 0.3 micrometers using a standard aerosol-generating device. The filters are tested annually and inspected daily to ensure that their efficiency is maintained.

Safety analyses for forthcoming INEL facility operations will not presume perfect HEPA filter operation. Additional precautions will be taken to minimize airborne releases. The pressure differential across each filter is measured continuously to detect formation of any holes or insecure filter installation. Filter
temperature will be measured to promptly detect a filter fire. Finally, radiation sensors will be installed downstream of the filters to continuously monitor atmospheric releases. Detection of radioactive particulates above the natural background levels would result in a prompt shutdown of facility operations.

See also the response to comment 05.11.03 (009).

02.03.01 (003) Scoping Process and Hearings

COMMENT
The commentator states that only two sites out of an extensive list were added during the scoping process.

RESPONSE
Volume I, section 1.3.1 summarizes the considerations of the suitability of the sites selected. Additional details on these considerations are provided in Alternative Site Selection Decision Process Report, which is provided as a reference in this EIS. This reference describes selection of agency preferences among a large number of possible alternative sites based on relevant factors, including economic and technical considerations and agency statutory missions.

02.03.01 (004) Scoping Process and Hearings

COMMENT
The commentator expresses the opinion that the scoping for Oak Ridge Reservation was not adequate.

RESPONSE
On October 22, 1990, DOE published a Notice of Intent in the Federal Register announcing its intent to prepare a programmatic EIS addressing environmental restoration and waste management, including SNF management activities across the entire DOE complex. DOE invited the public to submit written comments on the scope of that EIS and held 23 scoping meetings across the country, including one at Oak Ridge, Tennessee, on December 11, 1990. Two-hundred thirty-seven comments were received at the Oak Ridge meeting. DOE issued a draft Implementation Plan in January 1992, reflecting the comments provided. DOE held six regional public workshops on the draft Implementation Plan and recorded public comments given at these workshops. The Implementation Plan for the SNF and Idaho National Engineering Laboratory EIS, issued in October, 1993, addressed the comments received from scoping meetings and regional workshops. DOE conducted four public scoping periods during the evolution of this EIS. In response to public comments raised during the scoping process, DOE initiated a process for identifying possible additional alternative sites. The result of the selection process was the inclusion and evaluation of two additional sites, including Oak Ridge Reservation. The process of including Oak Ridge Reservation as an additional, reasonable alternative site is summarized in the May 9, 1994, amendment to the EIS Implementation Plan. DOE believes it conscientiously and thoroughly fulfilled its responsibilities to use available avenues for public awareness and for solicitation of public input during all stages of the EIS process and that it has fulfilled its obligations and responsibilities in accordance with NEPA.

2.4 Adequacy of the DRAFT EIS

02.04 (001) Adequacy of the Draft EIS

COMMENT
Commentators state that the process followed for the preparation of the EIS does not meet the requirements of the National Environmental Policy Act and Council on Environmental Quality regulations. Therefore, the EIS is flawed and inadequate, and the process should be terminated.

RESPONSE
NEPA, 42 USC Section 4321 et seq., and CEQ regulations at 40 CFR Part 1500 et seq. require that an EIS describe the purpose and need for the proposed action; list alternatives, including no action; and describe the affected environment and the environmental consequences associated with the proposed action and alternatives. Volumes 1 and 2 of this EIS meet these requirements. In each volume, Chapter 2 describes the purpose and need for the proposed action; Chapter 3 describes the alternatives being considered; Chapter 4 describes the affected environment; and Chapter 5 describes the environmental consequences.

Input was solicited from the public during a 90-day public comment period on the Draft EIS, which allowed commentators to send written comments, give oral comments and facsimile comments over a toll-free telephone line, or attend one or more of the 33 public hearings held in 20 locations around the United States.

All supporting documents referenced in the EIS are on file and are available to the public. The EIS has also considered issues of concern raised during public meetings and hearings.

02.04 (002) Adequacy of the Draft EIS

COMMENT
Commentators state that the EIS contains inaccurate and outdated data; that available studies and information were not included; that statistical evaluations may not have been properly performed; and that the only documents declassified and used were those that supported the outcome that DOE favors.
RESPONSE
The analyses in this EIS were performed using unclassified information contained in references cited in the EIS, which are available in public reading rooms and information locations around the country. To permit an independent reviewer to corroborate the results, the EIS contains a full description of the methodologies, assumptions, and data used. While classified information relevant to some aspects of the EIS exists, it is consistent with the unclassified information used for the analyses and does not alter the results.

02.04 (003) Adequacy of the Draft EIS
COMMENT
The commenter suggests that none of the options offered with regard to spent nuclear fuel fulfill National Environmental Policy Act requirements.
RESPONSE
CEQ regulations at 1502.14(a) state that agencies shall "Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives, which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated." DOE believes it has evaluated a reasonable range of alternatives. Alternatives eliminated from detailed study and the reasons for they were eliminated are discussed in Volumes 1 and 2, section 3.2.

02.04 (004) Adequacy of the Draft EIS
COMMENT
The commenter expresses the opinion that the EIS fails to assess an inclusive range of alternatives and dismisses some of the alternatives without a rigorous exploration, as required by Council on Environmental Quality regulations.
RESPONSE
DOE believes the range of alternatives analyzed in this EIS is inclusive and in accordance with the philosophy of considering a range of reasonable alternatives as required by the provisions of NEPA and CEQ regulations. Alternatives range from the No Action alternative to an alternative calling for consolidating of all SNF at a single site. Alternatives dismissed are discussed in Volume 1, section 3.2 and Volume 2, section 3.2. DOE believes the discussion of the basis for dismissing other possible alternatives is adequate.

02.04 (006) Adequacy of the Draft EIS
COMMENT
Commentators state that the Nevada Test Site and the Oak Ridge Reservation were not evaluated to the same extent as the other sites, question why the Savannah River Site documentation was developed in Idaho, and suggest that the EIS effort stop until preparers get more training on how to manage spent nuclear fuel.
RESPONSE
In response to public comments raised during the scoping process, DOE undertook a process for identifying possible additional alternative sites. [See also the response to comment 04.03.01 (002).] As a result of the selection process, the Nevada Test Site (NTS) and the Oak Ridge Reservation (ORR) were selected, and the analyses for these two sites are given in Volume 1, Appendix F. Volume 1, Appendix C, which evaluates the impacts for the Savannah River Site (SRS) was written in South Carolina. Each site appendix was reviewed and approved by DOE site managers. DOE believes the depth of analysis is appropriate for a programmatic EIS and is commensurate with the analyses of the other alternative sites in Volume 1. DOE considers the expertise and training of the preparers to be adequate, and they are listed in Volumes 1 and 2, Chapter 6.

02.04 (006) Adequacy of the Draft EIS
COMMENT
The commenter states that the EIS inadequately compares alternative sites.
RESPONSE
DOE believes that it has adequately compared the alternative sites. Volumes 1 and 2, Chapter 5 examine the potential environmental consequences of the proposed alternatives at each site. These chapters explain what evaluations were conducted and their results. The potential consequences of the proposed alternatives are then summarized and compared in section 3.3 of each volume. Supporting appendices and reference material provide increasing levels of detail on the scientific investigations.

DOE prepared this EIS to (1) provide a programmatic look forward for the next 40 years for SNF management, and (2) provide site-specific NEPA evaluations for reasonably foreseeable SNF management, environmental restoration, and waste management activities at INEL. Other site-specific NEPA reviews may be completed as additional specific proposals emerge. Those reviews can tie from this EIS.
02.04 (007) Adequacy of the Draft EIS

COMMENT

The commentor states that the EIS does not focus on solving the problems; there are only two technology development projects and no environmental restoration projects, and the EIS does not cover research and development activities to render spent nuclear fuel to an environmentally benign form.

RESPONSE

Numerous technologies are already available for managing radioactive materials, and others are being actively developed for this purpose. Technological options for managing SNF are described in Volume 1, section 1.1.3 and Appendix J.

As stated in Volume 2, section 2.1.2, potential impacts at INEL for environmental restoration activities are addressed at the site-wide level. In those instances where project-specific impacts of activities cannot be specifically quantified at this time, conservative "bounding" estimates of their environmental impacts were made. Project-specific impacts of these activities at INEL may be quantified and evaluated in the future, as appropriate, as part of the CERCLA process. Volume 2, Appendix C describes environmental restoration and waste management projects planned or currently being implemented at INEL.

Technology development activities are often done at a bench-scale level, and DOE has determined that these activities, individually or cumulatively, do not have the potential to have a significant effect on the human environment. Environmental restoration/waste management technology development is a major program that is managed through the DOE-Headquarters (HQ) Office of Technology Development (EM-50). Integrated demonstrations and integrated programs are conducted to develop new technologies. Industry and academic partners are used to find solutions to environmental challenges. Technologies related to SNF management are evolving as the final form of the SNF is defined. See also the response to comment 07.02.01 (001).

02.04 (009) Adequacy of the Draft EIS

COMMENT

The commentor states that it is unacceptable to leave all technical decisions to future EISs, and that the analysis should be adequate to support a Record of Decision.

RESPONSE

The purpose of this EIS is to consider management of DOE SNF pending ultimate disposition. DOE believes the analyses in this EIS are adequate to support a decision on this subject.

General solutions for managing SNF are discussed in Volume 1, section 1.1.3 and Appendix J. Technologies for final disposition of SNF cannot be selected in advance of repository acceptance requirements. These requirements are several years from completion and approval, but a combination of the technologies described in Appendix J may satisfy the eventual acceptance criteria. Furthermore, consideration is given by the alternatives analyzed in the EIS to providing or maintaining processing flexibility that may prove necessary to meeting the acceptance requirements. The implementation of safe interim storage and transition to ultimate disposition, coupled with the ability to meet disposal criteria (waste forms) represents the solution that DOE seeks to define with this EIS. Consequently, although the ultimate disposition of SNF is a high priority for DOE, the details of disposition activities have not been finalized and are beyond the scope of this EIS.

Other major NEPA reviews related to Volume 1 of this EIS as of March 1995 are shown in Volume 1, Table 1-4.

02.04 (010) Adequacy of the Draft EIS

COMMENT

Commentors state that the EIS does not focus on solving the problem of spent nuclear fuel management or that the best solution to the problem needs to be determined.

RESPONSE

Volume 1, section 3.1 describes DOE's preferred alternative for programmatic SNF management; Volume 2, section 3.4 describes DOE's preferred alternative for SNF management, environmental restoration, and waste management at INEL. See also the responses to comments 04.04 (008) and 04.04 (011).

The programmatic action that DOE ultimately selects is not necessarily limited to one of the alternatives. For example, a hybrid alternative could be developed that would incorporate actions from one or more of the five alternatives analyzed. Moreover, the programmatic decisions will not identify all site-specific SNF management options. If appropriate, specific proposals will be subjected to additional site-specific NEPA evaluation.

Ultimate disposition of SNF managed by DOE is a high priority. For planning purposes, DOE determined that the SNF managed by DOE that is not otherwise dispositioned (e.g., chemically separated, with the high-level waste being converted into a vitrified glass for repository disposal) is authorized for disposal in the first repository. This authorization is subject to the physical and statutory limits of the first repository, DOE SNF meeting repository acceptance criteria, and payment
of fees. As part of its SNF management program, DOE would (1) stabilize the SNF as needed to ensure safe interim storage, (2) characterize the existing SNF inventory to assess compliance with the first repository's acceptance criteria, and (3) determine what processing, if any, is required to meet the criteria. Decisions regarding the actual disposition of DOE SNF would follow appropriate review under NEPA and be subject to licensing by NRC. This path forward would be implemented so as to minimize impacts on the first repository schedule.

02.04 (011) Adequacy of the Draft EIS

COMMENT
The commenter states that the EIS does not discuss the release of radioactivity and what is going on at the Idaho National Engineering Laboratory.

RESPONSE
Volume 2, Chapter 4 describes the existing environment at INEL, including the release of radioactivity. Volume 2, Chapter 2 discusses the current activities, facilities, and missions at INEL.

02.04 (014) Adequacy of the Draft EIS

COMMENT
The commenter states that the focus and depth of analysis contained in the EIS are not adequate to make decisions.

RESPONSE
This EIS considers management of DOE SNF pending ultimate disposition. DOE believes the analyses in this EIS are adequate to support a decision on this subject.

NEPA, 42 USC Section 4321 et seq., and CEQ regulations at 40 CFR Part 1500 et seq. require that an EIS describe the purpose and need for the proposed action; alternatives, including no action; the affected environment; and environmental consequences associated with the proposed action and alternatives. Volumes 1 and 2 of this EIS meet these requirements. In each volume, Chapter 2 describes the purpose and need for the proposed action; Chapter 3 describes the alternatives being considered; Chapter 4 describes the affected environment; and Chapter 5 describes the environmental consequences.

Input was solicited from the public during a 90-day public comment period for the Draft EIS, which allowed commentors to send written comments, give oral comments and facsimile comments over a toll-free telephone line, or attend one or more of the 33 public hearings held in 20 locations around the United States.

All supporting documents referenced in the EIS are on file and are available to the public. The EIS also considers issues of concern raised during public meetings and hearings.

02.04 (017) Adequacy of the Draft EIS

COMMENT
The commenter is of the opinion that, despite the size of the EIS, the document is inadequate.

RESPONSE
This EIS considers management of DOE SNF pending ultimate disposition. DOE believes the analyses in this EIS are adequate to support a decision on this subject.

NEPA, 42 USC Section 4321 et seq., and CEQ regulations at 40 CFR Part 1500 et seq. require that an EIS describe the purpose and need for the proposed action; alternatives, including no action; the affected environment; and the environmental consequences associated with the proposed action and alternatives. Volumes 1 and 2 of this EIS meet these requirements. In each volume, Chapter 2 describes the purpose and need for the proposed action; Chapter 3 describes the alternatives being considered; Chapter 4 describes the affected environment; and Chapter 5 describes the environmental consequences.

Input was solicited from the public during a 90-day public comment period for the Draft EIS, which allowed commentors to send written comments, give oral comments and facsimile comments over a toll-free telephone line, or attend one or more of the 33 public hearings held in 20 locations around the United States.

All supporting documents referenced in the EIS are on file and are available to the public. The EIS also considers issues of concern raised during public meetings and hearings.

02.04 (019) Adequacy of the Draft EIS

COMMENT
The commenter states that the EIS is not adequate.

RESPONSE
This EIS considers management of DOE SNF pending ultimate disposition. DOE believes the analyses in this EIS are adequate to support a decision on this subject.

NEPA, 42 USC Section 4321 et seq., and CEQ regulations at 40 CFR Part 1500 et seq. require that an EIS describe the purpose and need for the proposed action; alternatives, including no action; the affected environment; and the environmental consequences associated with the proposed action and alternatives.
COMMENT
The commentor states that the information provided is insufficient to evaluate the private-sector waste treatment initiatives. The commentor refers to the statement in Volume II, section TRU 1-2, which states that the analysis in the EIS would cover all private-sector waste treatment initiatives.

RESPONSE
The analysis in this EIS is not intended to cover all private-sector waste treatment initiatives. That statement was deleted from the EIS.

COMMENT
The commentor states that land use, air and water quality, and geologic and ecological resources were not adequately considered in the EIS.

RESPONSE
Volume 1, Chapters 4 and 5, and Volume 2, Chapters 4 and 5, as well as the site-specific and project specific appendices, consider environmental impacts, including those mentioned by the commentor. Volume 1, Chapter 5 discusses impacts in a number of scientific disciplines. Section 5.2 briefly mentions several disciplines which, although important, are not likely to affect the decision process because of similar impacts for all alternatives. This approach is deemed sufficient for a programmatic NEPA decision. Volume 1, Appendix F provides specific information on the disciplines questioned by the commentor. The analyses show that under all of the disciplines analyzed, for all of the alternative actions considered, the environmental impacts of the proposed actions would be small.

02.04 (022) Adequacy of the Draft EIS
COMMENT
The commentor observes that the EIS states that "the level of analysis in this EIS is insufficient to allow selection of a particular option." The commentor also asks how the selection will be made and what other information will be considered.

RESPONSE
This EIS considers management of DOE SNF pending ultimate disposition. DOE believes the analyses in this EIS are adequate to support a decision on this subject. Some site-specific actions to implement programmatic decisions may require additional site-specific NEPA documentation.

In addition to public comments, DOE will consider environmental impacts, which would be small for all of the alternatives analyzed, as well as technical and practical considerations, economic factors, and agency missions and cost.

02.04 (023) Adequacy of the Draft EIS
COMMENT
The commentor states that the EIS is very expensive and has failed to address its primary goal of evaluating environmental impacts of the proposed actions.

RESPONSE
DOE believes that environmental impacts have been analyzed for all alternatives considered in this EIS, and would be small. NEPA, 42 USC Section 4321 et seq., and CEQ regulations at 40 CFR Section 1500 et seq. require that an EIS describe the purpose and need for the proposed action; alternatives, including no action; the affected environment; and the environmental consequences associated with the proposed action and alternatives. Volumes 1 and 2 of this EIS meet these requirements. In each volume, Chapter 2 describes the purpose and need for the proposed action; Chapter 3 describes the alternatives being considered; Chapter 4 describes the affected environment; and Chapter 5 describes the environmental consequences.

Input was solicited from the public during a 90-day public comment period, which allowed commentors to send written comments, give oral comments and facsimile comments over a toll-free telephone line, or attend one or more of the 33 public hearings held in 20 locations around the United States.

All supporting documents referenced in the EIS are on file and are available to the public. The EIS also considers issues of concern raised during public meetings and hearings.
02.04 (024) Adequacy of the Draft EIS

COMMENT
The commenter states that the comparisons of alternatives is inadequate and cost is not discussed.

RESPONSE
NEPA, 42 USC Section 4321 et seq., and CEQ regulations at 40 CFR Section 1500 et seq. require that an EIS describe the purpose and need for the proposed action; alternatives, including no action; the affected environment; and the environmental consequences associated with the proposed action and alternatives. Volumes 1 and 2 of this EIS meet these requirements. In each volume, Chapter 2 describes the purpose and need for the proposed action; Chapter 3 describes the alternatives being considered; Chapter 4 describes the affected environment; and Chapter 5 describes the environmental consequences.

Input was solicited from the public during a 90-day public comment period on the Draft EIS, which allowed commentors to send written comments, give oral comments and facsimile comments over a toll-free telephone line, or attend one or more of the 33 public hearings held in 20 locations around the United States.

All supporting documents referenced in the EIS are on file and are available to the public. The EIS also considers issues of concern raised during public meetings and hearings.

DOE prepared a spent nuclear fuel cost evaluation report for long-term planning purposes, some of which are beyond the scope of this EIS. Volume 1, section 3.3 summarizes the costs for implementing actions under each alternative.

02.04 (025) Adequacy of the Draft EIS

COMMENT
The commenter states that the EIS is flawed because it ignores many of the fundamental issues regarding the storage of spent nuclear fuel at the Idaho National Engineering Laboratory.

RESPONSE
This EIS considers management of DOE SNF pending ultimate disposition. DOE believes the analyses in this EIS are adequate to support a decision on this subject.

NEPA, 42 USC Section 4321 et seq., and CEQ regulations at 40 CFR Section 1500 et seq. require that an EIS describe the purpose and need for the proposed action; alternatives, including no action; the affected environment; and the environmental consequences associated with the proposed action and alternatives. Volumes 1 and 2 of this EIS meet these requirements. In each volume, Chapter 2 describes the purpose

and need for the proposed action; Chapter 3 describes the alternatives being considered; Chapter 4 describes the affected environment; and Chapter 5 describes the environmental consequences.

Input was solicited from the public during a 90-day public comment period, which allowed commentors to send written comments, give oral comments and facsimile comments over a toll-free telephone line, or attend one or more of the 33 public hearings held in 20 locations around the United States.

All supporting documents referenced in the EIS are on file and are available to the public. The EIS also considers issues of concern raised during public meetings and hearings.

02.04 (026) Adequacy of the Draft EIS

COMMENT
The commenter states that the focus and depth of analysis is not adequate to make a decision for restoring the environment at the Idaho National Engineering Laboratory. The commenter also states that the document focuses on shipping spent nuclear fuel without comprehensively treating alternatives for environmental restoration and waste management at the Idaho National Engineering Laboratory.

RESPONSE
Volume 2 concentrates on the alternatives affecting INEL. Chapter 3 explains the alternatives, and the chapter is subdivided to emphasize what the alternatives are for both environmental restoration and waste management. The impacts of these alternatives are discussed in Chapter 5 and summarized in section 3.3. DOE believes it has prepared a document with the appropriate focus and depth of analysis. The content of the document follows recommendations for EISs in CEQ regulations implementing NEPA. The document also factors in topics of concern raised during public scoping meetings. The analyses and data in the EIS and the supporting conclusions have been prepared and reviewed by qualified professionals. The EIS presents and compares, for the decisionmakers, the environmental consequences that could result from implementing the various alternatives. The site-specific details of environmental restoration will be handled, and the public informed, through processes under CERCLA and the FFA/CO for INEL.

02.04 (027) Adequacy of the Draft EIS

COMMENT
The commenter states that a more complete analysis of the impacts of past releases is required. This includes assessing the adequacy of each facility's "emission system" generating the waste stream.
RESPONSE
The adequacy of each existing facility's emission system is not assessed in this EIS, but rather the impacts of emissions are considered in the analysis of environmental impacts. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small.

02.04 (028) Adequacy of the Draft EIS

COMMENT
The commenter states that the EIS fails to address any spent nuclear fuel management activity beyond transportation.

RESPONSE
The EIS evaluates potential environmental impacts of transporting, receiving, processing, and storing DOE SNF. SNF risks to site workers and the general public from site operations, transportation, and facility accidents are discussed in Volume 1, section 5.1 for all alternatives analyzed. Estimated risk values are graphically contrasted among these alternatives in Volume 1, section 3.3. Cumulative impacts to the work force from all of these sources are provided in Volume 1, section 5.3. On-site transportation impacts are described in Volume 1, site-specific Appendices A through F. Shipping casks and off-site transportation impacts are described in Volume 1, Appendices D and I.

02.04 (029) Adequacy of the Draft EIS

COMMENT
The commenter states that an EIS should be properly prepared rather than hurried after a 2-year delay.

RESPONSE
DOE believes this EIS is complete and accurately reflects the potential environmental impacts of a reasonable range of alternatives. DOE had adequate time to fully evaluate the alternatives. The history and development of this EIS is in Volume 1, section 1.3.

This EIS was prepared using existing information that is available to the public and referenced in the EIS. This information and the methodologies used to analyze environmental impacts in the EIS have been thoroughly reviewed, and commented on by numerous well-informed citizens, state and Federal agencies, local and Tribal officials, and public interest organizations. A great effort was made on this project to collect comments from the public nationwide and to use these comments in the EIS, as appropriate.

02.04 (030) Adequacy of the Draft EIS

COMMENT
The commenter states that DOE failed to consider truly decentralized management of spent nuclear fuel at sites closest to its point of origin despite the identification of numerous suitable Federally owned sites across the country, thus decreasing transportation cost and radiological risk. The commenter is of the opinion that the EIS fails to fully evaluate a No Action alternative and cites some cost and transportation benefits of this alternative.

RESPONSE
Based on consideration of the Alternative Site Selection Decision Process Report, the Secretary of Energy added the Nevada Test Site (NTS) and the Oak Ridge Reservation (ORR) to the eight sites being considered for SNF management. Department of Defense sites are not considered reasonable due to potential conflicts in missions as per consultation with the Department of Defense.

NEPA requires the alternatives analysis in an EIS to "include the alternative of no action." There are two distinct interpretations of no action that must be considered, depending on the nature of the proposal being evaluated. The first situation might involve an action such as SNF management where ongoing programs initiated under existing legislation and regulations will continue, even as new plans are developed. In these cases "no action" is "no change" from current management direction or level of management intensity. To construct an alternative that is based on no management at all would be a useless exercise. Therefore, the No Action alternative may be thought of in terms of continuing with the present course of action until that action is changed. Consequently, projected impacts of alternative management schemes would be compared in the EIS to impacts projected for the existing plans. In this case, alternatives would include management plans of both greater and lesser intensity, especially greater and lesser levels of SNF management activities.

The second interpretation of no action is illustrated in instances involving Federal decisions on proposals for projects. No action in such cases would mean the proposed activity would not take place, and the resulting environmental effects from no action would be compared with the effects of permitting the proposed activity or an alternative activity to go forward.

Where a choice of no action by the agency would result in predictable actions by others, this consequence of the No Action alternative should be included in the analysis. For example, if denial of permission to ship fuel to a facility would lead to construction of additional on-site storage and increased on-site inventories, the EIS should analyze this consequence of the No Action alternative.
Thus, the No Action alternative essentially conforms to decentralized management that the commentor feels should be analyzed in the EIS. As stated in the EIS, DOE may not be able to ensure full compliance with environmental laws and regulations under the No Action alternative due to the state of a number of these management facilities, as described in the Spent Fuel Working Group Report on Inventory and Storage of the Department's Spent Nuclear Fuel and Other Reactor Irradiated Nuclear Materials and their Environmental, Safety, and Health Vulnerabilities (the spent nuclear fuel vulnerability assessment). No change to the EIS is necessary to analyze the equivalent of the commentor's opinion as to what is a "truly decentralized" alternative.

The EIS fully analyzes the No Action alternative, per the provisions of NEPA and CEQ regulations. Transportation and costs are addressed comparably under all alternatives evaluated in the EIS, and will be considered by decisionmakers along with environmental impacts and all other pertinent factors, including public comments, to arrive at a ROD.

Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in the EIS, including decentralization and no action. The analyses show that the impacts of all alternatives would be small. While there are differences in the impacts among alternatives, these differences by themselves are not sufficient to clearly identify one alternative as environmentally preferable.

02.04 (031) Adequacy of the Draft EIS

COMMENT

The commentor states that the EIS evaluation of the Idaho National Engineering Laboratory is inadequate because specific analyses of the impacts of proposed actions are deferred, even though the EIS was to define, disclose, and evaluate the environmental effects of sitewide activities over the next decade and beyond.

RESPONSE

DOE prepared this EIS and evaluated the proposed actions in accordance with NEPA. The content of the document follows recommendations for the content of EISs in CEQ and DOE regulations implementing NEPA, including factoring in topics of concern raised during the public scoping meetings. The analyses and data in the EIS and the supporting conclusions have been extensively reviewed. The EIS addresses the potential environmental consequences of implementing alternative actions for the programmatic management of SNF and INEL sitewide environmental restoration and waste management programs.

02.04 (032) Adequacy of the Draft EIS

COMMENT

The commentor states that the EIS is flawed because it does not include all Idaho National Engineering Laboratory operations, including reactor operations such as the Integral Fast Reactor.

RESPONSE

Volume 2, Chapter 1 explains that DOE needs to make site-specific decisions that would accomplish three major goals: support research and development missions at INEL; comply with legal requirements governing SNF, waste management, and environmental restoration; and treat, store and dispose of waste, manage SNF, and conduct environmental restoration activities at INEL in an environmentally sound manner. Reactor operations are beyond the scope of this EIS. However, impacts of waste streams and SNF from reactors at INEL are assessed in Volume 2, Chapter 5.

02.04 (033) Adequacy of the Draft EIS

COMMENT

The commentor indicates that one and one-half pages of Volume 1, Appendix I-7 on the subject of selecting ports of entry for foreign shipments is inadequate. The commentor also states that this EIS does not study or document the addition of new ports of entry for foreign shipments.

RESPONSE

The issue of selecting ports of entry for foreign shipments is not within the scope of this EIS. The commentor's concern is directed to the issue of FRR SNF of United States origin, which is being analyzed in a separate EIS. DOE will not make a final decision on the acceptance of that fuel until the EIS for the Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft) and this EIS are completed. Potential port sites of concern are addressed in this EIS to bound the analysis of transportation within the United States should a decision be made to return such material to this country for management.

02.04 (034) Adequacy of the Draft EIS

COMMENT

Commentors state that the document is general and suggest changes to the Summary to summarize how big the impacts are of transportation, cost, schedule, safety and health, waste, etc., and an evaluation of the advantages and disadvantages of all the alternatives.
RESPONSE
The Environmental Consequences section of the Summary presents, in summary form, the impacts, including shipments, public and worker health effects, employment, generation of radioactive waste, and impact on agency missions and cost. NEPA allows other information such as cost to be evaluated by the decisionmaker. DOE prepared a cost evaluation of proposed alternatives that is available in public reading rooms. This cost evaluation is summarized in Volume 1, section 3.3.

02.04 (036) Adequacy of the Draft EIS

COMMENT
The commenter states that the EIS violates the National Environmental Policy Act in that insufficient information is provided on projects or facilities that are in preliminary planning stages, specifically the Idaho Waste Processing Facility.

RESPONSE
A stand-alone Idaho Waste Processing Facility located near the Radioactive Waste Management Complex is postulated for planning purposes and analysis of environmental impacts. The project description in Volume 2, Appendix C is used for analysis of potential consequences, as discussed in Volume 2, Chapter 5. Even though construction of the Idaho Waste Processing Facility is beyond the time period analyzed in Volume 2, proposed projects are included in the EIS to give readers a comprehensive range of forthcoming projects as is currently possible. These projects or facilities may require additional analysis under NEPA. At such time, additional information on secondary waste generation will be available. The NEPA status of all environmental restoration and waste management projects contemplated for INEL is discussed in the EIS Summary and in Volume 2, Table 3.1-1.

02.04 (037) Adequacy of the Draft EIS

COMMENT
The commenter is of the opinion that the EIS provides an inadequate review of future spent nuclear fuel management, both programmatically and at the Idaho National Engineering Laboratory.

RESPONSE
This EIS considers the management of DOE SNF pending ultimate disposition. DOE believes the analyses in this EIS are adequate to support a decision on this subject.

The problems at existing storage facilities are identified in the Spent Fuel Working Group Report on Inventory and Storage of the Department's Spent Nuclear Fuel and Other Reactor Irradiated Nuclear Materials and their Environmental, Safety, and Health Vulnerabilities. This report, commonly called the spent nuclear fuel vulnerability assessment, and associated action plans to resolve identified vulnerabilities, are acknowledged in Volume 1, section 1.1.2 and Appendix J-2. Additional site-specific information is in Volume 1, Appendices A through F. Environmental consequences of SNF management are presented for all alternatives in Volume 1, section 5.1, and mitigation measures are discussed in section 5.7. For all alternatives analyzed, DOE is committed to complying with applicable Federal, state, and local regulations and DOE Orders to ensure protection of the environment and the health and safety of the public and site employees.

Decisions as to the ultimate disposition of SNF and high-level nuclear wastes have not been made, and are outside the scope of this EIS. However, ultimate disposition of SNF managed by DOE is a high priority. For planning purposes, DOE determined that the SNF managed by DOE that is not otherwise dispositioned (e.g., chemically separated, with the high-level waste being converted into a vitrified glass for repository disposal) is authorized for disposal in the first repository. This authorization is subject to the physical and statutory limits of the first repository, DOE SNF meeting repository acceptance criteria, and payment of fees. As part of its SNF management program, DOE would (1) stabilize the SNF as needed to ensure safe interim storage, (2) characterize the existing SNF inventory to assess compliance with the first repository’s acceptance criteria, and (3) determine what processing, if any, is required to meet the criteria. Decisions regarding the actual disposition of DOE SNF would follow appropriate review under NEPA and be subject to licensing by NRC. This path forward would be implemented so as to minimize impacts on the first repository schedule.

General solutions proposed for managing nuclear waste are discussed in Volume 2, Chapters 1 and 2, respectively. More specific descriptions of how SNF and specific wastes would be managed under the alternative actions are in Volume 2, section 3.1.

DOE believes that the range of alternatives analyzed in this EIS is reasonable in accordance with the requirements of NEPA and CEQ regulations. Analysis and discussion of all alternatives that can be postulated is an impossibly large task and is not required by existing regulations. Volume 1 provides the public and the decisionmakers with a programmatic view of the proposed action and a reasonable range of alternatives. The proposed action is to develop a path forward for the safe and effective management of DOE SNF. The alternatives are discussed at a level appropriate for a programmatic EIS. Once an alternative has been selected, actions within the selected alternative may require a detailed documentation at the site-specific level to satisfy NEPA requirements. Volume 2 is a site-specific
assessment of SNF management, environmental restoration, and waste management alternatives at INEL, which includes project-specific analyses for implementing these programs. Therefore, the alternatives discussed in Volume 2 are more specific than those in Volume 1.

02.04 (038) Adequacy of the Draft EIS

COMMENT
The commentor asserts that the EIS is deficient because it contains no analysis of the environmental impacts, including cumulative impacts from the future management of spent nuclear fuel once it arrives at Idaho National Engineering Laboratory.

RESPONSE
DOE believes the EIS is complete and accurately reflects the potential environmental impacts of a reasonable range of alternatives.

The site-specific impacts, including cumulative impacts, of managing SNF at INEL are discussed in Volume 2, Chapter 5 and Appendix F. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. Volume 2, Appendix B is specific to SNF management at INEL. The analyses show that the environmental impacts of all proposed alternatives would be small.

02.04 (040) Adequacy of the Draft EIS

COMMENT
The commentor states that the EIS does not provide documentation on exposure, dose, and risk models sufficient to support the results presented.

RESPONSE
The level of supporting documentation provided for various impact assessment models and methods reflects the tiered structure of the EIS. Every effort was made in the preparation of this EIS to make it readable and understandable by members of the public. The EIS was prepared in a layered fashion with respect to the depth of technical information. The summary is intended to present the information in a manner that would be generally understandable by nontechnical persons. The appendices are technically detailed and provide sufficient information for a thorough technical review by specialists. The appendices also contain references that provide more information on the methods and the technical analyses. This reference material is available in reading rooms and information locations, which are listed in the EIS, for anyone who wishes further technical detail. Volume 2, Appendix F provides detailed information on methodologies, key data, and assumptions used and additional information.
necessary to substantiate the content and conclusions provided in Volume 2, Chapter 5. Volume 2, Appendix F includes the exposure/dose and risk models and attendant assumptions.

The environmental impact analyses, including risk analysis, are designed to produce a reasonable projection of the upper bound of potential environmental consequences. This requires appropriately conservative assumptions and analytical approaches. In this context "conservative" means that an assumption or analysis would tend to overpredict, rather than underpredict, any adverse impacts. However, overly conservative analyses do not provide a useful basis for comparing alternatives. Each alternative has been analyzed using identical methods and levels of conservatism so that the relative impacts of alternatives can be accurately assessed.

The nature of the input data for each analysis is slightly different. Socioeconomic analyses are based on projected budgets, for example, where as air resources analyses are based on estimated releases of pollutants. The analytical models are also fundamentally different for similar reasons. For all analyses where conservative assumptions were required, generally accepted engineering and scientific approaches were used to ensure that these assumptions are not outside the range of uncertainty usually associated with the data.

Detailed uncertainty analyses can sometimes be useful in evaluating environmental impacts. They are particularly valuable when projected impacts are large and it is important to know how reliable the projections are. However, quantitative estimates of uncertainty in impacts for hypothetical future activities are difficult to determine. When appropriately conservative estimates of impacts are shown to be small, the exact degree of uncertainty diminishes in importance. The estimated impacts in the EIS are small enough that detailed quantitative uncertainty analyses are not appropriate to meet the objectives of an EIS.

02.04 (041) Adequacy of the Draft EIS

COMMENT
The commentor contends that the EIS is cumbersome as a result of the dual purpose and inadequate in the examination of issues pertaining to proposed Oak Ridge Reservation sites.

RESPONSE
The EIS Summary and Volume 1, Chapter 1 clearly state the options being evaluated by DOE. Both state that DOE is evaluating programmatic (DOE complex-wide) approaches to managing DOE SNF and site-specific approaches for SNF management, environmental restoration, and waste management activities at INEL.

In response to public comments raised during the scoping process, DOE undertook a process for identifying additional alternative sites. As a result, NTS and ORR were selected for analysis as alternative sites. DOE believes that the depth of analysis for ORR and NTS is appropriate for a programmatic EIS and is commensurate with the analyses of the other alternative sites in Volume 1.

02.04 (042) Adequacy of the Draft EIS

COMMENT
The commentor questions the adequacy of the technical analysis and the associated quantification of the environmental impacts of the various alternatives.

RESPONSE
The environmental impact analyses are designed to produce a reasonable projection of the upper bound of potential environmental consequences. This requires the use of appropriately conservative assumptions and analytical approaches. In this context "conservative" means that an assumption or analysis would tend to overestimate, rather than underestimate, any adverse impacts. However, unnecessarily conservative analyses may make it more difficult to compare alternatives. Therefore, where available, the environmental impact analyses are based on realistic, site-specific information. Each alternative was analyzed using consistent methodology and levels of conservatism so that the relative impacts of alternatives could be accurately assessed and compared.

The analyses of the impacts of operations and reasonably foreseeable accident conditions are based on calculations that require two elements: 1) input data, and 2) a model or analytical method for projecting potential impacts. The nature of the input data for each analysis is slightly different. Socioeconomic analyses are based on projected budgets, for example, while air resources analyses are based on estimated releases of pollutants. The analytical models are also fundamentally different for similar reasons. For all analyses where conservative assumptions were required, generally accepted engineering and scientific approaches were used to ensure that these assumptions are not outside the range of uncertainty usually associated with the data.

Detailed uncertainty analyses can sometimes be useful in evaluating environmental impacts. They are particularly valuable when projected impacts are large and it is important to know how reliable the projections are. However, quantitative estimates of uncertainty in impacts for hypothetical future activities are difficult to determine. When appropriately conservative estimates of impacts are shown to
be small, the exact degree of uncertainty diminishes in importance. The estimated impacts in the EIS are small enough that detailed quantitative uncertainty analyses are not appropriate to meet the objectives of an EIS.

02.04 (043) Adequacy of the Draft EIS

COMMENT

Commentor express the opinion that the Draft EIS requires substantive revision to meet the requirements of the National Environmental Policy Act and the Court Order. Commentor consider the document a hurried compilation of existing data that will jeopardize the decision-making process for the Idaho National Engineering Laboratory-specific actions if not revised. Commentors further indicate that the EIS compromises adherence to federal and state laws, although it dismisses alternatives that would violate DOE Orders or contractual agreements.

RESPONSE

In accordance with the requirements of NEPA (42 USC Section 4321 et seq.), this EIS was issued as a draft for public and agency review on June 30, 1994. Great effort was required to produce and make available an adequate Draft EIS for public review on or before June 30, 1994, to meet the deadline agreed to between the State of Idaho, DOE, and the Navy, and adopted by the Court. Though difficult to achieve, the integration of significant resources with a disciplined project management approach ensured success without sacrificing quality. Because of the volume of information presented in the Draft EIS, DOE extended the public comment period to 90 days, which is twice that required under NEPA, and conducted 33 public hearings at 20 locations across the nation, 8 of which were held in Idaho. In addition, DOE accepted public comments in writing, via hearing exhibits, and via a toll-free telephone line well published throughout the comment period. DOE is confident that it has considered all public comments received on the Draft EIS, responded to the comments, and issued a Final EIS that incorporates all meaningful comments, as appropriate.

This EIS was prepared using existing information that is available to the public and referenced in the EIS. This information and the methodologies used to analyze environmental impacts in the EIS have been thoroughly reviewed and commented on by numerous well-informed citizens, state and Federal agencies, local and Tribal officials, and public interest organizations. A great effort was made on this project to collect comments from the public nationwide and to use these comments in the EIS, as appropriate.

See also the responses to comments 04.04 (008) and 04.04 (011), as well as Volume 1, section 3.1, and Volume 2, section 3.4 for DOE's preferred alternatives.

DOE and the Navy consulted with the U.S. Environmental Protection Agency (EPA) to fully understand and be responsive to EPA comments on the Draft EIS, and to ensure that areas of insufficient information were clarified and/or enhanced in the Final EIS. In addition, DOE cont...ed other states and agencies providing comments on the draft to fully understand and consider their comments, with the exception of the State of Idaho, which declined DOE's requests to schedule a meeting.

The U.S. Department of the Interior (DOI) submitted comments on the Draft EIS several months after the close of the extended comment period. DOE is responding to DOI's concerns in separate correspondence.

While commentors raised a number of specific issues and concerns on the Draft EIS, none of the issues or concerns identified new reasonable alternatives requiring assessment or resulted in a significant change in the analysis of the potential environmental consequences. DOE believes that it has fulfilled its obligations commensurate with the requirements of NEPA for the preparation of an EIS.

02.04 (044) Adequacy of the Draft EIS

COMMENT

The commentor states that the EIS does not constitute an adequate, comprehensive, sitewide EIS for the Idaho National Engineering Laboratory.

RESPONSE

Volume 2, Chapters 1 and 5 discuss current and planned activities and cumulative impacts of activities at INEL. Environmental restoration and waste management activities and impacts, as discussed in Volume 2, cover a 10-year period. SNF management activities at INEL, as discussed in Volume 1, Appendix B Chapters 2 and 5, cover a 40-year period. These time periods are appropriate for analyzing near-term actions required for safe conduct of these activities. Some of the alternatives analyzed in Volumes 1 and 2 assume that waste and SNF remain at INEL.

The scope of the EIS is in accordance with the needs of DOE and the requirements of the Court Order. The EIS was reviewed during an extended public comment period. While a number of specific issues and concerns were raised on the EIS, none of the issues or concerns identified new reasonable alternatives requiring assessment or resulted in a significant change in the analysis of or the potential environmental consequences of the alternatives considered. DOE believes that it has fulfilled its obligations commensurate with the requirements of the National Environmental Policy Act for the preparation of EIS. See also response to comment 03.04.01 (007).
02.04 (045) Adequacy of the Draft EIS

COMMENT

The commentor states that the EIS discusses alternatives at the Idaho National Engineering Laboratory contingent on national spent nuclear fuel and waste management decisions. The commentor further states that this disjointed approach led to an undue influence toward Idaho National Engineering Laboratory spent nuclear fuel management, and that comments on the Implementation Plan did not result in a change in this approach.

RESPONSE

CEQ regulations regarding the preparation of NEPA documents require that when major actions are similar to other reasonably foreseeable agency actions, the environmental consequences must be evaluated in one EIS. DOE's analysis of proposed SNF activities at INEL complies with NEPA and the implementing regulations.

Accordingly, this EIS integrates national programmatic SNF management alternatives with alternatives for INEL sitewide environmental restoration and waste management alternatives, including management of SNF. The SNF management connection between the Volume 1 programmatic evaluation and the Volume 2 INEL alternatives for the management of SNF is Appendix B to Volume 1, which addresses SNF management alternatives as they would impact INEL. Recognizing the complexity and size of the EIS, DOE prepared an easy to read, volume-specific Summary to the EIS. DOE also made available a User's Guide, which leads the reviewers to EIS sections of particular interest.

Volume 1, Appendix B, Chapter 5 considers the impacts on INEL environment of the implementation of various DOE complex-wide SNF management alternatives. Volume 1, Appendix B, Chapter 2 describes INEL's SNF facility, the regulatory framework for SNF management at INEL, and the INEL SNF management program. Chapter 3 describes the DOE complex-wide SNF management alternatives as INEL proposes to implement them, including potential environmental consequences for each alternative. Chapter 4 describes the potentially affected environment, and Chapter 5 considers the environmental consequences. Transportation impacts are considered in sections 4.11, 5.11 and 5.20.3; impacts from receiving, processing and storing SNF at INEL are included in Chapters 4 and 5. Similar levels of analysis were performed for other sites being considered for SNF management, including the Savannah River Site, the Hanford Site, the Oak Ridge Reservation, and the Nevada Test Site.

02.04 (046) Adequacy of the Draft EIS

COMMENT

The commentor states that the EIS does not properly define the proposed action, but that DOE presents a "kaleidoscope" of potential spent nuclear fuel storage and waste management facilities at the Idaho National Engineering Laboratory. The commentor is also of the opinion that the programmatic scope of the EIS does not provide the site-specific details required by the Court, thereby violating the Court Order.

RESPONSE

Volume 2, Chapter 1 describes the proposed action (see the response to comment 02.04 (047)). This involves making a number of decisions within the range of reasonable alternatives analyzed in the EIS. DOE did not have a preferred alternative at the time of the Draft EIS, and has considered public comments along with other factors such as program needs, in defining its preferred alternative in the Final EIS. See the response to comment 04.04 (011) for information on DOE's preferred alternative for INEL environmental restoration and waste management programs for 1995 to 2005. See also the response to comment 04.02 (001).

The Court Order addresses five types of SNF: Fort St. Vrain fuel, Navy SNF, university and research reactor fuel, fuel from other DOE facilities, and fuel from foreign research reactors. All of these types of SNF are discussed relative to the proposed management alternatives and the related waste management activities associated with these fuels. These discussions can be found in a number of places in the EIS including Volume 1, Chapters 4 and 5; Volume 1, Appendix B (INEL specific), Chapter 3, section 4.14; and Volume 2, section 2.2.7. DOE factored the INEL site-specific SNF impacts of Volume 1, Appendix B into the environmental restoration and waste management program alternative actions evaluated in Volume 2. DOE is confident that the analysis of the proposed action and alternatives for SNF management, environmental restoration, and waste management at INEL is in full compliance with both the requirements and intent of NEPA and the Court Order. See also the response to comment 04.02 (001).

02.04 (047) Adequacy of the Draft EIS

COMMENT

The commentor states that the Draft EIS fails to identify the proposed action for environmental restoration and waste management at the Idaho National Engineering Laboratory, and proposed environmental restoration activities are limited to decontamination and decommissioning projects. The commentor adds that only 2 of the 47 proposed activities are related to technology development, and none is for environmental restoration.

RESPONSE

The proposed action for environmental restoration and waste management programs at INEL over the 10-year period 1995 to 2005 is discussed in Volume 2, Chapter 1. The proposed action is to develop...
appropriate facilities and technologies to manage waste and SNFs expected during the 10-year period: to more fully integrate all environmental restoration and waste management activities at INEL to achieve cost and operational efficiencies; and to minimize environmental impacts from environmental and waste management activities. In response to public comments, this proposed action will be achieved through five key decisions listed at the end of Volume 2, Chapter 1, including emphasis on waste minimization activities. The EIS has been revised to more clearly identify that portion of Volume 1, Chapter 2 that constitutes the proposed action.

The environmental restoration program at INEL is specifically discussed in Volume 2, sections 2.2.6 and 3.1.2. Volume 2, Appendix C addresses environmental restoration activities that have been initiated through agreement with the State of Idaho and EPA. Volume 2, Table 3.1-3 lists the general environmental restoration projects that would be completed under each alternative. Details regarding many of these projects are not available at this time. However, summaries of some projects are included in Volume 2, Appendix C.

The evaluation in Volume 2 of this EIS bounds environmental impacts from environmental restoration (or cleanup) activities at INEL. For purposes of this EIS, environmental restoration activities are addressed to the extent that they generate wastes which must be managed by DOE waste management programs. However, specific decisions related to cleanup at INEL are generally addressed under an enforceable agreement executed by DOE, EPA Region X, and the State of Idaho on December 9, 1991. This agreement, distinct from the EIS, is the FFA/CO. The FFA/CO establishes a comprehensive process that integrates the remediation requirements of CERCLA, and the corrective action requirements of RCRA and the State of Idaho's Hazardous Waste Management Act. Cleanup activities are conducted under the process and schedule established in the FFA/CO. RODs under the FFA/CO process are signed by all three agencies and represent a joint determination that protectiveness will be achieved through implementation of the selected remedy.

Environmental restoration efforts at INEL have progressed substantially since the FFA/CO was signed. As of November 1994, 10 of the 25 scheduled RODs have been successfully negotiated and signed by DOE, EPA, and the State of Idaho. These RODs resulted in the implementation and/or completion of several interim and final actions designed to reduce or eliminate hazards to human health and the environment. To date, all enforceable milestones set in accordance with the FFA/CO have been met, either on or ahead of schedule. Additional work will continue over the next several years, as detailed in the EIS and the FFA/CO Action Plan. For instance, the draft ROD for the Waste Area Group 10 Comprehensive Snake River Plain Aquifer Remedial Investigation feasibility Study, scheduled for May 2001, will announce decisions regarding the cleanup of the Snake River Plain aquifer. This EIS cannot anticipate the detail of those decisions. Therefore, analyses performed in support of this EIS must address the nature of the anticipated cleanup in general terms.

02.04 (048) Adequacy of the Draft EIS
COMMENT
The commenter states that DOE still does not understand its national responsibilities to protect health and safety and should consider all impacts of its proposed actions. The commenter is of the opinion that the Draft EIS has the same failings as DOE's environmental assessment, which was ruled inadequate by the Court. The commenter considers the presentation of information in the EIS to be cursory, and disjointed so as to undermine rational decisionmaking. The commenter considers the treatment of 12 current Idaho National Engineering Laboratory projects to be "superficial."
RESPONSE
DOE takes its national obligation to make informed decisions that protect the health and safety of workers, the public, and the environment seriously. This is evidenced by the coupling of the analysis of programmatic SNF management alternatives with the corresponding INEL site-specific SNF fuel management alternatives for implementation.

CEQ regulations at 40 CFR 1500.1(b) state that an EIS must concentrate on the issues that are truly significant to the action in question, instead of amassing needless detail. 40 CFR 1502.21 requires that the agency incorporate materials into an EIS by reference when the effect will be to reduce the bulk of the document. One specific mechanism for incorporation by reference is discussed in the regulation on “tiering” at 40 CFR 1502.20, which encourages agencies to eliminate repetitive discussion of the same issues and to focus on the actual issues ready for a decision at each level of environmental review.

The 12 project descriptions referred to by the commenter are interim actions at INEL being undertaken pursuant to 40 CFR 1506.1(c). The cumulative impacts of these interim actions are included within the No Action alternative in Volume 2 to provide a baseline from which the impacts of the proposed action could be assessed. In addition, although the proposed projects are summarized in Volume 2, Appendix C, the impacts of each of the proposed actions are fully assessed in the main volume (Volume 2, Chapter 5) of the INEL-specific portion of the EIS, to the extent that such proposed actions are ready for a decision.

See also the responses to comments 02.04 (043) and 02.04 (045).
02.04 (049) Adequacy of the Draft EIS

COMMENT

The commentor states that the EIS is inadequate because it fails to completely address the specific proposal that was the subject of the lawsuit: the shipment and storage of spent nuclear fuel from the Fort St. Vrain reactor. The commentor suggests several reasons why the project summary on the Fort St. Vrain fuel is inadequate, including the fact that it fails to address specifics related to transportation, such as whether safe and certified shipping casks exist and analysis of rail versus truck transport by specific fuel type and location.

RESPONSE

The EIS has a summary description of the shipment and storage of the SNF from Fort St. Vrain. This summary is in Volume 2, Appendix C, section C-4.1.5. For instance, this summary specifies that Fort St. Vrain SNF would be shipped in the TN-FSV cask designed by GA Technologies and certified by the Nuclear Regulatory Commission for truck transport (certificate of Compliance No. 9253, Rev. 0), with each cask holding six SNF blocks.

Volume 2, Appendix C, section C-4.1.5 summarizes information found elsewhere in the EIS on the impacts of shipping and storing Fort St. Vrain fuel. All of the environmental impacts of SNF shipment and storage are described in Volume 1, Chapter 5 and Appendix B. Fort St. Vrain fuel is just one of several types of SNF analyzed in the EIS under the various programmatic alternatives. For example, Volume 1, Appendices D and I present transportation impacts under all alternatives evaluated for SNF management, including methodologies and route-specific data. With respect to Fort St. Vrain SNF, a licensed rail cask is not currently available, although one is being designed by Pacific Nuclear Corporation. The incident-free and accident risk transportation analyses are presented for specific fuel types and pairs of originating and final destination sites.

The EIS presents a complete and comprehensive description of the impacts associated with SNF management, including the fuel from the Fort St. Vrain reactor. See also the response to comment 02.04 (046).

02.04 (059) Adequacy of the Draft EIS

COMMENT

The commentor states that the EIS is inadequate in its analysis of the impacts of long-term management of spent nuclear fuel because it fails to analyze where and how the fuel will be stored, how processing and reprocessing might occur, impacts of waste management activities, and what steps and technologies will be taken to prepare the fuel for ultimate disposition.

RESPONSE

The EIS analyzes the impacts of SNF management until 2035, by which time DOE expects to make and implement decisions regarding the ultimate disposition of SNF. Evaluating the potential environmental consequences of SNF management over the full 40-year interim period is anticipated to conservatively estimate any impacts that are reasonably foreseeable, including impacts from processing. Thus, the affected environments and environmental impacts that are reasonably foreseeable during this 40-year period are studied in detail in the EIS for a range of reasonable action and siting alternatives for SNF management. This information is in Volume 1, Chapters 4 and 5 and each of the site-specific Appendices A through F. Appendix J describes storage, processing, and steps and technologies available to either stabilize the SNF for storage and/or prepare it for ultimate disposition. The discussion in the EIS conservatively estimates all of the impacts, yet it remains flexible on the discussion of technologies due to the evolving waste acceptance criteria for potential geologic disposal, as well as development of potential new technologies not yet available. Decisions on ultimate disposition of SNF are beyond the scope of this EIS. See also the response to comment 05.09 (03).
waste stream management activities. Additional NEPA reviews for those projects that become ready for a decision may be conducted as necessary as the waste treatment technologies are further developed. See also the response to comment 07.02.02 (001).

02.04 (052) Adequacy of the Draft EIS

COMMENT

The commentor states that the EIS is inadequate because it fails to provide sufficient data to support its conclusions, including risk models and assumptions that must be available for public scrutiny, as well as information on waste management projects. The commentor indicates local information should be used, such as transportation statistics from Idaho, with regard to potential impacts. The commentor indicates that DOE is obligated to ensure that the scientific basis and uncertainty of its environmental analysis is available.

RESPONSE

The EIS complies with CEQ regulations at 40 CFR 1502.24, which require that DOE ensure the professional and scientific integrity of the discussions and analyses in the document. Wherever scientific and other sources were relied on for conclusions made in the EIS, references are cited. Reference lists appear at the end of each chapter and each appendix. All references cited in the EIS are available for public review in information locations and DOE reading rooms throughout the United States, as listed in the Summary. For example, transportation accident risks and the underlying models and assumptions are described in Volume 1, Appendix 1. The reference list for these discussions is found in Appendix I-10. Similarly, the methodology and models used to calculate impacts from facility accidents are in identified Volumes 1 and 2, Chapter 5 with appropriate references. See the response to comment 07.04 (006) with respect to information on waste management projects.

Regarding impacts from transportation, Volume 1, Appendices D and I present transportation impacts for all alternatives evaluated for SNF management, including methodologies, route-specific data, etc. The analyses for both incident-free transportation and accident risk transportation are presented for an entire generic route, which includes types of routes that may exist in Idaho for those shipments that may travel through, originate, or terminate in Idaho. These evaluations include state-specific accident rates. To find the consequences of a transportation accident in a suburban area such as Pocatello, Idaho, for example, the reviewer would look up the consequences calculated for a suburban area.

In response to public comments, DOE has provided a discussion on uncertainty and conservatism in Volumes 1 and 2, section 5.1.

02.04 (053) Adequacy of the Draft EIS

COMMENT

The commentor states that the EIS is inadequate because it does not incorporate impacts that might arise after 2035 if a permanent geologic repository does not become available as planned. The commentor cites cumulative impacts of waste management activities as another example of cursory analysis; that is, being defined only in waste volumes rather than in terms of past, present, and reasonably foreseeable storage and disposal actions and repository proposals.

RESPONSE

This EIS considers management of DOE SNF pending ultimate disposition. DOE believes that decisions on ultimate disposition will be made and implemented within 40 years; however, DOE is committed to safely managing SNF for the necessary time interval. DOE will review this EIS periodically and update it as appropriate during this period.

Regarding cumulative waste management impacts in the EIS, past actions are factored into the baseline. For instance, impacts to the aquifer due to past activities are reflected in results of current monitoring and modeling. Current waste inventories reflect the accumulation of waste from past activities. Volume 2, section 5.15 presents cumulative impacts by waste stream under each of the alternatives, including transportation, over the reasonably foreseeable period of the proposed action. As with the programmatic portion of the EIS, the INEL sitewide environmental restoration and waste management portion of the EIS is subject to review and updating at least every 5 years. In that time period, DOE determines whether to prepare a new programmatic or sitewide EIS or to supplement the existing EIS, as appropriate. See also the responses to comments 05.09 (006) and 05.09 (011).

02.04 (054) Adequacy of the Draft EIS

COMMENT

The commentor expresses the opinion that the Draft EIS fails to meet the requirements of the Court Order and the National Environmental Policy Act because alternatives are assessed programatically rather than site-specifically in the EIS. As examples, the commentor specifically references DOE's "summary dismissal" of leaving Fort St. Vrain fuel at the existing Fort St. Vrain facility, and failure to assess storing Fort St. Vrain fuel at a new facility at the Idaho National Engineering Laboratory.

RESPONSE

The EIS includes an alternative of leaving fuel at Fort St. Vrain, Colorado. The identification of alternatives when considering proposed actions is subject to the rule of reason. Although an agency must consider a reasonable range of alternatives, what constitutes a reasonable range depends on the nature of the proposed action and the facts in each case. The rule of reason is important because without it, an
infinite variety of alternatives might be considered possible. As the courts have said, "so long as there are unexplored and undisclosed alternatives that inventive minds might suggest, without the rule of reason, it would be technically impossible to prepare a literally correct EIS" [Fayetteville Area Chamber of Commerce vs. Volpe, 515 F.2d 1021 (4th Cir. 1975)]. As an example, this EIS addresses transportation by truck or by rail, or not transporting at all, which constitutes a reasonable range of alternatives by the rule of reason. This EIS addresses a reasonable range of alternatives in both Volumes 1 and Volume 2, and such alternatives have been adequately integrated to address a reasonable range of SNF activities at INEL.

Regarding the commentor's examples, the option of leaving Fort St. Vrain SNF at the existing Fort St. Vrain storage facility was considered under the No Action alternative. The statement in the EIS that leaving the fuel at the facility would violate the existing contract did not lessen such analysis: rather, it was a statement to advise the public of the consequences of such an alternative. DOE modified the project summary in this EIS to provide more information on the Fort St. Vrain fuel. With respect to the alternative of storing Fort St. Vrain fuel at a new facility at INEL, this is considered within the scope of the Dry Fuel Storage Facility Project Summary. See Volume 2, Appendix C, SNF-4.

02.04 (056) Adequacy of the Draft EIS

COMMENT

Commentors state that the EIS was prepared without significant consultation with the Shoshone-Bannock Tribes.

RESPONSE

DOE and the Navy consulted regularly with the Shoshone-Bannock Tribes, both with regard to this EIS and in other contexts. Specifically with respect to this EIS, DOE and the Navy reviewed the Shoshone-Bannock Tribes' comments, and to fully understand, evaluate, and consider these comments, there have been consultations between Tribal officials and appropriate INEL and Navy officials. In addition to addressing specific comments on the EIS, these ongoing consultations are designed to promote a mutual understanding of INEL-related issues important to the Tribes, both within and beyond the scope of this EIS. To date, these consultations have resulted in an increased awareness of Tribal values as they relate to nature, ties to the land, religious beliefs, and other areas of special interest to the Tribes. See also the response to comment 03.07 (008).

02.04 (057) Adequacy of the Draft EIS

COMMENT

The commentor states that the EIS neither describes ongoing activities nor analyzes their impacts in association with past and future activities, and is therefore not comprehensive.

RESPONSE

Volume 2, Chapter 4 describes the existing environment at INEL. Volume 2, Chapter 2 discusses the current activities, facilities, and missions at INEL. Site-specific impacts, including cumulative impacts, are presented in Volume 2, Chapter 5 and Appendix F. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize all of the alternatives considered in this EIS. The analysis shows that the environmental impacts of all proposed alternatives would be small.

02.04 (058) Adequacy of the Draft EIS

COMMENT

The commentor states that the EIS process is flawed because the focus is flawed, the alternatives are flawed, and the review of environmental consequences is inadequate.
RESPONSE
For each of the alternatives considered, environmental impacts were analyzed and presented to allow comparisons between the alternatives. DOE believes the technical analyses provided in this EIS, its appendices, and references accurately and adequately scope potential environmental impacts due to the proposed action.

02.04 (059) Adequacy of the Draft EIS
COMMENT
The commentor asserts that the facility-specific environmental impacts of spent nuclear fuel management activities must be performed prior to selecting a location for that activity.

RESPONSE
Specific information is not available on facilities that have not been fully designed and constructed. Such data are also not available for future activities, such as decontamination projects that have not occurred and treatment of waste streams, the treatment plans for which have not been finalized. Generic projects are included in the EIS to present readers with as comprehensive a range of forthcoming projects as is currently possible. These projects or facilities may require additional analysis under NEPA. By analyzing generic projects at the various alternative sites, DOE can reasonably compare the impacts of these activities at a programmatic level.

02.04 (060) Adequacy of the Draft EIS
COMMENT
Commentors state that the EIS treatment is too broad, and details about specific facilities or actions are too sketchy to serve as adequate National Environmental Policy Act documentation. One commentor asks what information other than public comments will be considered in EIS decisionmaking. Other commentors indicate that the EIS is not specific enough for adequate assessment of facilities, safety, and impacts to the environment. One commentor states that the EIS does not discuss processing.

RESPONSE
This EIS was prepared as a programmatic document dealing with the nationwide management of SNF in Volume 1, and sitewide environmental restoration and waste management and SNF management programs at INEL in Volume 2.

Because of the wide-ranging types and quantity of DOE SNF, DOE determined it prudent to examine alternatives for SNF management across the entire DOE complex; thus, a programmatic EIS. This determination was based, in part, on avoiding possible "improper segmentation," as discussed in NEPA implementing regulations at 40 CFR 1508.25 (a).

Each proposed action contemplated in this EIS is analyzed using the most current environmental analyses and other relevant information, as necessary, to assess all impacts, including cumulative impacts. Decisions for this EIS will be based on the environmental analyses, public comments, the Spent Nuclear Fuel Management Cost Evaluation Report (Draft), and any other information deemed necessary by decisionmakers, including technical and practical considerations.

Volume 2, Appendix C discusses 49 potential projects to implement INEL SNF management and environmental restoration programs. Volume 2, Appendix F, and Volume 1, Appendices B and J discuss impacts from processing SNF at INEL.

Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the environmental impacts of all proposed alternatives would be small.

02.04 (061) Adequacy of the Draft EIS
COMMENT
The commentor states that the EIS inadequately addresses alternatives by dismissing criteria such as aquifer locations and seismicity as "Issues Not Discussed in Detail."

RESPONSE
The commentor refers to Volume 1, section 5.2, which is a high-level summation of the site-specific analyses in the associated appendices. The section presents environmental consequences of the alternatives, focusing on the disciplines that may differentiate among sites, have the potential for a more significant impact, or are of general interest to the public. The disciplines not discussed in detail in Volume 1 are considered to be issues that are small and do not distinguish among alternatives. Nevertheless, these issues are discussed in detail in the appendices and reference documents. See also the responses to comments 02.04 (014) and 02.04 (021) regarding the adequacy of analysis in the EIS.

02.04 (062) Adequacy of the Draft EIS
COMMENT
The commentor states that the EIS is inadequate and unsatisfactory because it ignores past accidents and existing deficiencies at the Savannah River Site.

RESPONSE
Environmental impacts associated with past accidents or releases and existing deficiencies at the Savannah River Site are not within the scope of this EIS except to provide baseline data for the analysis of possible cumulative impacts. However, DOE acknowledges that environmental releases have...
occurred as a result of past activities. DOE's Environmental Management Program is responsible for appropriately addressing past releases in accordance with applicable regulations and standards.

2.5 Record of Decision

02.05 (001) Record of Decision

COMMENT
The commentor states that the burial of radioactive waste, including Navy waste, and the use of radioactive waste percolation ponds must be suspended until the Record of Decision for this EIS is issued.

RESPONSE
The EIS process established by NEPA is directed at appropriately considering the environmental consequences of proposals for new activities or for alterations of existing activities or facilities. Although current operations may have a bearing on the environmental impacts of proposed new actions, NEPA does not require that current operations be shut down until decisions on proposed new actions are reached and published in a ROD.

At present, only low-level radioactive wastes are being buried (disposed of below ground) at INEL. These low-level wastes must satisfy waste acceptance criteria specific to the Radioactive Waste Management Complex. In addition, the burial of low-level radioactive wastes is an ongoing activity.

Liquid effluent discharges from INEL site activities are monitored for the presence of radioactive chemical constituents and determined suitable for release pursuant to applicable Federal and state regulations.

As discussed in Volume 2, section 5.8, radiological discharges are no longer made to infiltration ponds. Past discharges of radioactivity did not result in exceedance of EPA Primary Drinking Water Standards offsite. Also, owing to radioactive decay, the low concentrations of such radionuclides in the aquifer from past discharges continue to diminish with time.

2.6 Out-of-Scope Issues

02.06 (001) Out-of-Scope Issues

COMMENT
A number of commentors provided input at public hearings, in writing, via exhibits, and/or via the toll-free telephone line that were not related to either the programmatic management of DOE spent nuclear fuel or environmental restoration and waste management activities at the Idaho National Engineering Laboratory, or issues considered in this EIS. Some of the comments dealt with such topics as:

- Siting of a bombing range in Idaho or elsewhere
- Movement of "nuclear specialist" trucks to a facility in Hartville, Tennessee
- An unspecified General Electric contract related to uses of nuclear power
- George Orwell's novel "1984" as it relates to safety and ethics
- Right to Work law impacts on trade unions
- United States arms exports to foreign countries
- Rights to peace and worldwide peace
- Maintaining a strong industrial base in Hawaii
- Operations of specific commercial nuclear waste facilities
- The 1948 Declaration of Human Rights

RESPONSE
It is beyond the scope of this EIS to address issues that are not related to either the programmatic management of DOE SNF or environmental restoration and waste management activities at INEL, including those listed above.

02.06 (002) Out-of-Scope Issues

COMMENT
The commentor states that the EIS fails to review alternatives and environmental consequences on the production side of the spent nuclear fuel issue, such as the continued use of nuclear ships, thereby violating the National Environmental Policy Act.

RESPONSE
This EIS considers management of DOE SNF pending ultimate disposition. DOE believes the analyses in this EIS are adequate to support a decision on this subject.
02.06 (003) Out-of-Scope Issues

COMMENT
The commentor objects to "spent fuel" not being called "high-level nuclear waste" in a fact sheet provided at scoping hearings for the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Reactor Spent Nuclear Fuel.

RESPONSE
Congress established the definitions of various categories of radioactive material in the Nuclear Waste Policy Act of 1982, as amended. Section 2 of the Act defines SNF as fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated by reprocessing. The definitions in the Act place SNF in its own category and distinguish it from high-level and low-level waste.

02.06 (004) Out-of-Scope Issues

COMMENT
The commentor asks to deal with nuclear waste in a safe, reliable manner.

RESPONSE
DOE is committed to comply with all applicable Federal and state laws and regulations, DOE Orders, and interagency agreements governing SNF and radioactive and hazardous wastes and is responsible for safely managing these materials. The delegation of authority or appointment of independent commissions is beyond the scope of this EIS.

02.06 (005) Out-of-Scope Issues

COMMENT
The commentor contends that cladding on nuclear fuel rods used in U.S. nuclear power plants is failing and that the Nuclear Regulatory Commission has done little to prevent potentially flawed fuel rod casings from being used in the United States and abroad.

RESPONSE
This EIS is limited in scope to DOE SNF. The condition of fuels in use in nuclear power plants and research reactors is not evaluated in the EIS.

02.06 (006) Out-of-Scope Issues

COMMENT
The commentor objects to "spent fuel" not being called "high-level nuclear waste" in a fact sheet provided at scoping hearings for the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Reactor Spent Nuclear Fuel.

RESPONSE
Congress established the definitions of various categories of radioactive material in the Nuclear Waste Policy Act of 1982, as amended. Section 2 of the Act defines SNF as fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated by reprocessing. The definitions in the Act place SNF in its own category and distinguish it from high-level and low-level waste.

02.06 (007) Out-of-Scope Issues

COMMENT
This EIS is limited in scope to DOE SNF. Neither operation and environmental risks nor costs of commercial nuclear power plants are evaluated in the EIS.

02.06 (008) Out-of-Scope Issues

COMMENT
The commentor requests that the EIS include an inventory of hazardous and radioactive materials used, generated, and leaked to the environment over the years at the Idaho National Engineering Laboratory.
RESPONSE
A total inventory of INEL hazardous and radioactive materials used or generated, and details about environmental releases are not within the scope of this EIS, except as they may relate to the discussion of the existing site conditions, cumulative impacts, and current or proposed waste management activities. For example, Volume 2, section 4.8 includes a discussion of existing water-quality conditions in the Snake River Plain aquifer. Cleanup of contamination from past releases is addressed at INEL under the FFA/CO.

02.06 (010) Out-of-Scope Issues
COMMENT
The commentor indicates that DOE budgets lack life-cycle costs such as those that would be required in Federal domestic budgets under proposed House Bill HR3870.
RESPONSE
The sources, appropriations, and accounting for fiscal and other resources to support the activities of the Federal Government are determined by Congress and are beyond the scope of this EIS.

02.06 (016) Out-of-Scope Issues
COMMENT
The commentor provides a fact sheet that addresses topics and issues that are only related to the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel.
RESPONSE
While this EIS includes potential future management of foreign research reactor spent nuclear fuel in cumulative impact analyses, the topic of DOE policy for managing this fuel is outside the scope of this EIS.

02.06 (021) Out-of-Scope Issues
COMMENT
The commentor raises issues related to the Centers for Disease Control and Prevention dose reconstruction study currently under way at the Idaho National Engineering Laboratory.
RESPONSE
Issues related to the Centers for Disease Control and Prevention (CDC) dose reconstruction study are beyond the scope of this EIS. However, DOE and the Navy are cooperating with the CDC in its conduct of the study.

02.06 (023) Out-of-Scope Issues
COMMENT
The commentor is of the opinion that DOE made a political decision to characterize only the Yucca Mountain Site for geologic disposal, rather than all three original sites.
RESPONSE
The decision to characterize only the Yucca Mountain site was made by Congress as part of amending the Nuclear Waste Policy Act, and is beyond the scope of this EIS.

02.06 (024) Out-of-Scope Issues
COMMENT
The commentor contends that some facilities have been closed due to noncompliance with environmental regulations.
RESPONSE
The facility closures mentioned by the commentor resulted from a change in DOE's mission and program needs relative to these sites, not environmental noncompliance. Facility closures are beyond the scope of this EIS. See also the response to comment 03.08 (011).

02.06 (025) Out-of-Scope Issues
COMMENT
The commentor raises the issue that the EIS does not address the potential impacts of ocean transport of foreign research reactor spent nuclear fuel to the United States.
RESPONSE
The ocean-going portion of FRR SNF shipments and a detailed evaluation of port activities are not addressed in this EIS. Alternatives for managing FRR SNF, including shipping across the global commons, are being analyzed in a separate EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor SNF (Draft). This EIS addresses domestic transportation and management of FRR SNF if it is returned to the United States. DOE will not make a final decision on the policy regarding FRR SNF until that EIS and this EIS are both completed.

02.06 (027) Out-of-Scope Issues
COMMENT
The commentor expresses the opinion that the benefits derived from nuclear technology do not justify the waste and "destruction," and that nuclear reactors and weapons have not improved our image or our lives.
RESPONSE
The net benefit of nuclear technology, reactors, and weapons is not within the scope of this EIS. This EIS does, however, address alternatives for safely managing DOE SNF over the next 40 years.

02.06 (028) Out-of-Scope Issues

COMMENT
The commentor states that this EIS does not address commercial spent nuclear fuel, and that this will lead to less than optimum decisions and no national policy.

RESPONSE
FRR SNF is included in the EIS in the event that DOE decides to accept such fuel after completion of the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor SNF (Draft) (FRR EIS). A discussion of the relationship between this EIS and the FRR EIS is provided in Volume 1, section 1.2.4. See also the response to comment 02.02 (002).

Regarding commercial SNF, DOE manages only a very limited quantity of special case commercial SNF, which is addressed in this EIS. It is inappropriate to consider commercial SNF, in general, in this EIS because this material is not managed by DOE. Under the Nuclear Waste Policy Act, as amended, DOE is responsible for managing the program for development of geologic repositories for permanent disposal of SNF and high-level radioactive waste. A separate EIS is required under this Act to accompany the repository site recommendation to the President.

02.06 (030) Out-of-Scope Issues

COMMENT
The commentor requests that best fuel cladding and fuel design be added to the EIS.

RESPONSE
Although the details of the design and fabrication of fuel elements and assemblies, as well as the requirements for specific cladding materials, are outside the scope of this EIS, the type of fuel cladding is a consideration in the management of SNF. A discussion of the various types of fuel claddings and management issues associated with them is in Volume 1, Appendix J.

02.06 (031) Out-of-Scope Issues

COMMENT
The commentor recommends that DOE prepare an overall programmatic EIS to evaluate the issues associated with all EISs evaluating radioactive waste, weapons dismantlement, and the cumulative effects of all this transportation.

RESPONSE
Evaluating all nuclear waste issues at a programmatic level is beyond the scope of this EIS. However, DOE currently has a range of NEPA reviews planned or under way. Volume 1, section 1.2 was revised to more fully explain the interrelationships of these reviews. Further, in the transportation cumulative impact analysis in this EIS, DOE considered the impacts of past, present, and reasonably foreseeable actions, including other DOE and non-DOE radiological shipments.

02.06 (032) Out-of-Scope Issues

COMMENT
The commentor is of the opinion that radioactive wastes should remain under guard at their current locations, and that the U.S. should assist Russia with waste management.

RESPONSE
The disposition of special nuclear material, such as plutonium, and assistance to Russia are outside the scope of this EIS.

02.06 (033) Out-of-Scope Issues

COMMENT
The commentor raises issues about activities and/or mishaps unrelated to the proposed actions of this EIS.

RESPONSE
Although these issues are out of the scope, it is a matter of DOE policy to monitor such activities/events and implement precautions as necessary to preclude like occurrences in the DOE's programs.

02.06 (034) Out-of-Scope Issues

COMMENT
The commentor favors keeping foreign spent nuclear fuel out of the United States.

RESPONSE
Alternatives related to the DOE policy on management of SNF of United States origin from foreign research reactors are being analyzed in a separate EIS and are outside the scope of this EIS. This EIS does analyze the impacts of transporting and managing FRR SNF (less than 1 percent of all the SNF addressed in this EIS) if there is a decision to accept such fuel. This effectively bounds the analysis for reasonably foreseeable management of the SNF under consideration. DOE will not make a final decision on the policy regarding FRR SNF until the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel and this EIS are completed.
02.06 (035) Out-of-Scope Issues

COMMENT
The commenter recommends zero discharge of persistent toxic chemicals and radionuclides as apparently recommended by an international joint convention in a report on Great Lakes water quality.

RESPONSE
DOE waste management policies and practices embrace numerous laws and regulations governing hazardous and radioactive wastes. A comprehensive list of these requirements is provided in Volume 2. Chapter 7: associated environmental permits are also discussed there. Current management practices for radioactive waste are described in Volume 2, section 2.2.7 (which is specific to INEL but also generally applies to wastes at other DOE sites). DOE is committed to comply with all applicable Federal, state, and local regulations and DOE Orders. All radioactive materials will be managed to protect the environment and the health and safety of the public and site employees. As discussed in Volume 1, section 5.2, the proposed alternatives would have minor impacts on water resources, but the differences in impacts do not distinguish among the alternatives. DOE also has adopted a policy emphasizing waste minimization and avoidance, as discussed in Volume 2, Chapters 1 and 2. Most new radioactive waste will be created during cleanup activities and decommissioning of contaminated facilities that no longer serve essential national missions.

02.06 (036) Out-of-Scope Issues

COMMENT
The commenter provides suggestions for additional options for transporting and storing low-level and high-level wastes.

RESPONSE
DOE complex-wide decisions on handling low-level and high-level wastes are being addressed the Waste Management Programmatic EIS and are outside the scope of this EIS.

02.06 (037) Out-of-Scope Issues

COMMENT
A commenter asks DOE to support legislation before Congress that would stop the export of fissionable materials. The commenter states that we in this country could bring back fuels from these research reactors as a final shipment as part of decommissioning all the research reactors. A commenter asked whether the U.S. plans to continue sending fuel to foreign countries, and whether the spent nuclear fuel would be taken back.

RESPONSE
Proposals regarding the exportation of fissile materials, reactor fuels, or other nuclear materials are beyond the scope of this EIS. Alternatives for managing FRR SNF are being analyzed in a separate EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft).

02.06 (039) Out-of-Scope Issues

COMMENT
The commenter states that low-level radioactivity disposal sites for nongovernment waste must be established and suggests that DOE headquarters has not done enough to expedite transfer of the Ward Valley site to the State of California, which shows lack of concern.

RESPONSE
The establishment of low-level waste disposal sites for nongovernment waste is not within the scope of this EIS.

02.06 (040) Out-of-Scope Issues

COMMENT
The commenter states that DOE does not give the No Action alternative the detailed consideration it deserves concerning receipt of foreign research reactor fuel.

RESPONSE
Volume 1 analyzes the transportation impacts for a reasonable range of alternatives for management of DOE SNF in the continental United States, including the No Action alternative. Decisions regarding the policy on management of FRR SNF are is beyond the scope of this EIS. A DOE EIS in preparation, Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel, (Draft) analyzes the potential for return of FRR SNF to the continental United States.

2.7 Hearings

02.07 (001) Hearings

COMMENT
Commentators state that DOE did not adequately seek public involvement in the process. Examples given include inadequate availability and comment time for the EIS and too few and insufficient notifications for meetings.
RESPONSE
In accordance with CEQ regulations, a Notice of Opportunity to comment on the preparation of an EIS
on DOE Programmatic SNF Management and Environmental Restoration and Waste Management at
INEL was published in the Federal Register on September 3, 1993. Numerous individuals and
organizations sent letters, either asking questions or raising issues related to the EIS. Each of these
letters was answered by DOE, with information provided as requested.

An Implementation Plan was prepared and released to the public on October 29, 1993; the amended final
version was available on May 9, 1994. DOE published a Notice of Availability in the Federal Register
on June 24, 1994, to announce the availability of the Draft EIS. The Draft EIS was offered upon request,
was available at 64 public libraries and information locations, was delivered to all who requested it, and
was sent to all state and Federal agencies, organizations, and individuals who were believed likely to be
interested in the subject. Public comments were solicited and written comments were received from
June through September 1994, well in excess of the NEPA requirement. Thirty-three public hearings
were held in 20 locations throughout the country, including 4 locations in Idaho, and comments were
received at these hearings, through the mail, and through a toll-free telephone line, which accepted
comments both orally and by facsimile. Notices of the dates, times, and locations of the public hearings
were published in the Federal Register on June 24, 1994. In addition, advertisements were placed in
local newspapers prior to the meetings. Numerous additional information briefings were also provided
to organizations and individuals. In a special effort to involve communities not previously involved,
DOE placed advertisements for the hearings in alternative newspapers, in Spanish-language newspapers
and on Spanish-language radio programs, and also had available Spanish-language translators for the
meetings in Idaho. DOE conscientiously and thoroughly fulfilled its responsibilities to use available
venues for public awareness and for solicitation of public input during all stages of the EIS.
Nevertheless, DOE continues to seek ways to improve public involvement and will use the comments in
developing improved public involvement for future EISs.

02.07 (002) Hearings
COMMENT
Commentors requested public hearings in Seattle as a potentially affected site.
RESPONSE
Public hearings were held in Seattle and Bremerton, Washington, on July 26, 1994.

02.07 (004) Hearings
COMMENT
Several commentors described difficulties with registering to make formal comments at the Twin Falls
public meeting, and suggest that DOE manipulated the system to limit the number of public comments.
RESPONSE
Standard practice for operating the toll-free telephone lines was to close them at noon the day before a
meeting. Prior to the Twin Falls meeting, however, a power outage caused the telephone lines to close
day before the meeting and backup systems failed to bring them back on line. When those
maintaining the lines discovered the problem, they decided to keep the lines open until 5:00 p.m.,
notifying DOE's outreach office and several major stakeholder offices in the Twin Falls area of this time
extension. Apparently, several people tried to register during the afternoon and were frustrated when
another power outage temporarily disrupted service. This disruption was brief.

Public hearings around the country were scheduled to fall within the 90-day comment period. Four
locations in Idaho were used for public hearings. This allowed some people to attend the hearings and
provide written or oral comments later in the comment period, either using the toll-free telephone line or
by mailing comments. Using this approach, all persons who wanted to comment were given an
opportunity to do so, even if they did not do so at public hearings.

02.07 (005) Hearings
COMMENT
The Town of Hilton Head, South Carolina, notes and congratulates DOE on the large effort and expense
employed by DOE on its "most thorough" public involvement program.
RESPONSE
The comment is noted.

02.07 (006) Hearings
COMMENT
The commentor questions whether the number of meetings and "plethora" of written information being
presented to the public at DOE sites could be consolidated.
RESPONSE
DOE attempts to coordinate and consolidate information presented and meetings scheduled with the
public, at both the national and individual site levels. DOE recognizes the need for a balance between
underinvolving and overburdening its stakeholders in soliciting input from the public on important
decisions, and must balance that against its legal obligations under the NEPA and other environmental statutes.

02.07 (007) Hearings

COMMENT

Commentors state that the process of adding the Oak Ridge Reservation as a potential spent nuclear fuel management location was flawed.

RESPONSE

On October 22, 1990, DOE published a Notice of Intent in the Federal Register announcing its intent to prepare an EIS addressing environmental restoration and waste management, including spent nuclear fuel management activities, across the entire DOE complex. DOE invited the public to submit written comments on the scope of the EIS, and held 23 scoping meetings across the country, including one at Oak Ridge, Tennessee, on December 11, 1990. Two hundred and thirty-seven comments were received at the Oak Ridge meeting. DOE issued a Draft Implementation Plan in January 1992, reflecting the comments provided. DOE held six regional public workshops on the Draft Implementation Plan and recorded public comments given at these workshops. The Implementation Plan for this EIS, issued in October 1993, addressed the comments received from scoping meetings and regional workshops. DOE conducted four public scoping periods during the evolution of the EIS. In response to public comments raised during the scoping process, DOE undertook a process for identifying possible additional alternative sites. The selection process included and evaluated two additional sites, including the Oak Ridge Reservation. The selection process is summarized in the May 9, 1994, amendment to the EIS Implementation Plan for the Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs. DOE believes it conscientiously and thoroughly fulfilled its responsibilities to use available avenues for public awareness and for solicitation of public input during all stages of the EIS process, and that it has fulfilled its obligations and responsibilities in accordance with the NEPA.

02.07 (008) Hearings

COMMENT

The commentor states that insufficient notification was given for the public to become involved in the activities associated with the EIS.

RESPONSE

DOE has an active stakeholder involvement process, which strives to include representatives of all members of the public.

In accordance with CEQ regulations, a Notice of Opportunity was published in the Federal Register on September 3, 1993, to comment on preparation of an EIS on DOE programmatic SNF management and SNF management, environmental restoration, waste management at INEL. DOE received numerous letters from individuals and organizations, either asking questions or raising issues related to the EIS. Each of these letters was answered by DOE, with information provided as requested. An Implementation Plan was prepared and released to the public on October 29, 1993; the final version was available on May 4, 1994. A Notice of Availability was published in the Federal Register on June 24, 1994, to announce the availability of the Draft EIS. The Draft EIS was offered on request and was available at 64 public libraries and information locations. The Draft EIS was delivered to all who requested it, and was sent to all state and Federal agencies, organizations, and individuals who were believed likely to be interested in the subject. Public comments were solicited and written comments were received from June through September, 1994, well in excess of the NEPA requirement. Thirty-three public hearings were held in 20 locations throughout the country, including 4 locations in Idaho, and comments were received at these hearings, through the mail, and through a toll-free telephone line, which accepted comments both orally and by facsimile. Notice of the dates, times, and locations of the public hearings were published in the Federal Register on June 24, 1994. In addition, advertisements were placed in local newspapers prior to the meetings. Numerous additional information briefings were provided to organizations and individuals. In a special effort to involve communities not previously involved, DOE advertised the hearings in alternative newspapers, in Spanish-language newspapers; and on Spanish-language radio shows, and also had available Spanish-language translators for the meetings in Idaho. DOE conscientiously and thoroughly fulfilled its responsibilities to use available avenues for public awareness and for solicitation of public input during all stages of the EIS process. Nevertheless, DOE continues to seek ways to improve the public involvement process and will use the comments in developing improved public involvement plans for future EISs.

02.07 (012) Hearings

COMMENT

A number of commentors state that the public meetings, particularly in Seattle, were held during a weekday when most people were at work, and that the meetings were over controlled and too limited in time.

RESPONSE

DOE held 33 separate meetings in 20 different locations during the 90-day comment period. By logistical necessity, some meetings were in the afternoon some were in the evening. The length of the question and answer sessions varied depending on the level of interest by the local meeting attendees. While some sessions were rather long, provisions were in place, and frequently announced during the
course of the meetings, to take oral comments from any interested citizen at any time the meetings were in session. With this arrangement for oral comment, plus the opportunity to provide comments over a toll-free telephone line and mail in comments, DOE believes all persons who wished to comment were accommodated during the public comment period.

02.07 (013) Hearings

COMMENT
The commentor, who lives in Georgia, wishes to work with DOE in a positive way that is more effective than the public meetings.

RESPONSE
The commentor is referred to the Office External Affairs at (803) 725-2889 at the Savannah River Site.

02.07 (014) Hearings

COMMENT
The commentor hopes that DOE will remember the comments made by elected officials at the Augusta, Georgia, public hearing.

RESPONSE
All written and oral comments received during the public comment process, regardless of origin, were carefully reviewed and considered by DOE in its preparation of the EIS and in its decisionmaking process for identification of a preferred alternative for SNF management.

2.8 Miscellaneous

02.08 (001) Miscellaneous

COMMENT
Commentors note the opinions of or opinions regarding others, the media, various elected officials, or various articles not of DOE or Navy authorship.

RESPONSE
It is inappropriate for DOE to address comments regarding the opinions of non-DOE or non-Navy officials or articles not of DOE or Navy authorship.

02.08 (002) Miscellaneous

COMMENT
Commentors state that some comments were not considered, some comments were ignored, and other comments were given more weight than others in the analysis. Other commentors note that the public

wants direct input into the decisionmaking process and hope that DOE addresses all of the comments.

RESPONSE
All written and oral comments received during the public comment process, regardless of origin, were carefully reviewed and considered by DOE in its preparation of the EIS and in its decisionmaking process for identification of a preferred alternative for SNF management.

02.08 (005) Miscellaneous

COMMENT
The commentor is of the opinion that additional EISs should be prepared for every point-to-point shipment of nuclear waste because of the uniqueness of potential environmental consequences for each shipment.

RESPONSE
Volume I, Appendices D and I analyze in detail the environmental consequences of off-site transportation and cover the impacts of any particular shipment or combination of shipments for any of the alternatives. Therefore, separate EISs for individual shipments covered by the proposed action of this EIS are considered unnecessary. Ongoing activities that are an integral part of the proposed action are included in the overall action, as allowed by NEPA. The cumulative risks predicted from all transportation modes during the 10-year period for shipments of radioactive wastes and the 40-year period for shipments of SNF are analyzed in Volumes I and 2, Chapter 5, respectively. Under all proposed alternatives, the risks would be small.

02.08 (006) Miscellaneous

COMMENT
The commentor requests that a separate written comment period be provided after the preferred alternative is selected.

RESPONSE
Under NEPA and its implementing regulations and guidelines, it is permissible to defer the identification of a preferred alternative to the Final EIS. DOE elected to do this after it had an opportunity to consider all public input as a part of its process for identifying a preferred alternative. An additional public comment period would be very time consuming and is not permitted under DOE's very rigorous schedule that arose from an agreement between DOE, the Navy, and the State of Idaho. In addition, NEPA does not require any additional public comment period when a Final EIS is released, unless new alternatives have been proposed that were not previously considered in the Draft EIS. DOE's preferred alternatives are within the range of the alternatives addressed in the Draft EIS. Nevertheless, the ROD will not be issued until after a 30-day waiting period following the issuance of the Final EIS.
The commentor states that the Navy's identification of a preferred alternative for the management of spent nuclear fuel will have more influence on DOE's decision than will public input.

RESPONSE
DOE considered all pertinent information in identifying a preferred alternative.

The commentor suggests that the EIS is based on the assumption that spent fuel must be moved, which then drives the rest of the discussion as to where DOE would like to put its spent fuel.

RESPONSE
Two of the five alternatives described in Volume I, Chapter 3 -- the No Action alternative and the Decentralization alternative -- are based on minimizing the movement of SNF, consistent with the need for safe storage and the existence of adequate storage capacity.

A number of commentors requested that they be placed or kept on the mailing list for subsequent documents to the EIS.

RESPONSE
DOE placed these names on the mailing list.

The commentor suggests that making cost data available after the close of the comment period on the EIS (particularly with regard to the comparison of alternatives) is likely to diminish both the utility of the public comments and the public's confidence in the Record of Decision.

RESPONSE
DOE recognizes that several commentors requested estimated implementation costs for the various alternatives in this EIS. Volume I, section 3.3 was added to this EIS to address this concern. The cost data for this section was extracted from the SNF Management Cost Evaluation Report (Draft), which is not limited to this EIS, but contains information pertinent to other management decisions. The cost evaluation report is available to the public in the EIS reading rooms. The Assumptions and Methodology Document for Spent Nuclear Fuel Cost Evaluation, which was the starting point for developing the cost evaluation report, was released for public review and comments were received.

One commentor asked to meet face to face with DOE officials. When the meeting did not take place, the individual was offended by the DOE "rudeness" and expressed deep concern over DOE's handling of the situation and the apparent lack of concern of DOE officials for the general public.

DOE regrets that its treatment of this individual was perceived as offensive and rude, given that DOE's intention was to be as responsive as possible. DOE replied with two letters to this individual that explained the details surrounding the situation and expressed regret over the perception that had developed.

All comments, written and oral, received during the public comment period have been carefully reviewed and considered by DOE in its preparation of the EIS and responded to if they were within the scope of the EIS.

The commentor states that all public testimony at Idaho hearings on the reconfiguration EIS and the waste management EIS must be included in the current EIS comments.

Neither NEPA nor its implementing regulations and guidelines require the inclusion of all public comments in one programmatic EIS from other, even related, programmatic EISs or related activities. Because this EIS considers SNF management, and two other EISs cited by the commentor do not, waiting for, and including those other comments would not only result in a delay that would violate the Court Order, but would take those comments out of context and be confusing.

The commentor states that the failure to identify DOE's proposed action and the alternatives for environmental restoration and waste management at the Idaho National Engineering Laboratory is a fundamental flaw under the National Environmental Policy Act.
Th e proposed action is stated in the Volume 1, Chapter 2 and Volume 2, Chapter 1 and are shown in Volume 1, sections 1 and 2 and Volume 2, section 2. Environmental restoration activities will take place under the Federal Facility Agreement and Consent Order for INEL. This document is available to the public.

See also the response to comment 04.02 (001).

02.08 (015) Miscellaneous

COMMENT
The commentor states that the decision on processing sodium waste might get lost in the spent nuclear fuel issues and not receive adequate public review.

RESPONSE
DOE has already conducted four public scoping periods. Comments from scoping meetings were summarized in DOE's Implementation Plan for this EIS, published October 29, 1993. DOE considered all comments submitted on the Implementation Plan during development of the EIS. DOE solicited comments, of which this is one, from the public on the EIS. DOE has used these comments in the development of the Final EIS. The issues raised by the commentor as issues that might not get adequate public review are described in several places within the EIS. Sodium-bearing waste is discussed in several locations throughout this EIS: (1) Volume 2, section 3.1.3.1 describes the alternatives for managing high-level waste; (2) Table 3.1-5 summarizes the alternatives and illustrates the proposed treatment and disposal of sodium-bearing wastes; and (3) the technology selection for treatment of sodium-bearing and calcine wastes is discussed in Volume 2, Appendix C under "Projects Related to High Level Waste: Waste Immobilization Facility." Reference materials, including extensive technical studies, have been available at the reading rooms and information locations identified in the EIS. While this EIS will be the basis for selecting a technology to be further developed for processing sodium waste and a technology for processing calcine, facilities for implementing the technologies will require additional NEPA documentation as these facilities become more firmly developed. Both the future NEPA actions and the permitting activities allow additional opportunity for public comment. DOE follows NEPA guidelines for public participation and believes that there is sufficient opportunity for the public to comment on issues.

02.08 (016) Miscellaneous

COMMENT
The commentor challenges DOE to seriously consider the comments and revise the document.

RESPONSE
DOE considered all comments submitted through public hearings or by telephone, facsimile, or mail. DOE examined and responded to each comment, and revised the EIS, as appropriate in response to comments.

02.08 (018) Miscellaneous

COMMENT
The commentor requests a copy of the responses to comments submitted by the Shoshone-Bannock Tribes and expresses support for their comments.

RESPONSE
Responses to all public comments on the Draft EIS are provided in this Volume of the Final EIS.

02.08 (019) Miscellaneous

COMMENT
The commentor states that the public is being misled by the National Environmental Policy Act process, in that "things" are going through the private sector unbeknownst to the public.

RESPONSE
This EIS presents the environmental impacts of several reasonable alternatives available for managing of DOE SNF. Implementation of some specific aspects of SNF management may be privatized, such as potential research and development activities; however, there are no discussions under way that in any way prejudice a decision on SNF management or that would be of any interest to the public in commenting on this EIS.

02.08 (020) Miscellaneous

COMMENT
Commentors suggest that the cost of preparing this EIS was too high.

RESPONSE
Preparation of this EIS is required by the provisions of NEPA. The entire NEPA process, while sometimes costly, is expected to benefit the public because it provides information and the opportunity to be part of DOE's decision-making process. The NEPA process benefits the public and the government by providing the basis for making informed decisions, while minimizing the impact of Federal actions on the environment.
02.08 (021) Miscellaneous

COMMENT
The commenter asserts that DOE failed to consult with the Shoshone-Bannock Tribes’ department responsible for air quality during preparation of the EIS, and that DOE must do so prior to completion of the EIS.

RESPONSE
DOE and the Navy consulted on this subject and others with the Tribes during preparation of the Draft and Final EIS. DOE consulted further with the Tribes as part of the process of addressing public comments on the Draft EIS. Discussions included air quality concerns.

02.08 (022) Miscellaneous

COMMENT
The commenter expresses the opinion that DOE halted reprocessing of highly enriched spent nuclear fuel without proper National Environmental Policy Act documentation.

RESPONSE
Historically, DOE produced large numbers of nuclear weapons using material from reprocessed SNF. DOE also used highly enriched uranium recovered from SNF to make new fuel. However, due to a substantial reduction in the need for these recovered materials, DOE, in a memorandum dated April 28, 1992, “Phaseout of Reprocessing,” decided to phase out reprocessing of highly enriched uranium at INEL and SRS. This decision was based on the reduced need for products, and did not require NEPA evaluation. A decision to discontinue an activity because of lack of need did not, by itself, trigger NEPA, because there was no new proposed action. Although a NEPA review was not needed to stop the old mission, a NEPA review would be needed to use the reprocessing facilities for a new purpose (i.e., using recovered uranium for nuclear power production, as suggested by the commenter). DOE has not proposed such a new mission.

02.08 (023) Miscellaneous

COMMENT
The commenter expresses the opinion that the EIS Summary is biased toward the Idaho National Engineering Laboratory, at the expense of other options.

RESPONSE
DOE manages wide-ranging types and a significant quantity of SNF at INEL. Therefore, DOE decided to discuss SNF management across the DOE complex in the same EIS as INEL activities for SNF and waste management and for environmental restoration. The second half of the Summary addresses Volume 2 and is, therefore, devoted to INEL. In the first half, the three DOE sites that have conducted extensive SNF management activities (INEL, Hanford, and the SRS) plus two additional sites (the ORR and NTS) are evaluated on a common basis. This evaluation is appropriate for a programmatic EIS.

The DOE Operations Office at each of the candidate site participated in preparing a site-specific appendix for the site. The evaluation of SNF alternatives reflects the policy and viewpoint of DOE.

02.08 (024) Miscellaneous

COMMENT
The commenter asks for an explanation of the scientific notation used (e.g., 1.3E-06).

RESPONSE
The notation is computer-based and is a simplified method of writing out the full mathematical notation of a number taken to the appropriate decimal places. In the example above, the actual number is 0.0000013 or 1.3 x 10 to the minus sixth power (1.3 divided by 1 million). Similarly, 0.13 is 1.3E-01, and 0.013 is 1.3E-02, etc. A brief description of scientific notation was added to the Glossary of both Volumes 1 and 2.

02.08 (025) Miscellaneous

COMMENT
The commenter states that the term "possible unavoidable" adverse impacts, as used in Volume 1, Appendix E, Chapter 6 for the No Action alternative, is a contradiction. The commenter also states that research reactor shutdowns and the resulting losses of jobs are avoidable if sites are required to consider on-site storage of spent nuclear fuel.

RESPONSE
An editorial change was made to the EIS to clarify and change "possible unavoidable" to impacts "that may be unavoidable." Under the No Action alternative, which is a required baseline under the NEPA, additional actions are not considered. For DOE reactors (Volume 1, Appendix E, section 6.1) the Decentralization alternative is the same as the No Action alternative, so such sites would require on-site storage. For non-DOE NRC-licensed domestic research reactors, DOE has title to the SNF and is responsible for interim storage and ultimate disposition of the fuel (Volume 1, Appendix E, section 2.1.2). Except for one minor commercial contributor, facilities with limited existing storage capacity are at universities or government installations (Volume 1, Appendix E, Table 2.1-2).
02.08 (026) Miscellaneous

COMMENT
The commentor states that DOE failed to recognize the special relationship between Indian tribes and the Federal Government during the development of the EIS.

RESPONSE
A number of laws pertain to the treatment of Native American concerns. In particular, the National Historic Preservation Act of 1966 provides for the development of a programmatic agreement among the Federal agencies to comply with the law for large projects. DOE acknowledges in Volumes 1 and 2, Chapter 5 that potential impacts to cultural resources of value to Native Americans, such as sacred or hunting and gathering areas, will be determined in consultation with the affected Native American groups. This is commonly ensured through Memoranda of Agreement involving the groups concerned and other responsible agencies, such as State Historic Preservation Offices. A number of these agreements are being developed or are in place, as described in Volumes 1 and 2, Chapter 5.

Details on the existing resources and the potential impacts associated with the alternatives are in Volume 1, Appendices A through F for specific sites. Although the major DOE sites have not been surveyed completely, the locations for the construction of proposed new facilities have generally been evaluated for their cultural importance. No known cultural resources would be affected by construction under any of the alternatives. Potential impacts were assessed by identifying project activities that could affect known or expected resources at each potential site. Because some projects are not yet fully defined, potential impacts cannot be completely characterized. However, for any alternative, DOE would conduct detailed preconstruction surveys and would consult with the State Historic Preservation Officer and Native American groups before any undertaking to determine appropriate measures to minimize impacts.

DOE has pursued additional consultation with the affected Native American groups relative to this EIS, and will continue consultations as appropriate.

02.08 (027) Miscellaneous

COMMENT
The commentor notes that the arrows indicating uranium and zirconoy are reversed in the figure on page 5 of the EIS Summary.

RESPONSE
The figure was corrected.

02.08 (029) Miscellaneous

COMMENT
The commentor suggests that Native American concerns are being ignored, and DOE needs to address the concerns of the Shoshone-Bannock Tribes in a separate section because the Shoshone-Bannock Tribes are a sovereign nation with treaty rights to unoccupied lands adjacent to the Idaho National Engineering Laboratory.

RESPONSE
The Fort Bridger Treaty of 1869 is an agreement between the Eastern Band Shoshone and Bannock Tribes, and the United States. It was signed in 1868 in Utah, and ratified and proclaimed in 1869. Both the United States and the Tribes pledged their honor to keep and maintain a peace. The treaty established fixed boundaries to land that would be considered "set apart for the absolute and undisturbed use and occupation of the Shoshone Indians herein named, and for such other friendly tribes or individual Indians, as from time to time they may be willing...to admit amongst them..." It is undisputed that at one time in the distant past, the Shoshone Indian Tribe was a nomadic nation that roamed over a range of more than 80 million acres that included portions of Wyoming, Colorado, Utah, Idaho, and Nevada. This aboriginal land area may have included land upon which INEL sits, but by signing the Fort Bridger Treaty of 1869, the Tribes relinquished rights to all but that area specifically designated in the treaty. As specifically stated in the treaty: "...the territory described in this article for the use of said Indians, and henceforth they will and do hereby relinquish all title, claims, or rights in and to any portion of the territory of the United States, except such as is embraced within the limits aforesaid." This was affirmed by the United States Supreme Court in the case Northwestern Bands of Shoshone Indians v. United States, 324 U.S. 333 (1945).

INEL site does not lie within any of the land boundaries established by the Fort Bridger Treaty of 1869. Furthermore, the entire INEL site is occupied by DOE, and therefore the provision of the Treaty that allows the Shoshone-Bannock Tribes the right to hunt on the unoccupied lands of the U.S. does not apply to any land upon which INEL sits.

DOE currently manages INEL in a way that does not conflict with any of the provisions of the Fort Bridger Treaty of 1869. To the extent that the Tribes' concerns involve consideration of environmental justice, these concerns are addressed in Volume 1, Appendix I, and Volume 2, section 5.20.
02.08 (030) Miscellaneous
COMMENT
The commenter states that the EIS will be deficient unless DOE carries through with its responsibilities to consult with the Shoshone-Bannock Tribes as it plans future actions, particularly with respect to those actions that could have impacts on the Idaho National Engineering Laboratory, surrounding lands, and the Fort Hall Reservation.
RESPONSE
DOE recognizes the value of consulting with other agencies and with the Tribes when appropriate to understand and address any concerns raised by the agencies or Tribes. DOE recognizes that other agencies and the Tribes possess special expertise in areas related to activities analyzed in this EIS. With respect to the Shoshone-Bannock Tribes, DOE has established a program of meaningful consultation with the Tribes to support future DOE actions and to gain the benefit of special expertise. Meetings are held as necessary with managers or technical experts of both entities to assure that the Tribes’ concerns and expertise are used to evaluate proposed activities. DOE continues to work with the Tribes to resolve any associated concerns.

02.08 (032) Miscellaneous
COMMENT
The commenter corrects a reference (typographical error) and requests that another document be referenced.
RESPONSE
The typographical error was corrected. The contract number now reads “AT(04-3)-633.” The additional reference is a subter reference to the Environmental Assessment for the Retrieval and Restoration of Transuranic Storage Area Waste, which is referenced in the EIS.

02.08 (033) Miscellaneous
COMMENT
The commenter asserts that sanity and ethics have been left out of this EIS.
RESPONSE
The provisions of NEPA and CEQ regulations require that an EIS consider the effects of the proposed actions on the human environment. This includes an analysis of economic and social effects. Volumes 1 and 2, Chapter 5 both discuss these impacts. In addition, Volume 1, Appendix L, devoted to environmental justice concerns, addresses questions of impacts to the human environment. Public comments were seriously considered in writing the EIS.

02.08 (034) Miscellaneous
COMMENT
The commenter states that the Waste Management Programmatic EIS should be available and considered in conjunction with this EIS, and suggests that DOE is sequestering this information.
RESPONSE
Litigation resulted in a very rigorous schedule that required DOE to develop and release this EIS before the Waste Management Programmatic EIS is completed. Writers and analysts worked with those developing the Waste Management Programmatic EIS to achieve consistency to the extent possible.

02.08 (035) Miscellaneous
COMMENT
The commenter states the EIS was unnecessary because implementation of any alternative would require additional, site-specific EISs. The commenter suggests that a less expensive and simpler cost analysis of alternatives would have been preferable to this EIS.
RESPONSE
NEPA, 42 USC Section 4321 et seq. and the CEQ regulations at 40 CFR 1500 et seq. established standards that DOE followed to prepare a programmatic EIS to identify and evaluate the environmental impacts of the proposed action and reasonable alternatives for SNF management across the entire DOE complex. These regulations require that an EIS describe the purpose and need for the proposed action; alternatives, including no action; the affected environment; and the environmental consequences associated with the proposed action and alternatives. Volumes 1 and 2 of this EIS meet these requirements. In each volume, Chapter 2 describes the purpose and need for the proposed action; Chapter 3 describes the alternatives being considered; Chapter 4 describes the affected environment; and Chapter 5 describes the environmental consequences.

Input was solicited from the public during a 90-day public comment period, which allowed commentors to send written comments, give oral comments and send facsimile comments over a toll-free telephone line, or attend one or more of the 33 public hearings held in 20 locations around the United States. With regard to analyzing the costs of the alternatives, DOE prepared a cost report, which is available to the public and decisionmakers.

All supporting documents referenced in the EIS are on file and are available to the public. The EIS also considers issues of concern raised during public meetings and hearings.
02.08 (036) Miscellaneous

COMMENT
The commenter states that there was a push to publish this EIS before the cost information was available, and that cost information should be available for the public to review.

RESPONSE
At the time the Draft EIS was published, a cost evaluation had been initiated. In August 1994, DOE issued a report, *Assumptions and Methodology Document for the Spent Nuclear Fuel Management Cost Evaluation*, and requested a 45-day public comment period. Comments were received and incorporated into the cost evaluation report. A summary of the cost report has been added to the EIS in Volume 1, section 3.3.6.

02.08 (037) Miscellaneous

COMMENT
The commenter states that it is difficult to determine impacts of specific actions regarding spent nuclear fuel, particularly those related to shipping Fort St. Vrain fuel.

RESPONSE
This EIS considers management of DOE SNF pending ultimate disposition. DOE believes the analyses in this EIS are adequate to support a decision on this subject. The outline for the document follows guidelines established by the CEQ under NEPA. Because the thrust of a programmatic EIS is different from a site-specific EIS, the information on specific actions does appear in different areas of the document. To adequately summarize the existing environment for all the separate sites included in the EIS without expanding an already large and complex document means descriptions of specific facilities and actions (such as Fort St. Vrain) must be condensed. The EIS is also tiered, with increasing levels of technical detail provided in appendices and supporting references.

A user's guide was provided with the EIS to help readers determine impacts under the various alternatives.

See also the response to comment 02.04 (046).

02.08 (039) Miscellaneous

COMMENT
The commenter states that the EIS is broadly written and that more detailed documentation under the National Environmental Policy Act will be required as the national spent nuclear fuel program is refined.

RESPONSE
DOE acknowledges that additional NEPA reviews may be required to implement decisions based on this EIS.

02.08 (040) Miscellaneous

COMMENT
The commenter suggests that the activities proposed for the Idaho National Engineering Laboratory are a sort of major Federal actions that require a programmatic EIS.

RESPONSE
SNF management activities that could involve INEL are part of the programmatic analysis in Volume 1. Waste management and environmental restoration projects specific to INEL are described in Volume 2. Cumulative impacts are discussed in Volume 2, section 5.5. Activities analyzed in Volume 2 are not such broad, policy-related decisions that they require programmatic documentation to assist in long-range agency planning.

02.08 (041) Miscellaneous

COMMENT
The commenter cites a court finding of DOE's reluctance to perform full National Environmental Policy Act analysis in the preparation of an environmental assessment regarding the shipment of Fort St. Vrain nuclear materials to the Idaho National Engineering Laboratory. The commenter additionally questions the independence of DOE's consultant in its finding of no significant impacts because the consultant was directed by DOE to prepare the finding of no significant impact prior to completion of the Environmental Assessment.

RESPONSE
This EIS addresses this and other issues identified by the Court.

02.08 (042) Miscellaneous

COMMENT
The commenter supports the DOE activities and the hearing process at various locations, supports operations at the Hanford Site, and states the hope that the Idaho National Engineering Laboratory will continue to operate, because its benefit to Idaho, this nation, and the world is invaluable.

RESPONSE
The comments are noted.
The commentor states that DOE and the Department of Defense have a negotiated position with regard to the standards, measures, mission, and funding for which they are responsible.

**RESPONSE**
The priorities for activities and programs of the Federal Government are determined by Congress and the President, who are the elected representatives of the people. Future funding to support the SNF management program will be established by Congress as part of the annual DOE budget process.

The commentor indicates that whatever it takes in a nonviolent and direct way to “stop the insanity” will be done, as evidenced in the past.

**RESPONSE**
The comment is noted.

The commentor questions the value of preparing an EIS at considerable cost, versus applying the cost to research and development of alternative energy sources.

**RESPONSE**
The proposed actions related to research and development of alternative energy sources is outside the scope of this EIS.

The commentor wants more information about the relationships between Volumes 1, 2, and the Idaho National Engineering Laboratory land use plan.

**RESPONSE**
The Summary, page 39, describes the relationship between Volumes 1 and 2. Volume 2, Table 2.1-1, explains the relationship between this EIS and other applicable National Environmental Policy Act documents. Volume 2, section 5.2 discusses the impacts to and consequences of land uses at INEL. Although there is no single document that describes all of these relationships, Volume 2, section 5.2 was coordinated with and reviewed by those writing INEL Long-Term Land-Use Future Scenarios (Draft).

The commentor indicates that the EIS gives a big picture of DOE spent nuclear fuel management operations.

**RESPONSE**
This EIS is intended to address the national management of DOE SNF.

The commentor expresses the desire that there be interaction with modeling efforts of the Waste Management Programmatic EIS.

**RESPONSE**
Writers and analysts of this EIS worked with those developing the Waste Management Programmatic EIS to achieve consistency wherever possible.

The commentor suggests that radioactivity source terms and other input parameters for all sites be pooled in a separate appendix.

**RESPONSE**
The purpose of Volume 1 of this EIS is to compare potential environmental impacts for each alternative across the various sites addressed in the volume. The EIS is tiered with respect to the technical depth of information. The Summary is intended to present the information in a manner that would be generally understandable to nontechnical persons. For this reason, the results of each impact analysis are pooled and in the summary to Volume 1. The appendices are organized to present more technically detailed information on each site. All of the information requested by the commentor is available in these site appendices or in the references provided therein. Providing additional appendices to summarize detailed technical information on each area of analysis would be duplicative and not in keeping with the purpose and structure of the EIS.

The commentor suggests that DOE could reduce the cost of involving the public in the decision-making process by consolidating meetings and informational materials on several different issues or proposed actions.
DOE encourages time and cost efficiency by combining meetings of like or related topics whenever possible. However, actions may arise under different environmental laws, and each action has its own set of decisions for public consideration and is own timetable driven by many factors, so that it is frequently not possible to group them together.

NEPA requires public involvement in the process as an essential element in ensuring informed decisionmaking and provides for public involvement at two stages: initial scoping and commenting on the Draft EIS.

When several Federal actions at one site are in progress simultaneously, it is sometimes possible for DOE to combine meetings or to share informational materials to reduce costs. DOE does make resource materials available to all sites to assist in planning more cost effectively for public involvement activities.

02.08 (058) Miscellaneous

COMMENT

The commentor states that the Final EIS must address the actions required to implement Defense Nuclear Facility Safety Board Recommendation 94-1.

RESPONSE

The Defense Nuclear Facilities Safety Board (DNFSB) issued Recommendation 94-1 on May 26, 1994. DOE accepted this on August 31, 1994, and submitted its Implementation Plan on February 28, 1995. DOE has broadened the original scope of the response to Recommendation 94-1 to include not only the nuclear weapons materials in the manufacturing pipeline, but also bulk liquids and solids containing fissile materials and other radioactive substances from such sources as spent fuel storage pools, reactor basins, reprocessing canyons, processing lines, and various facilities that require modifications to establish safe interim storage conditions.

02.08 (059) Miscellaneous

COMMENT

The commentor states that the EIS contains extraneous information that goes beyond what is required by the National Environmental Policy Act.

The EIS focuses on alternatives for programmatic SNF management and SNF management, environmental restoration, and waste management at INEL. Although voluminous, DOE believes the EIS presents the public and decisionmakers with the necessary and sufficient information to comment and make informed decisions.
3. POLICY

3.1 Mission

03.01 (001) Mission

COMMENT

Commentors express various opinions related to the costs of DOE programs, funding of such programs, and better uses of the same funding resources and time for the benefit of society as a whole. Commentors question the nation's ability to afford cleanup of DOE mismanagement. Commentors allude to DOE's inability to keep track of money, or the Federal Government's inability to keep track of unrelated programs, some of which the commentors characterize as secret. One commentor indicates that management of spent nuclear fuel should be a routine task not requiring significant resources.

RESPONSE

DOE recognizes the significant cost of environmental restoration, waste management, and spent nuclear fuel (SNF) management activities, none of which is considered by DOE to be routine or insignificant tasks. Whereas a significant portion of these costs is the result of past management practices that have proven to be unsound, the need for cleanup and the necessary fiscal resources required have been identified. The sources of necessary funds for DOE program elements, the level of appropriation to support such activities, and the associated priorities are essentially determined by Congress and the President through processes that are outside the scope of this EIS. DOE is held accountable for the expenditure of appropriated funds, and undergoes regular oversight by the Office of Management and Budget and the General Accounting Office. This EIS addresses the environmental impacts, and the needs and purpose for national management of DOE SNF, and environmental restoration and waste management activities at the Idaho National Engineering Laboratory (INEL) only. The estimated costs of the programmatic management of SNF under each alternative have been made available to decisionmakers and the public in the Spent Nuclear Fuel Management Cost Evaluation Report (Draft), which was prepared independently of this EIS. This report is available in the reading rooms and information locations listed in the EIS.

03.01 (002) Mission

COMMENT

The commentor asks DOE how it can help Americans achieve a higher quality of life through research and new technology development and what kind of legacy do we want to leave succeeding generations of Americans. The commentor expresses the opinion that it is necessary to support the constructive use of technology to improve the quality of human life.

RESPONSE

Although the general topic of technology development is not within the scope of this EIS, DOE emphasizes ongoing programs for technology development and transfer of these technologies developed at its sites to the private sector for constructive and safe use. Over the period of interim SNF management, technology development will likely occur.

03.01 (003) Mission

COMMENT

The commentor questions whether DOE and INEL are undergoing an identity crisis as to their collective missions and asks if INEL's mission can be refocused to continue contributing value to the American people. In addition, the commentor asks how this fits with the issues in the EIS.

RESPONSE

Volume 2, section 2.2.3 states that the current mission of INEL is to develop, demonstrate, and deploy advanced engineering technology and systems to improve national competitiveness and security, to make the production and use of energy more efficient, and to improve the quality of life and the environment. Specific activities at INEL have shifted over time to meet changing national needs. These shifts have included changing from the application of nuclear power to commercial uses, SNF reprocessing and waste storage, to the current emphasis on science and technology related to advancing and improving remediation and waste management at INEL and applying the knowledge gained at INEL to other national needs.

The purpose of this EIS is to determine the manner in which DOE will manage its SNF for up to 40 years pending ultimate disposition.

03.01 (004) Mission

COMMENT

The commentor expresses the opinion that there is more effort to build up the Idaho National Engineering Laboratory and add new technology than there is to fulfill promises of cleanup and restoration.

RESPONSE

The environmental restoration program at INEL is specifically discussed in Volume 2, sections 2.2.6 and 7.2.5. DOE, the Environmental Protection Agency (EPA) Region X, and the State of Idaho signed an agreement, the INEL Federal Facility Agreement/Consent Order (FFA/CO), on December 4, 1991, for cleanup activities at INEL. The INEL FFA/CO established the procedural framework and schedule for developing, prioritizing, implementing, and monitoring appropriate response actions in accordance with
The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Resource Conservation and Recovery Act (RCRA), and the Idaho Hazardous Waste Management Act.

The current INEL mission is to develop, demonstrate, and deploy advanced engineering technology and systems to improve national competitiveness and security, to make the production and use of energy more efficient, and to improve the quality of life and the environment. Areas of primary emphasis at INEL include waste management and minimization, environmental engineering and restoration, energy efficiency, renewable energy, national security and defense, nuclear technologies, and advanced technology and methods. The Environmental Restoration and Waste Management Program is a top priority at INEL.

03.01 (005) Mission
COMMENT
The commentator states that DOE has a hidden agenda, which is to build new nuclear weapons production facilities under the guise of waste processing.

RESPONSE
The purpose of this EIS is to provide a basis for making decisions on options for programmatic approaches for SNF management and site-specific approaches regarding the future direction of environmental restoration and waste management and SNF programs at INEL. The EIS was prepared consistent with this purpose, and DOE has no hidden agenda associated with the management of SNF.

03.01 (008) Mission
COMMENT
The commentator expresses the opinions that the Idaho National Engineering Laboratory mission statement is not credible, and that the Idaho National Engineering Laboratory mission is for defense-related, rather than peaceful, uses of nuclear energy.

RESPONSE
As discussed in Volume 2, section 2.2.3, the current INEL mission is to develop, demonstrate, and deploy advanced engineering technology and systems to improve national competitiveness and security, to make the production and use of energy more efficient, and to improve the quality of life and the environment. Specific activities at INEL have shifted over time to meet changing national needs. These shifts have included changing from the application of nuclear power to commercial uses, to SNF reprocessing and waste storage, to the current emphasis on science and technology related to advancing and improving remediation and waste management at INEL and applying the knowledge gained at INEL to other national needs. DOE does not agree that this is talking about war energy.

The public’s trust in DOE has eroded, and it will take great effort and some amount of time to regain that trust. DOE is addressing many of the problems associated with its loss of public trust. The Secretary of Energy publicly affirmed that current DOE policy and practice emphasizes safety and environmental considerations above other program goals. DOE is formally committed to protecting the safety and health of its workers, the public, and the environment. DOE is working as quickly as possible to rectify and eliminate adverse environmental impacts from past programs. The commentator should also be aware that a DOE complex-wide Environmental Management Site-Specific Advisory Board has been chartered under the Federal Advisory Committee Act. The Environmental Management Site-Specific Advisory Board consists of independent citizens tasked with advising DOE on local and national policy issues. In addition, aggressive public outreach and stakeholder initiatives are being implemented to keep the public well informed of DOE activities.

03.01 (009) Mission
COMMENT
The commentator expresses the opinion that the Department of Defense should manage nuclear work and the DOE should manage the “Energy War.” The commentator states that references to Navy nuclear waste are classified and should be removed from the EIS.

RESPONSE
The information contained in this EIS is not classified. The missions of the Department of Defense and DOE are defined by Congress and the President.

03.01 (014) Mission
COMMENT
The commentator states that DOE should take advantage of the scientific and engineering expertise at the Idaho National Engineering Laboratory to generate technological breakthroughs in waste management and cleanup.

RESPONSE
Volume 2, section 2.2.3 states that the current INEL mission is to develop, demonstrate, and deploy advanced engineering technology and systems to improve national competitiveness and security, to make the production and use of energy more efficient, and to improve the quality of life and the environment. Areas of primary emphasis at INEL include waste management and minimization, environmental engineering and restoration, energy efficiency, renewable energy, national security and defense, nuclear technologies, and advanced technology and methods. The Environmental Restoration and Waste Management Program is a top priority at INEL.
3.2 Authority and Responsibility

03.02 (001) Authority and Responsibility

COMMENT
The commentor asserts that the Navy and DOE are playing a bureaucratic game of not being responsible. The commentor further states that while DOE carries out the policies of Congress, it is time to establish a comprehensive national policy that avoids interagency indecision and confusion.

RESPONSE
DOE is responsible for managing U.S. Government-owned SNF. The Naval Nuclear Propulsion Program is a joint Navy and DOE program responsible by law for all matters pertaining to Naval nuclear propulsion; therefore, Naval SNF is also DOE's responsibility. DOE, as directed by Congress in the Nuclear Waste Policy Act of 1982, as amended, is committed to developing Federal geologic repositories for permanent isolation of these materials. Pending availability of such disposal options, DOE must provide safe and environmentally sound storage and management of these materials.

03.02 (002) Authority and Responsibility

COMMENT
The commentor refers to the sale of surplus processing equipment to a scrap-metal dealer.

RESPONSE
This administrative issue is beyond the scope of this EIS. As a result of the event to which the commentor refers, DOE is evaluating its surplus material policies.

03.02 (003) Authority and Responsibility

COMMENT
The commentor discusses the issue of the cooperative effort between DOE and the Navy on preparing this EIS and identifies the need for DOE to take the lead.

RESPONSE
DOE is the lead agency and has the lead role for preparing this EIS. The Navy participated as a cooperating agency for several reasons. First, under the Council on Environmental Quality (CEQ) regulations (40 CFR 1501.6) Cooperating Agencies, the CEQ emphasizes the need for agency cooperation in the National Environmental Policy Act (NEPA) process. Thus, any other Federal agency that has special expertise with respect to any environmental issue, if requested by the lead agency, may be a cooperating agency.

3.3 Credibility

03.03 (002) Credibility

COMMENT
A number of commentors express a general lack of trust in DOE based on its record of past mistakes, such as at the Waste Experimental Reduction Facility. They recommend that DOE and the Navy take action to establish public trust, and recommend that the EIS be more specific about what will happen and when under each alternative.

RESPONSE
In response to the lack of trust expressed by the public, the Secretary of Energy places great emphasis on openness and public involvement. The Secretary's July 29, 1994, Guidance on Implementation of the Department's Public Participation Policy states, "The business of the Department must be open to the full view of those whom it serves, consistent with applicable laws, regulations, and contracts. This policy marks a clear break with past practice by challenging the Department and its contractors to perform to a new standard of openness and service. The Department will incorporate public input into its decisions where appropriate and feasible and will provide feedback to the public on its reasoning." Public involvement for this EIS included numerous public scoping meetings and public hearings in 20 locations. DOE is increasing the number of forums for information exchange in addition to opportunities for public involvement required by NEPA and other laws. Many DOE sites, including INEL, have established citizens advisory boards to review and provide advice on DOE policies and proposals.

DOE accepts responsibility for solving the problems associated with management of waste and spent nuclear fuel. Lessons learned from past waste management practices and the knowledge gained from research and development programs are incorporated into new management programs.

In many cases, it is not possible to be specific about what will happen and when. Volume 1 of the EIS is intended to provide the public and decisionmakers with a programmatic, rather than project-specific, view of the proposed actions and alternatives. Alternatives in Volume 1 will be implemented over a period of 20 years, depending on the alternative chosen. Volume 2 is a site-specific assessment of SNF.
management, environmental restoration, and waste management alternatives at INEL. In general, alternatives in Volume 2 will be implemented over 10 years. More detail about these specific projects is in the project summaries in Volume 2, Appendix C.

Volume 1, section 5.1.1 summarizes the impacts from waste management activities associated with the action alternatives, and the site-specific details are discussed in Volume 1, Appendices A through F. Waste Experimental Reduction Facility operations were suspended in February 1991 to upgrade safety documentation, operating procedures, and management systems. These upgrades were mandated when DOE adopted a new Order for operation of nonreactor facilities, DOE Order 5480.23, Nuclear Safety Analysis Reports. These upgrades have been completed. This facility must pass a DOE operational readiness evaluation before operations will be resumed. Operational readiness evaluations are reviewed by entities such as the State of Idaho and the Defense Nuclear Facility Safety Board. Incineration of combustible radioactive materials would take place under the Ten-Year Plan and Maximum Treatment, Storage, and Disposal alternatives, but not the No Action and Minimum Treatment, Storage, and Disposal alternatives. Stack emissions under the Ten-Year Plan and the Maximum Treatment, Storage, and Disposal alternatives would be monitored continuously by radiation sensors to avoid total reliance on high-efficiency particulate air filters.

03.03 (005) Credibility

COMMENT
The commenter states that DOE should have foreseen the problems with management of nuclear waste long ago, before there were any problems.

RESPONSE
The Secretary of Energy has publicly affirmed that current DOE policy and practice emphasizes safety and environmental considerations above other program goals. DOE is formally committed to protecting the safety and health of its workers, the public, and the environment. Furthermore, DOE intends to design, construct, and operate facilities in a safe manner, relying on lessons learned from the last 40 years of SNF management. DOE is working as quickly as possible to rectify and eliminate adverse environmental impacts from past programs.

Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small.
03.03 (012) Credibility

COMMENT
The commentor expresses the opinion that DOE has a disregard for human health and safety, as do the Russians.

RESPONSE
No significant environmental impacts have been identified for any of the alternatives identified in the EIS for managing SNF. Additionally, the Secretary of Energy has publicly affirmed that current DOE policy and practice emphasizes safety and environmental considerations above other program goals. DOE is formally committed to protecting the safety and health of its workers, the public, and the environment. DOE is working to remediate and eliminate adverse environmental impacts from past programs. Concerns over alleged mishaps in Russia are beyond the scope of this EIS.

03.03 (013) Credibility

COMMENT
The commentor is apprehensive about spent nuclear fuel storage at the Hanford Site because of past DOE practices.

RESPONSE
Impact analyses associated with managing SNF show that effects on human health or the environment would be small for all of the alternatives considered. The potential impacts due to operations or hypothetical accident conditions for management of SNF present little risk for all of the alternatives considered.

3.4 Legal/Regulatory

03.04 (001) Legal/Regulatory

COMMENT
The commentor requests inclusion of the Washington Model Toxics Control Act in the Volume 1, Appendix A, section 2.2.1 list of significant Federal and state laws.

RESPONSE
The Washington Model Toxics Control Act applies to the Hanford Site mainly as a source of applicable or relevant and appropriate requirements under CERCLA. The Washington Model Toxics Act has been added to the list in Volume 1, Appendix A, section 2.2.1.

03.04 (002) Legal/Regulatory

COMMENT
The commentor asks to have the current radiation safety standards included in the EIS.

RESPONSE
DOE Orders 5480.11 and 5400.5, Radiation Protection for Occupational Workers and Radiation Protection of the Public and the Environment, which cover radiation protection of occupational workers and radiation protection of the public and the environment, respectively, provide the standards and requirements for DOE operations. These Orders are listed in Volumes 1 and 2, section 7.2.

03.04 (003) Legal/Regulatory

COMMENT
The commentor suggests that compliance with the Federal Facilities Agreement/Consent Order should not be linked with the continued acceptance of spent nuclear fuel.

RESPONSE
There is no link between compliance with the INEL FFA/CO and the receipt of additional SNF. The No Action alternative, required under NEPA, provides a baseline, minimal activity level for comparison with other alternatives. This baseline does not consider the need to comply with regulations. The No Action alternative analyzed in Volume 2 assumes that the conditions required to remain in compliance with the INEL FFA/CO will not be met because those conditions constitute more than the minimal activity allowed under the alternative. Likewise, SNF will not be received under this alternative because receiving additional SNF would be above the minimal activity allowed by the alternative. The two activities, therefore, are consequences of the alternative, and one is not conditional on the other.

03.04 (004) Legal/Regulatory

COMMENT
The commentor suggests that the EIS does not adequately address applicability of the Resource Conservation and Recovery Act to management of spent nuclear fuel, and that the commentor will review this issue closely when the Final EIS is published.

RESPONSE
DOE discusses RCRA in Volume 1, section 7.1 and Volume 2, section 7.2. In addition, the issue of applicability of RCRA to some DOE SNF is discussed in Volume 1, section 7.2.5. DOE is aware of its responsibilities under RCRA for conducting its waste management activities. Historically, DOE chemically reprocessed SNF to recover valuable products and fissionable materials. The SNF was considered a feed material for this recovery process and was not considered a waste under RCRA. Some of the materials resulting from reprocessing are considered hazardous wastes under RCRA and are
managed as such. However, because of world events, DOE is phasing out reprocessing for the recovery of SNF. Therefore, there is some uncertainty with regard to the regulatory status of some of DOE's SNF relative to RCRA. DOE has initiated discussions with EPA on potential applicability of RCRA to SNF.

03.04 (005) Legal/Regulatory

COMMENT

The commentor requests that reference to the Tri-Party Agreement milestones be added to Volume 1, Appendix A.

RESPONSE

The Tri-Party Agreement is discussed in Volume 1, Appendix A, section 2.2 as well as other appropriate sections. Adding it as a reference would not provide any further clarification or aid the decision-making process, as compliance with the Tri-Party Agreement is independent of the alternative selected. Additional information has been provided in Volume 1, Appendix A reflecting the fourth amendment (January 1994) of the Tri-Party Agreement. Applicable SNF milestones are provided in Volume 1, Appendix A, section 3.1.1, Table 3.3.

03.04 (006) Legal/Regulatory

COMMENT

The commentor states that in the case of the Hanford Site, the No Action alternative should state "DOE would not be able to fulfill agreements with states or other Federal agencies" rather than "DOE might not..."

RESPONSE

Volume 1, Chapter 3 has been changed to respond to this comment.

03.04 (007) Legal/Regulatory

COMMENT

The commentor expresses the opinion that importing the foreign fuel through U.S. ports of entry, most of which are large cities, violates the National Defense Authorization Act. The commentor states that this act envisions the selection of a port of entry to minimize the risk to the human population.

RESPONSE

Management of foreign research reactor (FRR) SNF is addressed in Volume 1 for consideration in assessments of cumulative SNF management impacts. However, whether the United States decides to accept this SNF and which ports would be used are matters being addressed in a separate EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft) (FRR EIS), as announced in Volume 58 of the Federal Register, pages 54336 through 54340. The FRR EIS may select the ports of entry in accordance with all laws and regulations, including the National Defense Authorization Act, as appropriate. Alternatives for DOE’s policy on FRR SNF management are being analyzed in the FRR EIS, including alternatives regarding transportation from the ports of entry.

03.04 (008) Legal/Regulatory

COMMENT

Commentors ask which laws and regulations DOE must observe to operate interim spent nuclear fuel storage facilities. Commentors specifically question whether Nuclear Regulatory Commission regulations will apply to the centralized storage facility. Additionally, commentors suggest that the EIS mention that certain DOE Orders are being codified, and that they are applicable.

RESPONSE

The Federal and state laws that DOE believes are potentially applicable to the various proposed activities are identified in Volume 1, section 7.2 and Volume 2, section 7.2. Former DOE Orders that have been codified into regulations are included. More detailed discussions of relevant state and Federal regulations are provided in Volume 1, Appendices A through F.

DOE believes that, although Nuclear Regulatory Commission (NRC) regulations do not at this time apply to storage facilities for noncommercial fuel, such standards should be considered in DOE's interim storage planning to ensure that any needed treatment for interim storage is compatible with ultimate disposition.

03.04 (009) Legal/Regulatory

COMMENT

The commentor wants to know why DOE is exempt from state taxes.

RESPONSE

DOE, like all Federal Government agencies, is exempt from state taxes because of sovereign immunity granted to the Federal Government by the U.S. Constitution. Although DOE is exempt from state taxes, sales and use taxes are paid on all construction materials, supplies, and associated equipment used by contractors.

03.04 (010) Legal/Regulatory

COMMENT

Commentors state that DOE should not be self regulated; rather, there should be independent oversight of DOE, Navy, and Nuclear Regulatory Commission activities pursuant to Executive Order No. 12344,
Naval Nuclear Propulsion Program, with the Occupational Safety and Health Administration and Environmental Protection Agency empowered to penalize or shut down DOE operations that violate public health standards. Additionally, commentors ask that medical information be declassified.

RESPONSE
The Atomic Energy Act gives DOE the authority to regulate SNF, but like other Federal agencies, DOE is subject to regulation by EPA and state agencies that have been granted primacy by EPA. By granting primacy, a Federal agency allows a state agency to enforce state regulations that cover the same area of responsibility as the Federal regulations. The state agency must, in general, demonstrate to the Federal agency that its regulations are at least as restrictive as the Federal regulations and that it has the resources to manage its enforcement program. DOE facilities, therefore, face the same penalties for noncompliance with EPA and equivalent state agency regulations as any private facilities, including the potential for fines and facility shutdowns. DOE sites have Site-Specific Advisory Boards consisting of independent citizens who advise DOE on local and national policy issues and provide recommendations on proposed site-specific activities. Additionally, DOE is overseen by the Defense Nuclear Facilities Safety Board, as prescribed by Section 318 of the Atomic Energy Act.

Executive Order 12344, Naval Nuclear Propulsion Program, enacted as Public Law 98-525, prescribes the authority and responsibility of the Naval Nuclear Propulsion Program, including all environmental and occupational safety and health aspects of the program. Such activities are also subject to independent regulatory review as discussed above for DOE.

Although the activities cited by the commentor are exempt from the standards promulgated by the Occupational Safety and Health Act (OSHA), DOE maintains an occupational safety and health program, which the Secretary of Labor has deemed to be comparable to the OSHA program. This program is implemented through a series of DOE Orders and applies to both DOE and contractor operations.

DOE is assessing the potential impacts to the interim SNF management program of NRC jurisdiction over the geologic repository being developed by the Office of Civilian Radioactive Waste Management and the potential impacts of future NRC oversight of its activities, as discussed in Volume 1, section 3.3.7. Additionally, in late 1994, DOE formed a task force to evaluate whether DOE operations should come under the jurisdiction of NRC or OSHA. The evaluation is still in progress.

To the extent that disclosure of medical records does not violate the privacy of individuals, DOE intends to continue its review and disclosure of medical records. The President has launched an initiative to discover, declassify, and make available to the public information relating to human radiation experiments. DOE is participating fully in this initiative.

03.04 (011) Legal/Regulatory
COMMENT
Commentors question the adequacy of the Nuclear Regulatory Commission and the Environmental Protection Agency regulatory standards and state that these agencies may not be any more trustworthy than DOE.

RESPONSE
Federal agencies, including NRC, EPA, and DOE, have public processes by which they propose and approve regulations, pursuant to the Administration Procedures Act. These processes present the technical and other justifications for proposed regulations and allow the public, including other agencies, an opportunity to comment and to provide evidence to support or refute the agency's justifications.

03.04 (012) Legal/Regulatory
COMMENT
The commentor indicates that DOE Orders can change, thereby changing requirements, etc., for the EIS (e.g., dose restrictions).

RESPONSE
Volume 1, section 7.2 and Volume 2, section 7.2 of the EIS discuss the major Federal statutes that impose environmental protection and compliance requirements on DOE. These sections include a discussion of DOE Orders related to environmental, health, and safety protection. Through the authority of the Atomic Energy Act, DOE is responsible for establishing a comprehensive health, safety, and environmental protection program for its facilities. The regulatory mechanisms through which DOE manages its facilities are the promulgation of regulations and the issuance of DOE Orders. DOE Orders generally set forth policies and the programs and internal responsibilities for implementing those policies. DOE Orders are subject to change as situations, requirements, conditions, and statutes change. DOE Orders are not changed without a thorough evaluation of the issues and impacts associated with the Order.

03.04 (013) Legal/Regulatory
COMMENT
The commentor opposes DOE committing to meet Nuclear Regulatory Commission requirements for interim storage options or the Department of Transportation requirements for interim storage facilities or other activities. In addition, for spent nuclear fuel transportation, the commentor states DOE should not
attempt to impose transportation requirements above and beyond those required by the Department of Transportation or the Nuclear Regulatory Commission.

RESPONSE
In Volume 1, section 3.3.7, DOE discusses the possibility of having interim storage facility designs reviewed for compliance with NRC licensing standards, even though DOE is not regulated by NRC. Also, DOE considers Department of Transportation regulations, even in instances where they do not strictly apply. In these cases, as with all regulations, DOE looks to other agencies for guidance in areas where the other agencies have expertise or experience. DOE believes that this results in reduced costs and impacts for conducting an activity. At times, however, the unique characteristics of agencies, when appropriate, to incorporate any relevant requirements.

03.04 (014) Legal/Regulatory
COMMENT
Commentors state that DOE must identify in the EIS, and obey, all state and Federal laws and regulations. Specifically, the laws and regulations of the States of New York and Washington, the City of Seattle, and those associated with the West Valley Demonstration Project should be identified.

RESPONSE
DOE is committed to operating its SNF management program in compliance with all applicable laws, regulations, Executive Orders, DOE Orders, and permits and compliance agreements with regulatory agencies. This commitment is independent of the regulations and laws identified in the EIS. Volumes 1 and 2, section 7.2 identify the laws and regulations that are appropriate and applicable to the activities proposed in this EIS. The DOE regulations that implement NEPA require consultation with other agencies, when appropriate, to incorporate any relevant requirements.

The alternative selected will be implemented within existing laws and DOE's legal obligation under its November 1986 agreement with the New York State Energy Research and Development Authority (NYSERDA), Agreement Between NYSERDA and DOE on the U.S. Department of Energy Spent Nuclear Fuel Located at the Western New York Nuclear Service Center. Negotiations are currently under way between DOE and NYSERDA, per section 8(c) of their November 1986 agreement, regarding extension of the date for removal of the SNF from West Valley. A decision regarding removal of the SNF from West Valley depends on the Record of Decision (ROD) for this EIS.

See also the response to comment 02.01 (024).

03.04 (017) Legal/Regulatory
COMMENT
The commentor states that the fear of liability has so haunted the U.S. nuclear weapons establishment that contractors and the Atomic Energy Commission demanded and got complete immunity from liability, even for gross negligence or violation of contract.

RESPONSE
The commentor confuses immunity with indemnity. The Price Anderson Act provides for indemnification by DOE for liabilities that may arise from a nuclear incident as a result of activities undertaken by DOE's contractors. This means that if a nuclear incident were to occur, such as a release of radioactive materials from a facility, and damages were incurred as a result of the incident, DOE would indemnify its contractors from liability. In other words, DOE would take responsibility for ensuring that such damages were appropriately compensated under the liability scheme of the Price Anderson Act. In addition, the Price Anderson Act Amendments of 1988 subject indemnified contractors to civil and criminal sanctions if they violate any applicable nuclear safety requirements at any facility under the contractor's control.

03.04 (018) Legal/Regulatory
COMMENT
Commentors express the opinion that DOE's past performance in the areas of management and oversight calls into question DOE's claims of regulatory compliance, management oversight, and cost effectiveness. Commentors note that these are the responsibility of DOE, not its contractors.

RESPONSE
It is DOE policy to operate its facilities in compliance with regulatory requirements. DOE faces essentially the same penalties as private industry for violations. DOE has programs for management oversight and is subject to oversight by the Defense Nuclear Facilities Safety Board, which is an independent Federal oversight organization, EPA, and state requirements. DOE operations contractors are required to comply with DOE Orders, and contractor performance is monitored by DOE. The major DOE Orders pertaining to the construction and operation of SNF management facilities within the DOE complex are listed in Volume 1, Table 7-1 of the EIS.

03.04 (019) Legal/Regulatory
COMMENT
The commentor asks for an assessment of proposed regulations on the use and expansion of the Idaho National Engineering Laboratory Radioactive Waste Management Complex. The commentor specifically mentions the Resource Conservation and Recovery Act Reauthorization. The commentor
further alleges that DOE has mismanaged Idaho National Engineering Laboratory radioactive wastes, because current practices do not comply with Resource Conservation and Recovery Act Subtitle D or C requirements.

RESPONSE
DOE has not evaluated potential environmental impacts based on proposed statutory modifications to RCRA. However, when reauthorization is complete, DOE will review and evaluate the consequences of the statutory changes on current operations. DOE is currently disposing of low-level radioactive wastes at the INEL Radioactive Waste Management Complex in accordance with DOE Orders and other applicable requirements. These low-level wastes do not fall within the definition of RCRA solid or hazardous waste, and thus are not subject to regulation under RCRA. All wastes are disposed of in a manner that ensures protection of human health and the environment.

03.04 (021) Legal/Regulatory
COMMENT
The commentor refers to pending legislation to give local communities greater authority in regulating and inspecting nuclear waste shipments.
RESPONSE
This is a matter appropriately addressed by Congress.

03.04 (022) Legal/Regulatory
COMMENT
The commentor notes that in the Volume 1, Chapter 7 discussion of the Safe Drinking Water Act, there is a correct citation for the beta dose limit, but that corresponding citations for gamma emissions and alpha-emitting radionuclide concentrations are lacking and should be added. Additionally, the commentor notes that Chapter 7 discusses the current U.S. Environmental Protection Agency regulations, while in Chapter 4, the text compares levels with proposed regulations. The commentor suggests that the EIS acknowledge the discussion of two different sets of regulations.
RESPONSE
DOE made appropriate changes to Volume 1, Chapter 7 to explain the two regulations and add references to limits for gamma- and alpha-emitting radionuclides, as suggested. Proposed rules regulating radioactive materials' maximum contaminant levels were published July 18, 1991. To date, those proposed EPA rules have not become final. For this analysis, however, the more conservative proposed standards were used.

3.4.1 Compliance with the Court Order

03.04.01 (001) Compliance with the Court Order
COMMENT
The commentor questions the motives of DOE and the Navy, suggesting that without a lawsuit by the people of Idaho, these agencies would have acted without public input on the EIS.
RESPONSE
DOE was in the process of preparing a site-wide EIS on the environmental restoration and waste management (ER&WM) programs at INEL and a programmatic EIS on ER&WM, including SNF, prior to the lawsuit. As a result of the lawsuit, the EIS that analyzed SNF activities was redirected.

03.04.01 (002) Compliance with the Court Order
COMMENT
Commentors state that the court decision Public Service Co. of Colorado v. Andrus, 25 F. Supp. 1483 (D. Idaho 1993) involving the shipment of spent nuclear fuel from the Fort St. Vain Nuclear Generating Station in Colorado to the Idaho National Engineering Laboratory was right and good for the people of Idaho. Further, commentors state that the EIS does not address everything that DOE was directed by the Court Order to address.
RESPONSE
DOE believes this EIS is complete and accurately reflects the potential environmental impacts of a reasonable range of alternatives.

03.04.01 (004) Compliance with the Court Order
COMMENT
The commentor states that the EIS does not assess the effects of shipping and storing nuclear waste at the Idaho National Engineering Laboratory, as ordered in 1993.
RESPONSE
Volume 2, Chapter 5 assesses the environmental consequences of the various alternatives, which are described in Volume 2, Chapter 3. These alternatives cover a spectrum of the shipping and storing options for SNF management at INEL.
3.5 Government Policy

03.05 (003) Government Policy

COMMENT
The commenter urges DOE to manage spent nuclear fuel responsibly.

RESPONSE
The EIS will allow DOE to carefully weigh public comments, environmental impacts, and risk of human health effects in making decisions regarding safe and responsible management of SNF.

See also the response to comment 03.08 (010).

03.05 (004) Government Policy

COMMENT
The commenter expresses the opinion that the funds being spent on transporting the waste would be better spent on alternative energy sources and detoxification of waste. The commenter also favors leaving waste where it can be seen, rather than burying it.

RESPONSE
The cost of transporting waste and SNF is a relatively small portion of the management cost. DOE prepared a report that estimates the cost of each alternative, including its associated transportation. See also the response to comment 03.01 (001).

The priorities for funding activities and programs of the Federal Government are determined by Congress and the President. A discussion of Federal spending priorities is beyond the scope of this EIS. Future funding to support interim management of SNF covered in this EIS will be established by Congress and the President as part of the annual DOE budget process.
03.05 (005) Government Policy

COMMENT

The commenter asks if DOE has a plan to take spent nuclear fuel from reactors in the Peachbottom cask to the Atascadero (Mescalero) Apache Indian Tribe per its proposal to store it on their reservation.

RESPONSE

DOE has no such plans. The Mescalero Apaches previously indicated an interest in the possibility of storing nuclear waste on their reservation. Such agreements regarding storage of commercial SNF are beyond the scope of this EIS.

03.05 (006) Government Policy

COMMENT

The commenter advocates a strong environmental restoration program at all DOE sites.

RESPONSE

Environmental restoration and waste management activities at DOE sites other than INEL are not within the scope of this EIS. However, DOE is addressing necessary environmental management activities at all of its sites.

See also the response to comment 03.08 (010).

03.05 (007) Government Policy

COMMENT

Several commenters focus on the economic viability and environmental impacts of various energy-producing technologies, including expressing both support for and opposition to nuclear power generation or technology development. Most of those opposed to nuclear power ask DOE to modify policies favoring nuclear power over alternative, renewable energy sources and energy conservation. Energy alternatives specifically suggested for more research and development include solar, wind, hydroelectric, grid hookups with the Russians, and fossil fuels.

RESPONSE

Comments on DOE's energy-related policies, conservation of energy, and the preference for development of one energy technology over another are outside the scope of this EIS. None of these issues will be affected by decisions made based on this EIS.

03.05 (008) Government Policy

COMMENT

Commenters express general opposition to or question the ethics of continued generation of spent nuclear fuel, operation of existing or new nuclear reactors, modernization of the defense complex, production of nuclear weapons, and further nuclear technology development for defense purposes. Some commenters specifically oppose use of highly enriched uranium in DOE reactors, reprocessing to recycle fissile materials, and transportation of nuclear materials. Others encourage phasing out nuclear reactors and nuclear-powered ships, and ceasing nuclear waste generation. One commenter states that the United States should set the example with the end of the Cold War. Other commenters express a preference for specific reactor technologies or projects such as the Integral Fast Reactor in Idaho or the Multipurpose Reactor in South Carolina, citing a number of benefits.

RESPONSE

Policies regarding the operation of nuclear reactors, nuclear-powered ships, the cessation of nuclear waste generation, production of nuclear weapons and defense technology development, and the need to generate and manage additional SNF in the future are established by Congress and the President. However, decisions regarding the alternatives to manage such SNF are within the scope of and are analyzed in this EIS.

Most of the SNF addressed in this EIS has already been generated and is currently being managed by DOE. Although vulnerabilities exist, DOE is managing SNF with safety as the primary focus. DOE has announced a decision to phase out reprocessing SNF for the purpose of recovering fissionable materials. Transportation of nuclear materials is necessary for DOE to carry out its various missions, and is analyzed in this EIS with respect to the proposed alternatives for managing of DOE SNF. Policies related to the use of highly enriched uranium in DOE reactors are beyond the scope of this EIS. Preference for specific reactor technologies and opinions about the benefits of such technologies have been noted, but selection and implementation of such technologies are outside the scope of this EIS.

03.05 (009) Government Policy

COMMENT

Commenters state that a more rational waste policy needs to be formulated in which materials are categorized according to their actual long-term hazards, waste generation is minimized, disposal costs are paid up front, and shallow burial is banned. One commenter states that the United States should develop a comprehensive nuclear waste policy with full public debate.
RESPONSE

Decisions regarding the programmatic management of DOE SNF over the next 40 years in the United States will be made by the Secretary of Energy based largely on the analysis in this EIS. An integral part of this process is the presentation of the EIS to the public to solicit comments on its contents. This EIS represents a national effort to address the problems associated with DOE SNF (see Volume 1).

Volume 2 addresses alternative approaches for managing DOE ER&WM and SNF activities at INEL. This EIS does not evaluate DOE complex-wide programmatic alternatives or policies for environmental restoration and waste management. Those issues are being evaluated in a separate EIS, which is currently being prepared by DOE.

DOE currently classifies and manages SNF and wastes with consideration of the long-term hazards associated with these materials. A discussion of the waste types managed by DOE is in Volume 2, section 2.2.7. Shallow land burial of low-level wastes is a common practice throughout the nuclear industry and is DOE policy for those wastes that meet strict site-specific waste acceptance criteria. The issue of shallow land burial is being addressed in the DOE Waste Management Programmatic EIS.

Public comments on that document will be solicited by DOE, including comments on policies and costs related to the disposal of various waste forms. Likewise, disposal costs of high-level wastes and SNF are outside the scope of this EIS.

03.05 (017) Government Policy

COMMENT

The commenter questions continued nuclear energy development or production, except for medical uses.

RESPONSE

This EIS pertains to programmatic SNF management and INEL SNF management and ER&WM programs. Policies regarding nuclear energy development or production are beyond the scope of this EIS.

03.05 (018) Government Policy

COMMENT

The commenter expresses a general objection to generating spent nuclear fuel, to further use of highly enriched uranium in DOE reactors, to reprocessing, and/or to transportation of nuclear materials.

RESPONSE

Most of the SNF addressed in this EIS has already been generated and is currently being managed by DOE. Policies regarding the need to generate and manage additional SNF in the future are beyond the scope of this EIS; however, decisions regarding the alternative to managing such SNF are within the scope of and are analyzed in this EIS.

Although vulnerabilities exist, DOE is managing SNF with safety as the primary focus. DOE announced a decision in 1992 to phase out reprocessing of SNF for the purpose of recovering fissile materials. Transporting nuclear materials is necessary for DOE to carry out its various missions, and is analyzed in the EIS with respect to the proposed alternatives for managing DOE SNF. Policies related to the use of highly enriched uranium in DOE reactors are beyond the scope of this EIS.

03.05 (022) Government Policy

COMMENT

The commenter expresses the need for a new vision for the United States, in that its 200-year history does not sensibly allow management of long-lived radioactive materials.

RESPONSE

Most of the SNF addressed in this EIS has already been generated and is currently being managed by DOE.

03.05 (023) Government Policy

COMMENT

The commenter suggests that it should be left to the scientists to decide on the most feasible, practical and beneficial methods for successfully disposing of radioactive wastes. In addition, the commenter suggests a three-part program to accomplish this, which would include reduction of the need for storage, even for the byproduct and disposal of wastes in areas least detrimental to life.

RESPONSE

DOE has a program for safely managing and storing all radioactive materials at each of the sites considered in the EIS, which includes research, development, and demonstration activities. General solutions for managing SNF, including waste reduction, recycling, and storage, are discussed in Volume 1, section 1.1.3 and Appendix J. Current management practices for radioactive wastes are described in Volume 2, section 2.2.7. Although Volume 2 is specific to INEL, it is also generally applicable to wastes at other DOE sites. Disposal options for DOE complex-wide wastes are outside the scope of this EIS, but are being addressed in the DOE Waste Management Programmatic EIS.
03.05 (024) Government Policy

COMMENT

Commentors note that spent nuclear fuel continues to be generated and that generation should stop, that greater efforts should be made to solve the problems with existing storage facilities and the problem of ultimate disposition of spent nuclear fuel, and that the spent fuel should be left where it is generated.

RESPONSE

Eliminating all current and future generation of DOE SNF would not significantly diminish the handling, storage, and final disposition challenges facing DOE. Inventories of DOE SNF are addressed in Volume 1, section 1.1 of the EIS. Approximately 86 percent of the current inventory originated in DOE weapons-production reactors that have ceased to operate. Another 8 percent was generated in DOE experimental reactors, most of which have been shut down. According to Volume 1, Table 1-1, additional SNF to be generated over the next 40 years (until 2035) will amount to only a 3-percent increase in the current inventory. Eliminating sources of DOE SNF altogether would require halting nuclear Navy operations and nuclear research at universities, which is not within the control of DOE and is outside the scope of this EIS.

Problems at existing storage facilities have been identified in the Spent Fuel Working Group Report on Inventory and Storage of the Department’s Spent Nuclear Fuel and Other Irradiated Nuclear Materials and Their Environmental, Safety and Health Vulnerabilities. This report, called the spent nuclear fuel vulnerability assessment, and associated action plans to resolve identified vulnerabilities are acknowledged in Volume 1, section 1.1.2 and Appendix J-2. Additional site-specific information is in Volume 1, Appendices A through F. Environmental consequences of SNF management are presented for all alternatives in Volume 1, section 5.1, and mitigation measures are discussed in section 5.7. For all alternatives analyzed, DOE is committed to complying with applicable Federal, state, and local regulations and DOE Orders to ensure protection of the environment and the health and safety of the public and site employees.

General technologies and practices for managing SNF are discussed in Volume 1, section 1.1.3 and Appendix J. Technologies for final disposition of SNF cannot be specified in advance of repository acceptance requirements. These requirements are several years from completion and approval, but a combination of the technologies described in Volume 1, Appendix J may satisfy the eventual acceptance criteria. Furthermore, consideration is given by the alternatives analyzed in this EIS to providing or maintaining processing flexibility that may prove necessary to meet the acceptance requirements. Although ultimate disposition of SNF is a high priority for DOE, the details of disposition activities, including Yucca Mountain for SNF and high-level waste and the Waste Isolation Pilot Plant for transuranic waste, have not been finalized and are beyond the scope of this EIS. Processing is addressed as an option in the EIS under the Volume 2, Maximum Treatment, Storage, and Disposal alternative for INEL. Managing waste generated from dismantling weapons and disposing of weapons material are the subjects of other DOE EISs.

Several alternatives in this EIS evaluate leaving all or most of the SNF at locations where it is now stored or generated. In addition, other EIS alternatives were evaluated to give consideration to providing and maintaining DOE’s flexibility to safely, efficiently, and responsibly manage SNF until final disposition decisions are made.

03.05 (025) Government Policy

COMMENT

The commentor states that this EIS and its alternatives represent a delay rather than a solution.

RESPONSE

Volume 1, Chapter 2 discusses the purpose and need for DOE action. This action includes complex-wide strategic decisions on managing SNF for the next 40 years. These discussions include where to conduct these activities; determining appropriate capabilities, facilities, and locations for SNF management; and developing activities to support the SNF management program.

03.05 (027) Government Policy

COMMENT

The commentor states that solutions do not exist to solve the problem of the spent nuclear fuel that DOE has already generated, citing the failure of Yucca Mountain and the Waste Isolation Pilot Plant, or the waste or special nuclear material from weapons.

RESPONSE

General technologies and practices for managing SNF are discussed in Volume 1, section 1.1.3 and Appendix J of the EIS. Technologies for final disposition of SNF cannot be specified in advance of repository acceptance requirements. These requirements are several years from completion and approval, but a combination of the technologies described in Volume 1, Appendix J may satisfy the eventual acceptance criteria. Furthermore, consideration is given by the alternatives analyzed in this EIS to providing or maintaining processing flexibility that may prove necessary to meet the acceptance requirements. Although ultimate disposition of SNF is a high priority for DOE, the details of disposition activities, including Yucca Mountain for SNF and high-level waste and the Waste Isolation Pilot Plant for transuranic waste, have not been finalized and are beyond the scope of this EIS. Processing is addressed as an option in the EIS under the Volume 2, Maximum Treatment, Storage, and Disposal alternative for INEL. Managing waste generated from dismantling weapons and disposing of weapons material are the subjects of other DOE EISs.
03.05 (028) Government Policy
COMMENT
The commentor states that the statement in Volume 1, Appendix A, "The DOE intends to maintain active institutional control of the site in perpetuity," conflicts with other DOE commitments to turn over large portions of the Hanford Site to other entities for non-DOE uses.
RESPONSE
DOE intends to maintain institutional control of certain portions of the Hanford site for a long time; however, some portions of the Hanford Site may be released from DOE institutional control as further land-use planning activities mature.

03.05 (029) Government Policy
COMMENT
The commentor questions why DOE is building more permanent storage facilities for waste that was supposed to go to the Waste Isolation Pilot Plant, and questions whether Idaho is going to become a permanent dump.
RESPONSE
Although the ultimate disposition of SNF, high-level waste, and transuranic waste is a high priority for DOE, the details of final disposition of these wastes have not been finalized and are outside the scope of this EIS. DOE is committed not only to developing Federal geologic repositories for permanent isolation of SNF and transuranic waste, but to providing safe interim storage pending availability of permanent disposal facilities. No permanent storage facilities in Idaho are proposed for these wastes.

3.5.1 Reactor Programs/Nuclear Power
3.5.2 Not used
3.5.3 Reactor Programs/Nuclear Power

03.05.03 (003) Reactor Programs/Nuclear Power
COMMENT
The commentor expresses the opinion that nuclear power generation should be emphasized and that plutonium and uranium should not be discarded.
RESPONSE
This EIS pertains to programmatic SNF management and INEL ER&WM programs. Policies regarding emphasis on nuclear power production are not within the scope of this EIS. Regarding maintaining SNF as a resource, such decisions are beyond the scope of this EIS, which evaluates only interim management until decisions on ultimate disposition are made. Decisions regarding the disposition of weapons-usable fissile materials are being addressed in the forthcoming Programmatic EIS for Storage and Disposition of Weapons-Usable Fissile Material.

3.5.4 Energy Development
03.05.04 (002) Energy Development
COMMENT
The commentor indicates that all sources of energy have associated problems, which can be overcome through research.
RESPONSE
No response is required.

3.5.5 Recycling and Reprocessing
03.05.05 (001) Recycling and Reprocessing
COMMENT
The commentor is of the opinion that DOE should work toward an international ban on reprocessing.
RESPONSE
DOE announced a decision in 1992 to phase out reprocessing of SNF for the purpose of recovering fissile materials for use in weapons production. Establishing a U.S. policy to encourage an international ban on reprocessing is beyond the scope of this EIS.

03.05.05 (002) Recycling and Reprocessing
COMMENT
The commentor states that the United States should maintain reprocessing capability for spent nuclear fuel. The commentor indicates that centralizing spent nuclear fuel management activities at the Hanford Site would allow the U.S. to establish global reprocessing capability to support the Pacific Rim.
RESPONSE
In April of 1992, The Secretary of Energy directed INEL and the Savannah River Site (SRS) to phase out defense-related chemical separations activities due to a reduction in the demand for new material for nuclear weapons. DOE no longer produces strategic isotopes, and at INEL, the phaseout activities have been completed. Phaseout activities at SRS continue. DOE has committed to prohibit the use of materials separated or stabilized during the phaseout, shutdown, and cleanup of weapons complex facilities for nuclear explosives purposes. Use of DOE chemical separations facilities for nondefense-
related activities, such as stabilizing SNF, is a reasonable option, the impacts of which are evaluated in the EIS as part of the various alternatives.

03.05.05 (003) Recycling and Reprocessing

COMMENT

Commentors state that nuclear waste materials should be considered for potential recovery of valuable substances, such as separating certain radioactive isotopes for use as potential future fuel or other uses.

RESPONSE

As acknowledged in Volume 1, section 1.1.3, DOE is considering several specialized technologies for separating radioactive elements from SNF and radioactive wastes, including recovery of materials that may be used to fuel nuclear reactors. For example, Volume 1, Appendix J discusses processing SNF to remove fissile material.

03.05.05 (006) Recycling and Reprocessing

COMMENT

The commentor urges DOE to not select an alternative for SNF management that would in essence throw away all of the technological gains, including reprocessing, that have been made in the nuclear industry over the last 50 years. The commentor believes that abandonment of reprocessing will not allow the United States to solve the problems that continue to accumulate and that the United States cannot hope for the future to provide a "magic" solution to the problems of SNF management. The commentor questions why reprocessing is on hold if processing is being considered in the EIS.

RESPONSE

Processing and reprocessing are defined in the Glossary (Appendix H) for Volume 1 of the EIS. Processing means "applying a chemical or physical process designed to alter the characteristics of the SNF (SNF) matrix." Reprocessing is defined as "processing of reactor-irradiated nuclear material (primarily SNF) to recover fissile and fertile material, in order to recycle such materials primarily for defense programs." Thus, reprocessing is only one type of processing. As discussed in Volume 1, Chapter 1, DOE made a policy decision in 1992 that reprocessing of SNF for weapons production would be phased out. This policy is still in effect. Since that time, all of DOE's reprocessing facilities either have ceased to operate or are phasing out operations.

Volume 1, Chapter 1 also indicates that several forms of SNF processing may still be required to stabilize certain types of SNF for safe storage. In addition, there are many different types of fuel with widely differing characteristics that may require treatment for safe storage and final disposition. At this time, repository acceptance criteria for receipt of SNF and high-level waste for final disposition have not been defined; therefore, the types of fuels that may require treatment cannot be determined. Many of the treatments being studied do not separate fissile materials, although some do. Because repository acceptance criteria are not defined, it is not currently possible to determine whether fissile material will have to be separated from some fuels to meet disposal criteria. Consideration of processing and use of existing reprocessing facilities are evaluated in this EIS, because these facilities could be used for short-term management of some fuels that were not designed for extended underground storage, but which are currently being stored underwater. Specific technologies for managing SNF are described in Volume 1, Appendix J.

03.05.05 (007) Recycling and Reprocessing

COMMENT

The commentor states that essentially all DOE spent nuclear fuel could be reprocessed by now if DOE had not ceased reprocessing, and asks why reprocessing was stopped.

RESPONSE

As discussed in Volume 1, Chapter 1, all of DOE's reprocessing facilities either have ceased to operate or are phasing out operations because continued recycling of plutonium and uranium for weapons production has been discontinued as a matter of national policy. This policy results from the collapse of the Soviet Union and consequent reduced need for strategic nuclear weapons and the fissile materials needed for their fabrication. DOE recognizes that processing may be an effective tool for managing SNF; thus, processing is included as an option in several of the alternatives.

03.05.05 (010) Recycling and Reprocessing

COMMENT

The commentor considers it strange that with the end of the Cold War, the decision to recycle spent nuclear fuel has been supplanted by storage for the next billion years.

RESPONSE

In April 1992, The Secretary of Energy directed INEL and SRS to phase out defense-related chemical separations activities due to a reduction in the demand for new material for nuclear weapons. DOE no longer produces strategic isotopes, and at INEL, the phaseout activities have been completed. Phaseout activities at SRS continue. DOE has committed to prohibit the use of materials separated or stabilized during the phaseout, shutdown, and cleanup of weapons complex facilities for nuclear explosives purposes. Use of DOE chemical separations facilities for nondefense-related activities, such as stabilizing SNF, is a reasonable option, the impacts of which are evaluated in the EIS as part of the various alternatives.
03.05.05 (011) Recycling and Reprocessing

COMMENT
The commenter encourages consideration of "the recycling approach alternative."

RESPONSE
In the past, DOE reprocessed SNF. Reprocessing is defined as "processing of reactor-irradiated nuclear material (primarily SNF) to recover fissile and fertile material, in order to recycle such materials primarily for defense programs." As discussed in Volume 1, Chapter 1, all of DOE's reprocessing facilities either have ceased to operate or are rapidly phasing out of operations, because continued recycling of plutonium and uranium for weapons production is no longer a national priority. Specific technologies for managing SNF are described in detail in Volume 1, Appendix J of the EIS.

03.05.05 (012) Recycling and Reprocessing

COMMENT
The commenter recommends using the Integral Fast Reactor to recycle spent nuclear fuel.

RESPONSE
The Integral Fast Reactor program was discontinued and is not addressed in this EIS. A waste management project, Electrometallurgical Processing Demonstration, which, if successful, could prepare stainless-clad metallic spent fuel for disposal, is discussed in Volume 2, section 3.1 and in Volume 2, Appendix C.

3.6 Foreign Research Reactor Fuel Return Policy

03.06 (001) Foreign Research Reactor Fuel Return Policy

COMMENT
The commenter states the need for a global commons analysis for foreign research reactor spent nuclear fuel.

RESPONSE
Global commons analysis refers to analyzing potential environmental consequences of transporting, for United States receipt, FRR SNF over the oceans outside the jurisdiction of any nation. This EIS considers only the transportation of FRR SNF from U.S. ports of entry to DOE facilities so that all cumulative impacts of the alternatives considered are included. In compliance with Executive Order 12114, Environmental Effects Abroad of Major Federal Actions, the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft) considers the environmental impacts of transporting FRR SNF over the global commons.

3.7 Equity and Environmental Justice

03.07 (001) Equity and Environmental Justice

COMMENT
The commenter expresses the opinion that secondary impacts from accidents, such as agricultural land withdrawal, interdiction of agricultural products, and economic impacts, would fall disproportionately on the Shoshone-Bannock Tribes.

RESPONSE
Volume 1, Chapter 5 and Appendices B and D, and Volume 2, Chapters 3 and 5 and Appendix F discuss risks to the public, workers, and the environment due to facility accidents at INEL. The EIS shows that impacts to the public, as well as the Shoshone-Bannock Tribes, from accidents would be small for all of the alternatives considered.

The overall review indicated that the potential impacts calculated for each discipline under each of the proposed alternatives present no significant risk to the surrounding population. As described in Volume 1, Appendix L, the impacts also do not constitute a disproportionately high and adverse impact on any particular segment of the population, minorities or low-income communities included, and thus do not present an environmental justice concern.

DOE consulted with the Tribes on this issue. The impacts on human health or the environment from facility or transportation accidents associated with managing SNF at INEL would be small under any of the alternatives considered. For example, it is unlikely that a single additional fatal cancer would occur as a result of SNF activities under any alternative. Because the potential impacts due to the risk of either a transportation or a facility accident for any of the alternatives considered would be small, no adverse effects from accidents associated with managing SNF would be expected for any particular segment of the population, minorities and low-income groups included.

03.07 (002) Equity and Environmental Justice

COMMENT
The commenter expresses the opinion that if centralization is the preferred alternative, the affected community should be given extra care, guarantees, and mitigation and compensation measures.

RESPONSE
The sources, appropriations, and accounting for fiscal and other resources to support the activities of the Federal Government are determined by Congress and are beyond the scope of this EIS.
As discussed in Volume 1, Chapter 3, safely managing SNF requires that many factors be analyzed, including site security, presence of skilled workers, safety, and the affected environment. Analyses of impacts for a number of potential storage locations are included in the EIS. These impacts would be small for all alternatives. As part of the public comment process, public input regarding the eventual location of SNF management activities was sought. DOE considered this public input when identifying the preferred alternative. The preferred alternative and other factors will be considered in the ROD for the proposed action.

See also the response to comment 05.09 (015).

03.07 (003) Equity and Environmental Justice

COMMENT

Commentors express the opinion that a specific state or site hosts a large share of the government's nuclear waste/spent nuclear fuel, which raises the question of equity. Other commentors indicate that their site has done its fair share or has enough involvement and should not be asked to do more, or be the nation's "dumping ground." In addition, the opinion was offered that all atomic wastes from the armed services should be spread around other states or divided equally.

RESPONSE

Several DOE sites do manage a significant percentage of DOE SNF and waste. This is due to each site's established capability to safely manage such materials (for example safeguards and security, a skilled work force, facilities, and historic mission) and associated support infrastructure (for example, waste management, emergency response, and stakeholder involvement programs). Decisions about where to site and conduct such programs are also influenced by a system of checks and balances designed to be beyond the control of the DOE, such as Congressional funding allocations, state and local permitting requirements, and potential judicial scrutiny.

Additionally, NEPA provides opportunities to involve the public in and promote informed decisionmaking regarding major Federal decisions. Accordingly, this EIS objectively evaluates 10 sites as reasonable siting alternatives for some level of SNF management activity. The analyses in the EIS include environmental considerations, socioeconomic impacts, and the potential risks to the public from both operations and reasonably foreseeable accidents for a number of options for managing SNF. The EIS concludes that there would be no significant risks to the public or the environment due to SNF management activities at any of the 10 sites considered.

See also the response to comment 03.07 (004).

03.07 (004) Equity and Environmental Justice

COMMENT

Many commentors state that sites that are politically weak, relatively unpopulated, economically depressed, and/or publicly inactive are being taken advantage of or targeted as waste management sites or dumps due to their inability to object effectively.

RESPONSE

This EIS objectively evaluates 10 sites as reasonable siting alternatives for some level of SNF management activity, without regard to political factors. The analysis includes environmental considerations, socioeconomic impacts, and potential risks to the public from both operations and reasonably foreseeable accidents for a number of options for managing SNF. The EIS concludes that there would be no significant risks to the public or the environment due to SNF management activities at any of the 10 sites considered.

DOE considered public comments in the preparation of this EIS, upon which a decision will be based. Although the EIS provides a basis for making decisions from the perspective of environmental impacts and public comments, decisions also will be based on such considerations as cost, programmatic needs of DOE and the Navy, and implementability. In addition, implementation of decisions are subject to Congressional funding and regulatory oversight processes. DOE intends to develop and implement a national SNF management strategy that serves the overall needs of the nation.

See also the response to comment 03.07 (003).

03.07 (005) Equity and Environmental Justice

COMMENT

The commentor states that decisions regarding remediation, waste management, and storage activities must provide for the protection of the Shoshone-Bannock Tribes' cultural and natural resources.

RESPONSE

The environmental restoration actions that would occur under the alternatives considered in this EIS would be subject to the provisions of CERCLA, which provides for ecological risk assessment and identification of injury or potential injury to natural resources resulting from past releases of hazardous substances. The alternatives in this EIS include projects for protecting the vadose zone and cleaning groundwater, and cleaning up and/or retrieving buried wastes. The environmental impact analyses are designed to produce a reasonable projection of the upper bound for potential environmental consequences. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the...
environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small.

03.07 (006) Equity and Environmental Justice

COMMENT
The commenter notes that the West Valley Demonstration Project is located on the Cattaraugus Creek upstream of the Cattaraugus Reservation of the Seneca Nation of Indians. The commenter suggests that this creates environmental justice concerns, and that DOE should pay particular attention to potential adverse environmental impacts. The commenter also states that the Reservation should be given full opportunity to participate in the National Environmental Policy Act process.

RESPONSE
Volume 1, Appendix L addresses environmental justice concerns related to SNF management. Potential impacts to the Seneca Nation of Indians arising from SNF management activities associated with the West Valley Demonstration Project are considered to the extent that they are within the scope of this EIS. Consultation with the Seneca Nation of Indians on the Cattaraugus Reservation resulted in a request that the tribe be notified of impending shipments across their lands. DOE is considering this request.

03.07 (007) Equity and Environmental Justice

COMMENT
The commenter notes that the presidential memorandum accompanying Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs Federal agencies to analyze the environmental effects on minority communities and low-income communities when such analysis is required by the National Environmental Policy Act of 1969. The commenter is of the opinion that the EIS does not adequately address environmental justice.

RESPONSE
The Draft EIS committed to further analysis of environmental justice based on DOE's implementation strategy for Executive Order 12898, which was unavailable at the time. Though administration guidance was still evolving at the time of Final EIS preparation, the analysis of environmental justice has been expanded based on appropriate interim guidance. The EIS addresses environmental justice and associated directives in Volume 1, section 5.8 and Appendix L for programmatic SNF management; in Volume 2, section 5.20 for ER&WM activities at INEL; and in the EIS Summary.

See also the response to comment 03.07 (003).

03.07 (008) Equity and Environmental Justice

COMMENT
The commenter states that DOE must meet the requirements of Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, and fully consider the Shoshone-Bannock Tribes' comments on the EIS, the impacts of its proposed actions on the Tribes, the Fort Hall Reservation, and on other disadvantaged populations living in proximity to the Idaho National Engineering Laboratory. The commenter further indicates that the Tribes are not just another "minority population," but are governments that have a special relationship with the Federal Government and its agencies, and have certain authorities to regulate others, including the Federal Government.

RESPONSE
The EIS addresses environmental justice and associated directives in Volume 1, section 5.8 and Appendix L for programmatic SNF management; Volume 2, section 5.20 for INEL ER&WM programs; and the EIS Summary. Potential impacts to the Shoshone-Bannock Tribes and the Fort Hall Reservation arising from SNF management and waste management and environmental restoration program activities associated with INEL are considered to the extent that they are within the scope of the EIS, including transportation impacts. Impacts of all of the alternatives considered would be small. To fully understand and be responsive to the Tribes, DOE consults regularly with the Shoshone-Bannock Tribes regarding comments on and concerns about the potential siting of proposed activities at INEL. DOE recognizes the Shoshone-Bannock Tribes as a sovereign nation.

3.8 Miscellaneous

03.08 (001) Miscellaneous

COMMENT
The commenter forwards to the State of Oregon questions related to shipping foreign research reactor fuel through the Port of Portland, Oregon, including such matters as the associated risks and risk analyses, emergency plans and resources, and details of possible shipments.

RESPONSE
In a letter to the commenter (Nuclear Free Port Coalition) on July 20, 1994, the Oregon Department of Energy answered each of the questions raised. This letter states that while all transport of hazardous materials poses a risk, the chance of an accident occurring during movement of FRR SNF through the Port of Portland, which could harm those exposed to radioactive materials from such an accident or cause evacuation of people downwind of the accident site, is extremely small. The letter also states that state, Federal, and local emergency plans, supporting resources and trained responders, and notification
procedures are available, rehearsed, and updated as needed. The Oregon Department of Energy letter identified applicable Federal, state, and local regulations governing such shipments and provided information on the properties of some of the materials involved and controls on exposure to radiation.

The letter stated that if the Oregon Department of Energy knew of changes to the shipping procedures that would substantially increase safety, it would ask DOE or other shippers to make those changes. The letter also stated that the Oregon Department of Energy has no evidence that changes to existing procedures would increase safety.

In summary, the Oregon Department of Energy specifically answered each of the commentor's questions and those answers are consistent with the discussions and analyses in this EIS. The EIS demonstrates that the risks associated with transporting SNF would be small for all of the alternatives considered.

03.08 (002) Miscellaneous

**COMMENT**

A commentor suggests that the EIS be updated to reflect more current information on Fort St. Vain spent nuclear fuel. Additionally, the commentor states that no licensed cask exists for the shipment of spent nuclear fuel from Fort St. Vain.

**RESPONSE**

Volumes 1 and 2 contain the most current information DOE has on Fort St. Vain SNF. Volume 1 gives specific information regarding the quantity of Fort St. Vain fuel currently stored at INEL and the quantity that could be received in the future. The EIS provides an upper limit on the individual and cumulative impacts.

The TN-FSV cask, U.S. Nuclear Regulatory Commission Certificate of Compliance No. 9251, Rev. 0, has been approved by NRC for shipping SNF by truck from Fort St. Vain. The Certificate of Compliance for the TN-FSV cask does not expire until May 31, 1999, and the Public Service Company of Colorado is registered as a user.

03.08 (003) Miscellaneous

**COMMENT**

The commentor encourages DOE support for a grant proposal (the Equal Partners Act) to study issues associated with the storage of spent nuclear fuel in South Carolina.

**RESPONSE**

Support for specific grant proposals is outside the scope of this EIS; however, DOE is receptive to unsolicited proposals related to managing SNF.

03.08 (004) Miscellaneous

**COMMENT**

The commentor points out that even with citizen's groups "going to bat" to stop waste shipments all over the country, waste is still being shipped.

**RESPONSE**

DOE is mandated by Congress to perform certain activities, among them to manage its SNF in a safe and secure manner. With this EIS, DOE is examining a range of management alternatives that include varying amounts of transportation of SNF among sites for management.

03.08 (006) Miscellaneous

**COMMENT**

The commentor is opposed to the Idaho National Engineering Laboratory's perceived treatment under the Nuclear Weapons Complex Reconfiguration Program, also known as Complex 21.

**RESPONSE**

The Nuclear Weapons Complex Reconfiguration Programmatic EIS, which has been split into two EISs, the Programmatic EIS for Tritium Supply and Recycling and the Stockpile Stewardship and Management Programmatic EIS, is discussed in Volume 1, section 1.2.2 of this EIS; however, general issues related to that program are beyond the scope of this EIS.

03.08 (007) Miscellaneous

**COMMENT**

Commentors express the need to inform the public of DOE activities and note the value of providing information on radiation, waste management, risk, and other related topics. Such information should not end with the siting of a facility or program or be in the self interest of anyone.

**RESPONSE**

DOE has engaged in substantial public information programs and stakeholder initiatives to provide information to the public. All major Federal actions invoking NEPA review are publicized, and public hearings are advertised throughout potentially affected communities. All persons and organizations have an opportunity to request information from DOE and to provide comments during the scoping process and public review periods. Activities include providing speakers on a variety of topics on request to a wide range of audiences, promoting student awareness of the sciences, numerous public information programs, and the development of a website. The Department will continue to provide information on its programs and activities to those interested.
meetings and publications, and public information offices at all major DOE locations. DOE's policy is to fully and objectively inform the public of its activities and to involve the public in decisionmaking to the extent practicable.

See also the response to comment 03.03 (008).

03.08 (008) Miscellaneous

COMMENT
The commenter indicates that there should be objective international standards of accountability for the money being spent on weapons and their impacts on life.

RESPONSE
This EIS addresses interim management of DOE SNF until ultimate disposition. International standards of accountability and the fiscal efficiencies of cleanup activities are beyond the scope of this EIS. See also the response to comment 03.01 (001).

03.08 (009) Miscellaneous

COMMENT
The commenter makes statements regarding activities such as the 106C tank at the Hanford Site and litigation, performance assessment, and waste management activities at the Nevada Test Site.

RESPONSE
The activities in question are unrelated to the proposed actions, alternatives under consideration, or the decisions being facilitated through this EIS.

03.08 (010) Miscellaneous

COMMENT
Commentors express the opinion that DOE has not shown recent or historical concern for or interest in the public, future generations, workers, or the environment. Commentors mention both specific and general adverse impacts from past DOE programs and operations, and charge that DOE has demonstrated general abuse of responsibility.

RESPONSE
DOE is very much aware of public criticisms of its operations, both ongoing and historical. In this regard, the Secretary of Energy has publicly affirmed that current DOE policy and practice emphasize safety and environmental responsibility above all other program goals. DOE is formally committed to protecting the safety and health of its workers, the public, and the environment in consideration of current and future generations. DOE is also working to rectify and eliminate adverse environmental impacts from past programs, while ensuring that current activities are conducted without environmental insult.

03.08 (011) Miscellaneous

COMMENT
Commentors express the need for or urge DOE to consider independent review and recommendations as to the priorities, national policy, and/or scope of nuclear waste or spent nuclear fuel management or other DOE activities. Commentors mention the need for a comprehensive nuclear policy and local oversight of DOE activities, public debate, referendums, appointment of independent commissions or "Blue Ribbon" panels, or other "balanced" advisory groups including participation of citizens, experts, workers, and/or state and local officials. Such groups should be independent of DOE and the Navy. One commenter suggests that the supervision of radiation health research be conducted by a nonmilitary agency independent of the military and weapons production, and that oversight be conducted by qualified independent scientists and representatives of site workers and nearby communities.

RESPONSE
DOE has and continues to take advantage of independent assessment and oversight of various programs and operations. DOE is subject to independent regulations and oversight under numerous environmental regulations such as the Clean Air Act, the Clean Water Act, and CERCLA under the jurisdiction of EPA or the states, as appropriate. Policy regarding additional oversight is under review; however, such decisions are beyond the scope of this EIS. DOE often requests or cooperates with review of its operations by independent organizations such as the National Academy of Sciences, the Congressionally appointed Defense Nuclear Facilities Safety Board, the recently appointed Galvin Commission, etc. The Centers for Disease Control and Prevention is conducting radiological dose reconstruction studies related to past DOE releases.

The DOE complex-wide Environmental Management Advisory Board has been chartered under the Federal Advisory Committee Act. The Board consists of independent citizens from various backgrounds tasked with advising DOE on local and national policy issues. Local site-specific advisory boards are also being established. For instance, the INEL Site-Specific Advisory Board reviewed and commented on this EIS. DOE recognizes the value of independent and interdisciplinary review of not only its NEPA documentation, but its policies, priorities, and practices. In the case of this EIS, decisions will be made by the Secretary of Energy and will include consideration of public and agency comments on the EIS.
03.08 (012) Miscellaneous

COMMENT

Commentors express opinions regarding whether the nonproliferation policy justifies the return of spent nuclear fuel of United States origin from foreign research reactors. Most commentors express the opinion that countries where such spent nuclear fuel currently exist do not pose a nonproliferation threat and can safely store such material without undue risk. Other commentors express the opinion that these countries pose a nonproliferation threat and support return of spent nuclear fuel of United States origin from foreign research reactors.

RESPONSE

While nuclear nonproliferation policy is an issue affecting decisions regarding the management of SNF either within the United States or abroad, that issue and the merits of various aspects of United States nonproliferation policy are determined by the President and Congress. The nonproliferation policy is a consideration in the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft), which analyzes the environmental impacts of returning FRR SNF to the United States and after it has reached a U.S. port and been readied for shipment to a DOE SNF storage location.

See also the response to comment 06.09 (013).

03.08 (013) Miscellaneous

COMMENT

Commentors express humorous or other opinions regarding institutions, officials, issues, and the like.

RESPONSE

Such comments do not provide substance conducive to a response. DOE recognizes that some commentors disagree with the need for and the alternatives being considered to manage SNF.

03.08 (014) Miscellaneous

COMMENT

The commentor notes that cost factors are not addressed in the EIS, but will likely be important to the decision process. The commentor also states that in combination with other factors, such as the Integral Fast Reactor already being at the Idaho National Engineering Laboratory, the decision will be driven toward keeping spent nuclear fuels at the Idaho National Engineering Laboratory and, possibly, toward bringing more in, just based on cost considerations, suggesting that this is both an irretrievable commitment of resources and "piercemealing" the EIS.

03.08 (015) Miscellaneous

COMMENT

The commentor states that the EIS conclusion that the alternative proposals for spent nuclear fuel management have small environmental effects is logical if it is assumed that there will be compliance with existing Federal laws and regulations.

RESPONSE

DOE is committed to comply with all applicable Federal and state laws and regulations. Further, it is DOE policy to implement legally applicable radiation protection standards and to consider and adopt, as appropriate, recommendations by authoritative organizations (e.g., the National Council on Radiation Protection and Measurement, the International Commission on Radiological Protection, the Nuclear Regulatory Commission). The No Action alternative in the EIS, which provides an environmental baseline for comparison of the impacts of the other alternatives, would not meet all regulatory requirements. DOE considered regulatory compliance in its identification of the preferred alternative.

03.08 (016) Miscellaneous

COMMENT

Commentors indicate that DOE must select, in its preferred alternative and in the EIS Record of Decision, an alternative that supports its contractual obligation to remove spent nuclear fuel from the West Valley Demonstration Project site.

RESPONSE

In developing its preferred alternative and the ROD, DOE has and will consider all contractual commitments, including those with the West Valley Demonstration Project. Negotiations are currently under way between DOE and the New York State Energy Research and Development Authority, per section 8(c) of their November 1986 Agreement, regarding extension of the date for removal of the SNF
from West Valley. A decision regarding removal of the SNF from West Valley must await publication of the ROD for this EIS.

See the response to comment 04.04 (008) for management of spent nuclear fuel under DOE's preferred alternative.

03.08 (017) Miscellaneous

COMMENT

Commentors state that all DOE sites are contaminated, and cleanup is not progressing quickly enough. Some commentors support continued research at Idaho National Engineering Laboratory and would like to see past issues resolved before additional wastes are brought in.

RESPONSE

DOE accepts the responsibility to operate its waste management activities in compliance with applicable requirements and continues to improve the procedures and technologies associated with waste management. Accordingly, lessons learned from past practices and knowledge gained from ongoing research and development programs are incorporated into future waste management programs. The purpose of this EIS is to further these objectives.

DOE's Environmental Restoration Program is responsible for responding to past releases to the environment. Specific decisions related to cleanup at INEL are generally addressed under an enforceable agreement executed by DOE, EPA Region X, and the State of Idaho on December 9, 1991, the FFA/CO. The FFA/CO establishes a comprehensive process to integrate the remediation requirements of CERCLA, and the corrective action requirements of RCRA and the State of Idaho's Hazardous Waste Management Act. Cleanup activities are conducted under the process and schedule established in the FFA/CO. RODs under the FFA/CO process are signed by all three agencies and represent a joint determination that protection of human health and the environment will be achieved through implementation of the selected remedy.

Environmental restoration efforts at INEL have progressed substantially since the FFA/CO was signed. As of March 1995, 10 of the 25 scheduled RODs have been successfully negotiated and signed by DOE, EPA, and the State of Idaho. These RODs have resulted in the implementation and/or completion of interim and final actions designed to reduce or eliminate hazards to human health and the environment. To date, all enforceable milestones set in accordance with the FFA/CO have been met, either on or ahead of schedule. Additional work is scheduled over the next several years, as detailed in this EIS and the FFA/CO.

Other DOE sites are responsible for negotiating similar agreements with the appropriate regulatory agencies and managing environmental restoration activities in accordance with these agreements, as discussed in Volume 1, Appendices A through F.

Specific details of the overall DOE Environmental Restoration Program in general are not within the scope of this EIS. The INEL Environmental Restoration Program is discussed in Volume 2, sections 2.2.6 and 7.2.5.

03.08 (018) Miscellaneous

COMMENT

The commenter suggests adding "current" to clarify the DOE and Navy mission statements in the Summary.

RESPONSE

The Summary has been edited to clarify the missions of both DOE and the Navy.

03.08 (019) Miscellaneous

COMMENT

The commenter states that DOE spends too much money, whether for environmental evaluations, public meetings, or waste and spent fuel activities.

RESPONSE

Congress dictates the responsibilities for which DOE will be held accountable. That accountability includes proper justification of the planning budget and fiscal accountability. This EIS was prepared pursuant to NEPA. The entire NEPA process, while sometimes costly, is expected to benefit the public because it provides the opportunity to be part of DOE's decision-making process. The NEPA process also benefits the public and the government by helping ensure cleaner and safer environments in and around Federal facilities.

03.08 (020) Miscellaneous

COMMENT

The commenter indicates DOE has been motivated or influenced by the corporations or monetary interests that manage the DOE sites, and requests that DOE not damage the environment.

RESPONSE

This EIS, with supported by significant work by outside consultants, was prepared by DOE. All analyses by consultants were carefully reviewed by DOE. Contractors who participated in preparing this document have no financial interest in decisions that will be made by the Secretary of Energy based on
this EIS. None of the management and operating contractors at the sites prepared the EIS, although they did provide data that was used in the preparation of the document. For this EIS, public comments have played a significant role in the decision process. The final decisions will be made using an objective approach, and will include such factors as DOE mission, cost, and technical feasibility. DOE’s final decision will not be influenced by corporations.

Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small.

03.08 (022) Miscellaneous
COMMENT
The commenter suggests that DOE change its radiation protection standards.
RESPONSE
It is beyond the scope of this EIS to establish radiation protection standards for DOE. Radiation protection standards are established by the National Association of Science and the National Council on Radiation Protection, considering the latest scientific information. These standards are also reviewed for consistency with international standards set by the International Council on Radiation Protection.

03.08 (023) Miscellaneous
COMMENT
Commentors suggest that funding for cleanup at the Idaho National Engineering Laboratory is not sufficient.
RESPONSE
Funding issues are beyond the scope of this EIS.

03.08 (024) Miscellaneous
COMMENT
The commenter states that the public should have a say in what waste comes into Idaho before it arrives.
RESPONSE
NEPA and its implementing regulations require public participation prior to an agency making a decision on a major proposed action. For this EIS, DOE provided extensive public participation opportunities.

In accordance with CEQ regulations, a Notice of Opportunity to comment on preparation of an EIS on DOE Programmatic Spent Nuclear Fuel Management and Environmental Restoration and Waste
4. PROPOSED ACTION AND ALTERNATIVES

4.1 Purpose and Need

04.01 (001) Purpose and Need

COMMENT

Many commentors state that the EIS does not adequately describe the purpose and need for the proposed action. One commentator is of the opinion that the stated purpose failed to demonstrate the need for a programmatic EIS.

RESPONSE

The purpose and need for DOE actions are described adequately in Volume 1, Chapter 2 and Volume 2, Chapter 1. Volume 1, Chapter 2 describes the need for DOE to provide a management strategy for a wide range of types of spent nuclear fuel (SNF) in varying conditions. Volume 2, Chapter 1 describes the need for DOE to implement a waste management program at the Idaho National Engineering Laboratory (INEL) that complements its environmental restoration program as set forth in the Federal Facility Agreement and Consent Order (FFA/CO).

The decisions that must be made to establish an effective SNF program are (a) where to conduct SNF management activities, (b) the appropriate facilities, capabilities, and technologies for SNF management, and (c) the research and development activities to support the SNF management program.

The integration of programmatic management of SNF and the INEL environmental restoration and waste management programs into a single EIS was based on analysis of the requirements of the Court with regard to SNF management activities at INEL. To fully evaluate all reasonable alternatives for SNF management activities at INEL, including Fort St. Vrain and Naval SNF, DOE considered it necessary to evaluate the national strategy for managing SNF. This allows the public and decisionmakers, the full perspective of reasonable alternatives. It also serves as a means to address nationwide vulnerabilities, as stated in Volume 1, Chapter 2. To meet the deadlines agreed to during litigation, it was necessary to withdraw programmatic SNF management from the Programmatic Environmental Restoration and Waste Management EIS (now the Waste Management Programmatic EIS) and include it in the INEL Environmental Restoration and Waste Management EIS.

See also the response to comment 05.09 (008).

04.01 (002) Purpose and Need

COMMENT

The commenter states that the EIS does not define the problem and motivation for getting the problem solved, except in terms of transportation.

RESPONSE

The problem varies with SNF type and waste type. The decision criteria used to compare the various alternatives and select the preferred alternatives was based in part on public comments, including the need to address specific problems and the public's desire to minimize transportation. The transportation analysis shows the maximum potential impacts among the proposed alternatives.

This information is used by the decisionmakers. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small. While there would be differences in the impacts among the alternatives, these differences by themselves are not sufficient to distinguish between alternatives.

04.01 (003) Purpose and Need

COMMENT

The commentator expresses the opinion that the EIS is really justifying continued operations of existing facilities, and a real mission needs to be established.

RESPONSE

The EIS evaluates a full range of alternatives to safely and effectively manage present and reasonably foreseeable quantities of SNF pending its permanent disposition. The purpose and need for the proposed actions are in Volume 1, Chapter 2. DOE believes this EIS adequately describes the SNF mission.

04.01 (004) Purpose and Need

COMMENT

The commentator suggests that a range of possible solutions be developed.

RESPONSE

Volume 1 of this EIS is programmatic; that is, it evaluates a full range of reasonable alternatives for SNF management activities on a nationwide basis. Volume 1, section 3.1 describes the preferred alternative for SNF management; Volume 2, section 3.4 describes the preferred alternative for SNF management, environmental restoration, and waste management at INEL.

Ultimate disposition of DOE SNF is a high priority. For planning purposes, DOE had determined that the SNF managed by DOE that is not otherwise dispositioned (e.g., chemically separated, with the high-
level waste being converted into a vitrified glass for repository disposal) is authorized for disposal in the first repository. This authorization is subject to the physical and statutory limits of the first repository, DOE SNF meeting repository acceptance criteria, and payment of fees. As part of its SNF management program, DOE would (1) stabilize the SNF as needed to ensure safe interim storage, (2) characterize the existing SNF inventory to assess compliance with the first repository's acceptance criteria, and (3) determine what processing, if any, is required to meet the criteria. Decisions regarding the actual disposition of DOE SNF would follow appropriate review under NEPA and be subject to licensing by NRC. This path forward would be implemented so as to minimize impacts on the first repository schedule.

**04.01 (005) Purpose and Need**

**COMMENT**

Commentors state that DOE is wasting taxpayer dollars focusing on temporary storage rather than ultimate disposition and question why preparing spent nuclear fuel for final disposition would take 40 years. In addition, commentors express opinions that solutions are not evident for solving the problems associated with spent nuclear fuel management.

**RESPONSE**

The independent Defense Nuclear Facility Safety Board have determined that imminent hazards could arise within several years unless additional interim SNF storage capabilities are available. Yucca Mountain is being studied as the potential site for the first geologic repository. If the site is found suitable, acceptance of commercial SNF is expected to begin 2010. Although the date for acceptance of DOE high-level waste is planned to be 2015, the date for acceptance of DOE SNF at the repository has not been finalized. While DOE is committed to developing a Federal geologic repository for permanent isolation of SNF and high-level wastes, technologies for final SNF disposition cannot be specified in advance of repository performance and associated acceptance criteria for SNF and high-level waste. DOE acknowledges these challenges by allowing up to 40 years for ultimate disposition to begin in a suitable repository.

The 40-year period is not needed to prepare SNF for final disposition, but is judged to be an upper limit on the time needed for a repository to be available. Pending availability of such disposal options, DOE is committed to providing safe and environmentally sound storage and management of SNF.

Although activities associated with licensing and opening the SNF and high-level waste repositories are outside the scope of this EIS, general solutions for safe interim management of SNF are included in this EIS. General solutions for managing SNF have been developed and are discussed in Volume 1,
section 1.1 and Appendix J. Technologies that have been developed to enable SNF to be managed safely during the storage period are described in Volume 1, Appendix J. A combination of these technologies may satisfy many of the eventual repository acceptance criteria. In addition, consideration is given in the alternatives analyzed in the EIS for providing or maintaining processing flexibility that may be required to meet the repository acceptance criteria.

04.01 (008) Purpose and Need

COMMENT
The commentor states that the EIS needs to explain the actions needed, problems identified and solutions, and then identify locations.

RESPONSE
Volume 1, Chapter 2 describes the purpose and need for the proposed action. The alternatives, described in Chapter 3, provide potential solutions to these problems/needs. DOE considers environmental impacts, mission impacts, cost effectiveness, and public input in making its decision after a Final EIS is published.

04.01 (009) Purpose and Need

COMMENT
The commentor states that the EIS should not address the nationwide inventory of spent nuclear fuel. This unnecessary evaluation along with configuring this programmatic and INEL site-wide EIS leads one to believe that the INEL is designated as the national site for spent fuel management, thus business as usual.

RESPONSE
This EIS is a comprehensive national review of management options for a large inventory of DOE SNF in response to requests to do so by the State of Idaho. In 1991, the State of Idaho and DOE became involved in litigation over SNF. In a Court opinion dated May 2, 1992, DOE was advised to analyze shipments of fuel from the Fort St. Vrain reactor in a comprehensive EIS, which also analyzes and discusses all proposed shipments of nuclear waste to INEL from all sources. The State of Idaho requested that the Court allow it the opportunity to amend its pleading, which the court allowed. In its amended counterclaim, the State of Idaho argued that DOE must analyze, in a comprehensive EIS, all actions involving receiving and storing SNF, and must study all reasonable alternatives to the receiving SNF at INEL. This argument by the State of Idaho helped shape the scope of the EIS. INEL is being considered with four other DOE sites for the management for DOE SNF under a number of reasonable action alternatives. Additionally, five sites are being considered for the management of Naval SNF fuel only. No decision have been made regarding any sites. See the response to comments 04.04 (008) and 04.04 (011).

4.2 Proposed Action

04.02 (001) Proposed Action

COMMENT
The commentor states that the EIS is not adequate because it fails to clearly define the proposed action.

RESPONSE
DOE has revised Volume 1, Chapter 2 and Volume 2, Chapter 1 to more clearly state the proposed actions. Volume 1, Chapter 2 describes the background factors leading to the proposed action and sets forth the action proposed by DOE. DOE states that as a primary part of establishing an effective SNF management program, DOE must first analyze complex-wide strategic questions regarding SNF management. These questions include analyzing the most appropriate location(s) for SNF management; the methods for managing SNF; and the necessary research and development activities that would be integrated into the management program. This type of EIS is commonly known as a "programmatic" or "program" EIS, and is acceptable under the Council on Environmental Quality (CEQ) regulations at 40 CFR 1502.4(b). As emphasized in Volume 1, Chapter 2, once decisions are made regarding the appropriate locations(s) for SNF management, questions on site-specific and technical implementation of the SNF management program will be analyzed in subsequent tiered NEPA reviews, as appropriate.

Volume 2, Chapter 1 of the EIS describes the purpose and need for agency action at INEL. DOE states in that section that as part of developing and implementing a program for SNF management, environmental restoration, and waste management at INEL, site-specific decisions must be made regarding research and development activities, compliance with legal requirements, and management of wastes, SNF, and environmental restoration projects, all in an environmentally sound manner. The proposed action in Volume 2 of the EIS is adequate under CEQ regulations. Volume 2 evaluates the INEL site-specific alternatives for managing SNF under all programmatic alternatives evaluated in Volume 1.

4.3 Alternatives Analyzed

04.03 (001) Alternatives Analyzed

COMMENT
Many commentors state that the generation of spent nuclear fuel should be minimized or stopped until there is a long-term management plan in place, existing facilities and problems are corrected, or there is a means of ultimate disposition. Some commentors state that the No Action alternative would facilitate
that process, while others state that the EIS is inadequate because it does not address the cradle-to-grave aspects of spent nuclear fuel.

RESPONSE

Eliminating all current and future generation of DOE SNF would not significantly diminish the handling, storage, and final disposition challenges facing DOE. Also, many products produced by the operating reactors would cease to exist, as stated in Volume 1, Appendix E, section 2.1.1. DOE SNF inventories are addressed in Volume 1, section 1.1 and for INEL in Volume 2, section 2.2.5. Approximately 86 percent of the current inventory originated in DOE weapons-production reactors that have ceased to operate. DOE experimental reactors, most of which have been shut down, generated another 8 percent. According to Volume 1, Table 1-1, the additional SNF, in metric tons of heavy metal (MTHM), to be generated over the next 40 years (until 2035) will amount to only a 3-percent increase in the current inventory. The operations that generate DOE and Navy SNF are carried out to implement programs and policies established by the President and Congress; therefore, cessation of these activities would require changes in these policies and programs. Such changes are outside the scope of this EIS.

Problems at existing storage facilities have been identified in the Spent Fuel Working Group Report on Inventory and Storage of the Department's Spent Nuclear Fuel and Other Reactor Irradiated Nuclear Materials and Their Environmental, Safety and Health Vulnerabilities. This report, called the spent nuclear fuel vulnerability assessment, and associated action plans to resolve identified vulnerabilities are acknowledged in Volume 1, section 1.1.2 and Appendix J-2, and Volume 2, section 2.2.5 for INEL. Additional site-specific information is in Volume 1, Appendices A through F. Environmental consequences of SNF management are presented for all alternatives in Volume 1, sections 5.1 and 5.2, and mitigation measures are discussed in section 5.7. For all alternatives analyzed, impacts would be small.

General solutions for managing SNF have been developed and are discussed in Volume 1, section 1.1.3 and Appendix J. Therein it is noted that technologies for final disposition of SNF cannot be specified in advance of repository acceptance criteria. These requirements are several years from completion and approval, but a combination of the technologies described in Appendix J may satisfy the eventual acceptance criteria. Furthermore, consideration is given by the alternatives analyzed in the EIS to providing or maintaining processing flexibility that may prove necessary to meet the acceptance criteria. Consequently, although the ultimate disposition of SNF is a high priority for DOE, the details of disposition activities have not been finalized and are beyond the scope of this EIS.

Pending availability of such disposal options, DOE must provide for safe and environmentally sound storage and management of these materials. Several of the action alternatives being evaluated in this EIS also provide the flexibility to economically site facilities that may be necessary to process materials, high-level waste, or SNF to meet waste acceptance criteria that are evolving for the repositories. The implementation of safe interim storage, and the capability to meet necessary repository disposal criteria represent the solution that DOE seeks to define with this EIS.

04.03 (002) Alternatives Analyzed

COMMENT

The commenter states that the United States is planning to receive foreign spent nuclear fuel for storage, but it should be kept outside the United States. The commenter also raises an issue about the lack of capacity to currently store such spent nuclear fuel.

RESPONSE

Alternatives related to the policy on managing SNF of United States origin from foreign research reactors (FRRs) are being analyzed in a separate EIS. However, this EIS does analyze the impacts of transporting and managing FRR SNF should a decision to accept such fuel be made. This effectively bounds the analysis for reasonably foreseeable management of the SNF under consideration. DOE will not make a final decision on the acceptance of that fuel until the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft) and this EIS are completed. Depending on decisions made under this EIS, capacity at the Savannah River Site (SRS), INEL, or both may need to be enhanced to support on-site SNF management activities.

04.03 (003) Alternatives Analyzed

COMMENT

The commenter suggests that foreign and domestic non-DOE shipments should not be included in the Decentralization alternative, and only the no-exam case for the Navy spent nuclear fuel should be included.

RESPONSE

The changes to the Decentralization alternative the commenter recommends essentially equate to the No Action alternative. The EIS evaluates environmental impacts of all alternatives, including the No Action alternative, and concludes that these impacts would be small.

04.03 (004) Alternatives Analyzed

COMMENT

The commenter states that all alternatives present catastrophic risk to present and future populations and are enormously expensive.
RESPONSE
The estimated costs of the alternatives are summarized in Volume 1, section 3.3. For all of the alternatives considered in this EIS, the impacts presented in Volume 1, Appendix K would be small. See also the response to comment 05.12.07.01 (001) regarding risks due to postulated accidents and to comment 05.10.02 (007) regarding fears.

04.03 (005) Alternatives Analyzed
COMMENT
Commentors express the opinion that the EIS fails to assess an inclusive range of alternatives and has not considered all options or sites, and that DOE and Navy minds are limited to out-of-date solutions.

RESPONSE
DOE believes that the range of alternatives analyzed in the EIS are inclusive and in accordance with the requirements of considering a reasonable range of alternatives under the NEPA and CEQ regulations. Alternatives range from the No Action alternative to an alternative that would consolidate all SNF at a single site, the Centralization alternative. Alternatives dismissed are discussed in Volume 1, section 3.2 and Volume 2, section 3.2. DOE believes the discussions of the bases for dismissing other possible alternatives are adequate. Analysis and discussion of all alternatives that can be postulated is an impossibly large task and is not required by existing regulations. See also response to the comment 04.03.01 (001) regarding selection of alternative sites.

04.03 (006) Alternatives Analyzed
COMMENT
The commentor states that the alternatives provided are too broad and the EIS should analyze different storage possibilities and technologies.

RESPONSE
The purpose of Volume 1 of the EIS is to provide the public and decisionmakers with a programmatic view of the proposed action and alternatives. The alternatives are discussed at a level appropriate for an EIS covering all DOE SNF at a large number of sites and aimed at reaching a decision on the best strategy for managing of DOE SNF. Once an alternative has been selected, each action within the selected alternative may require additional documentation at the site-specific level to satisfy the provisions of the NEPA. Volume 2 is a site-specific assessment of SNF management, environmental restoration, and waste management alternatives at INEL. Therefore, the alternatives discussed in Volume 2 are more specific than those in Volume 1. However, some actions under Volume 2 alternatives may also require additional environmental documentation if they are part of the selected alternative.

04.03 (008) Alternatives Analyzed
COMMENT
The commentor states that the environmental restoration and waste management alternatives contain components that are unreasonable, and none of them matches what DOE plans to do.

RESPONSE
The proposed action presents a complex, almost infinite, number of possible alternatives. In this circumstance, NEPA requires evaluation of a reasonable range of specific alternatives. DOE's alternatives cover the full spectrum of reasonable alternatives ranging from minimizing environmental restoration and waste management activities at INEL, to maximizing those activities at the site. A decision based on these alternatives will be contained in the Record of Decision (ROD).

04.03 (009) Alternatives Analyzed
COMMENT
The commentor notes that the structure of the Decentralization alternative appears to dictate a result that targets the Savannah River Site and the I-halo National Engineering Laboratory.

RESPONSE
It is true that if the Decentralization alternative is selected and implemented as the DOE management strategy for SNF, SRS and INEL would receive most of the limited fuel transfers within the DOE complex. These receipts are only a small fraction of those proposed under other action alternatives or the SNF currently managed at these sites.

04.03 (010) Alternatives Analyzed
COMMENT
The commentor suggests that the EIS include some solutions like on-site storage in dual-purpose dry casks.

RESPONSE
Dry-cask storage is included in the activities identified in the overview of technologies in Volume 1, Appendix J. If a dual-purpose cask were licensed, it could be used for the SNF analyzed in this document.

In addition, DOE is preparing an EIS that considers use of a multi-purpose canister-based system for managing certain types of SNF.
04.03 (012) Alternatives Analyzed

COMMENT
The commenter considers interim centralization integral to a deep geologic repository and recommends a number of processing and remediation actions be taken.

RESPONSE
The processing and remediation suggestions proposed by the commenter are beyond the scope of this EIS, but will be addressed in the Waste Management Programmatic EIS or in site-specific NEPA documents.

04.03 (015) Alternatives Analyzed

COMMENT
Commentors state that the EIS does not explore alternatives for storing spent nuclear fuel other than at the Idaho National Engineering Laboratory.

RESPONSE
This EIS explores alternatives that would store SNF at locations other than INEL, as described in detail in Volume 1, Chapter 3 and Appendix F, section 2.2. If INEL is not chosen as the western site, SNF could be stored at the Hanford Site, the Savannah River Site, the Oak Ridge Reservation, and the Nevada Test Site under the Centralization alternative and by the Regionalization by geography alternative. Under these alternatives, all SNF currently stored at INEL would be moved to other sites. The No Action and Decentralization alternatives would store the SNF close to the point of generation.

04.03 (016) Alternatives Analyzed

COMMENT
The commenter states that in some respects, it is difficult to determine the difference between the “decentralized” and “regionalized” approaches.

RESPONSE
The Decentralization alternative would maintain existing SNF at current locations and new SNF at or near the site of generation. The Regionalization alternative involves transporting SNF from one DOE site to another, with all of it stored at two or three DOE sites, based on fuel type or geography. These alternatives do have some features in common, e.g., under some options of each alternative, university and Navy SNF would be transported to DOE sites.

04.03 (017) Alternatives Analyzed

COMMENT
The commenter states that the EIS fails to identify alternative projects and analyze them because waste streams drive the EIS.

04.03 (018) Alternatives Analyzed

COMMENT
The commenter asks why other nations are not considered in this EIS as spent nuclear fuel storage alternatives.

RESPONSE
The United States nuclear weapons nonproliferation policy is summarized in the White House Fact Sheet on Nonproliferation and Export Control Policy, September 27, 1993. Under its nuclear nonproliferation policy, the United States seeks to reduce or eliminate, where possible, the accumulation of stockpiles of highly enriched uranium or plutonium. Based on these considerations, this alternative was eliminated from detailed analysis (see Volume 1, section 3.2 and Volume 1, Appendix D, section 3.6). In addition, the design and operating characteristics of the fuel for Naval reactors and certain portions of other SNF are classified. As such, foreign access is prohibited without going through a complex process prescribed in the Atomic Energy Act involving a government agreement approved by the President and reviewed by Congress. Such access is not allowed under existing agreements and strict Nuclear Regulatory Commission (NRC) licensing requirements.

04.03 (019) Alternatives Analyzed

COMMENT
The commenter notes that the alternatives evaluated in the EIS do not reflect DOE’s spent fuel strategic plan.

RESPONSE
DOE issued the DOE-Owned Spent Nuclear Fuel Strategic Plan on December 30, 1994. The strategic plan is consistent with the alternatives in the EIS. The strategic plan needs to be reevaluated to ensure it reflects the strategic management options selected in the EIS ROD.
04.03 (020) Alternatives Analyzed

COMMENT
The commentor states that adding a "transition time" to the No Action alternative changes the intent of the alternative.

RESPONSE
The transition period required relates to the time needed to implement a specific alternative should it be selected. For any of the alternatives, time is needed for safe, orderly transition of SNF activities. For example, the transition time needed for the No Action alternative is described in Volume 1, Appendix D, section 3.8. As described therein, the transition would make use of existing facilities and transportation methods described under the alternatives considered. The risks associated with all of the alternatives considered for management of Naval SNF, summarized in Volume 1, Appendix D, Chapter 3, would be small, so the risks associated with the transition period would be just as small.

The EIS has been revised to reflect the transition period of 3 to 20 years, with the exception of the 1992/1993 Planning Basis alternative, which has no transition period.

04.03 (021) Alternatives Analyzed

COMMENT
Commentors state that the alternatives or the range of alternatives are inadequate.

RESPONSE
Volume 1, section 3.1 describes DOE's preferred alternative for programmatic SNF management; Volume 2, section 3.4 describes the preferred alternative for SNF management, environmental restoration and waste management activities at INEL. See the responses to comments 04.04 (008) and 04.04 (011).

The programmatic action that DOE ultimately selects is not necessarily limited to one of the alternatives presented. For example, a hybrid alternative could be developed that would incorporate actions from one or more of the five alternatives analyzed. Moreover, the programmatic decisions will not identify all site-specific SNF management options. If appropriate, the decisions would be made after additional site-specific NEPA evaluation.

04.03 (026) Alternatives Analyzed

COMMENT
The commentor states that the EIS does not scientifically examine if Idaho would be safe to store waste and asks if any evidence exists.

RESPONSE
Volume 2, Chapter 5 examines the potential environmental consequences of the alternatives considered, many of which involve storing waste. This chapter explains the evaluations conducted and their results. Volume 2, section 3.3 summarizes and compares the potential consequences of the alternatives. All alternatives considered, including storing SNF in Idaho, would be safe, as evidenced by the small environmental impacts reported in this EIS. Supporting appendices and reference material provide increasing levels of detail on the scientific investigations conducted.

04.03 (027) Alternatives Analyzed

COMMENT
Commentors state that some of DOE's spent nuclear fuel or foreign research reactor fuel should be processed overseas at existing facilities and must be included as an alternative in this EIS. One commentor expresses the opinion that the option of shipping spent nuclear fuel to British Nuclear Fuels chemical processing facilities in England is not the best choice.

RESPONSE
Volume 1, section 3.2.5 and Appendix A have been revised in response to comments to include discussion of foreign processing of DOE SNF being evaluated in the FRR EIS. SNF reprocessing to recover uranium and plutonium for defense purposes is being phased out. As discussed in Volume 1, section 1.1.3, SNF processing is being evaluated for certain fuel types for purposes such as stabilization, which would not eliminate the need for storage and ultimate disposition, such as disposal. Any future decision to perform overseas processing of N-Reactor or any other specific SNF type will be subject to additional site-specific or program-specific NEPA review tiered from this EIS.

04.03 (031) Alternatives Analyzed

COMMENT
The commentor notes that solutions do not exist to solve the problem of the spent nuclear fuel that DOE has already generated.

RESPONSE
Volume 1, section 3.1 and Volume 2, section 3.4 describe the preferred alternatives for SNF management nationally and at the INEL, respectively. See also the responses to comments 04.04 (008) and 04.04 (011).

The programmatic action that DOE ultimately selects is not necessarily limited to one of the alternatives presented. For example, the ROD could incorporate actions from one or more of the five alternatives.
analyzed. Moreover, the programmatic decisions will not identify all site-specific SNF management options. If appropriate, the decisions would be implemented after additional site-specific NEPA evaluation.

04.03 (032) Alternatives Analyzed

COMMENT
The commentor states that under some alternatives it could take years to build required facilities and suggests that specific language be included under each alternative to permit necessary actions, including the shipment of spent nuclear fuel to other sites and the provision of additional storage facilities on site.

RESPONSE
Volume 1, section 3.1 and Volume 1, Appendix D, section 3.8 describe the transition period required for implementation of the alternatives considered, and the impacts associated with the transition. The programmatic action that DOE ultimately selects is not necessarily limited to one of the alternatives presented. For example, a hybrid alternative could be developed that would incorporate actions from one or more of the five alternatives analyzed. Moreover, the programmatic decisions will not identify all site-specific SNF management options. If appropriate, decisions on implementation would be made after additional site-specific NEPA evaluation.

04.03 (033) Alternatives Analyzed

COMMENT
The commentor questions how spent nuclear fuel handling experience accumulates with regard to the EIS Summary statement on page 21 that "DOE does not consider the Nevada Test Site to be a preferred site for the management of spent nuclear fuel because of the...Nevada Test Site's lack of current spent nuclear fuel handling experience."

RESPONSE
An overview of SNF management is in Volume 1, section 1.1, and the consequences of implementing the alternatives are presented in Volume 1, Chapter 5. Current management practices at each of the alternatives are discussed in Volume 1, site-specific Appendices A through F, and the histories and past missions of these sites are also presented in these appendices. Supporting information on the types of SNF and their origins is given in Volume 1, Appendix J. Experience with handling DOE SNF generally has been acquired in connection with operating DOE nuclear reactors, particularly during refueling and storage activities. Several DOE sites also were prominently involved in past reprocessing of SNF to extract fissile materials for reuse. Relatively little reactor operation has occurred at the Nevada Test Site, and no reprocessing has occurred there. No SNF handling activities have occurred at the Nevada Test Site since 1986, as discussed in Volume 1, Appendix F, Part Two. See also the response to comment 04.03.01 (028).

04.03 (036) Alternatives Analyzed

COMMENT
The commentor states that the EIS leads one to believe that the Savannah River Site does not handle waste material as effectively as the INEL.

RESPONSE
This EIS analyzes all alternatives objectively. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small.

04.03 (037) Alternatives Analyzed

COMMENT
The commentor states that the EIS does not consider leaving Fort St. Vrain spent nuclear fuel in Colorado where it is currently stored in a Nuclear Regulatory Commission licensed storage facility, nor does it acknowledge that the foreign research reactor fuel could be processed or safely stored in Europe or the United Kingdom.

RESPONSE
Volume 1, Appendix E, section 2.2 addresses the alternative of leaving the Fort St. Vrain SNF in Colorado as an alternative to the Fort St. Vrain SNF Shipment and Storage Project. Under all of the alternatives considered, the impacts of the proposed alternatives would be small. See also the response to comment 04.03 (027).

04.03 (038) Alternatives Analyzed

COMMENT
The commentor notes that the description of the No Action alternative includes minimal spent nuclear fuel related research and development and it is not obvious why, because there is already plenty of spent nuclear fuel at the Idaho National Engineering Laboratory that could be used for research and development.

RESPONSE
Volume 1, section 3.1.1 discusses the No Action alternative. Section 3.1.1 shows that there would be no additional shipments to INEL, except during the transition period. The No Action alternative seeks to analyze a baseline condition of minimal activity against which the other alternatives can be measured; therefore, it is defined as having minimal research and development. Minimal research and development is not a consequence of ceasing shipments of SNF to INEL.
04.03 (039) Alternatives Analyzed
COMMENT
Commentors state that alternative descriptions in Volume 1, Tables 3-1 through 3-4 mention the fuel storage problems at Test Area North, but not at other storage facilities at the Idaho National Engineering Laboratory that were identified as not meeting current standards. The commentor adds that no matter what alternative is selected, spent nuclear fuel should be moved from all facilities that do not meet current standards.
RESPONSE
Volume 1, Appendix B, Table 3-2, and Volume 2, Appendix F detail potential SNF projects required for each alternative. Other potential upgrades or replacement facilities that may be required to implement a specific alternative at the site are included for each alternative analysis in Volume 1, section 3.1, and more detailed analyses are provided in the Volume 1 site-specific Appendices A through F.

04.03 (040) Alternatives Analyzed
COMMENT
The commentor states that after identifying the spent fuel problems to be addressed, that various alternatives for resolution should have been explored, including design of storage facilities, what types of processing and handling are needed, and whether alternative types of fuel can improve the safety of long-term storage.
RESPONSE
Volume 1, Chapter 2 states that DOE needs to make complex-wide strategic decisions for managing SNF for the next 40 years. The EIS further states that because DOE is not ready to decide on the ultimate disposition of SNF, alternatives for technologies for disposition are not within the scope of this EIS.

The EIS discusses the various vulnerabilities identified with existing SNF storage facilities around the DOE complex. These problems are addressed in the EIS under the various alternatives. Alternatives for resolving problems at individual sites will be addressed on a site-specific basis in separate environmental documentation.

DOE believes that the range of alternatives analyzed in the EIS are inclusive and in accordance with the philosophy of considering a full range of reasonable alternatives, as required by NEPA and CEQ regulations. Analysis and discussion of every alternative that can be postulated is an impossibly large task and is not required by existing regulations.

Volume 1, section 3.1 and Volume 2, section 3.4 describe the preferred alternatives for programmatic SNF management, and SNF management, environmental restoration, and waste management at the INEL, respectively. See also the responses to comments 04.04 (008) and 04.04 (011).

04.03 (041) Alternatives Analyzed
COMMENT
The commentor notes that projections of and disposition plans for the volume of waste that would be generated by spent fuel activities are key issues that merit attention in the EIS.
RESPONSE
The projections of waste generation associated with SNF management activities are summarized for each alternative in Volume 1, section 5.1 of the EIS. For example, Figure 5-1 summarizes the projections for the No Action alternative. All waste generation data is summarized in Volume 1, Appendix K. Additional site-specific information is provided in the Volume 1 site-specific Appendices A through F. DOE disposition plans will be negotiated on a site-specific basis under FFA/COs.

04.03 (042) Alternatives Analyzed
COMMENT
The commentor objects to the indefinite dates or storage and transport to a possible permanent site. The commentor asserts that nuclear fuel has been and will continue to be stored improperly. The commentor questions why such deterioration is expected under only the No Action alternative.
RESPONSE
Ultimate disposition of DOE SNF is a high priority. For planning purposes, DOE had determined that the SNF managed by DOE that is not otherwise dispositioned (e.g., chemically separated, with the high-level waste being converted into a vitrified glass for repository disposal) is authorized for disposal in the first repository. This authorization is subject to the physical and statutory limits of the first repository. DOE SNF meeting repository acceptance criteria, and payment or fees. As part of its SNF management program, DOE would (1) stabilize the SNF as needed to ensure safe interim storage, (2) characterize the existing SNF inventory to assess compliance with the first repository's acceptance criteria, and (3) determine what processing, if any, is required to meet the criteria. Decisions regarding the actual disposition of DOE SNF would follow appropriate review under NEPA and, subject to licensing by NRC. This path forward would be implemented so as to minimize impacts on the first repository schedule.
Given the current first repository schedule and queue for emplacement, DOE must be prepared to store its SNF for an extended period, currently estimated not to exceed 40 years. DOE believes that the alternatives in the EIS represent reasonable alternatives for safely managing SNF.

The No Action alternative, which is required by NEPA, is an alternative analyzed as a baseline for comparison. This alternative assumes only minimal safety upgrades to existing facilities, and no new facilities. Under this alternative, existing conditions would largely continue and some fuel could deteriorate. On the other hand, all other alternatives proposed would use upgrades and new facilities to ensure improved storage conditions and to stabilize deteriorated SNF. See also the response to comment 06.01 (002).

04.03 (043) Alternatives Analyzed

COMMENT
The commentor states that the EIS should clarify in detail how hazardous waste management activities at the INEL will be handled under each alternative and how their differences will affect the facility’s ability to comply with current regulatory requirements, such as land ban requirements.

RESPONSE
A discussion of hazardous waste management practices at INEL is provided in Volume 2, section 3.1.3, which notes that the DOE complex relies primarily on the private sector for disposal of hazardous waste at licensed and permitted facilities. Few changes from these practices are assumed for any alternative, so that the facility’s ability to comply with current regulatory requirements, such as land ban requirements, are basically unaffected.

04.03 (045) Alternatives Analyzed

COMMENT
The commentor expresses the opinion that the mix and match of various proposals within the alternatives frustrates meaningful comment on the environmental acceptability of the future management of the INEL.

RESPONSE
Please see responses to comments 04.03.02 (007) and 05.08.03 (015). Additionally, the alternatives in the EIS are purposefully broad so that courses of action, bounded by the analyses of environmental consequences, can be developed and tailored within and between alternatives. Narrowing the scope of each alternative or increasing the number of alternatives to be more detail specific would further complicate the analysis and clear presentation of environmental consequences. DOE did not identify a preferred alternative in the Draft EIS, but has in the Final EIS following consideration of public comments, including consultation with the Shoshone-Bannock Tribes. The course of action to be followed will be published in the ROD.

04.03 (047) Alternatives Analyzed

COMMENT
The commentor states that the EIS does not contain an alternative for low-level waste disposal.

RESPONSE
Volume 2, section 3.1 discusses alternatives for low-level waste disposal. Volume 2, Appendix F discusses project-specific options for low-level waste disposal. The impacts for the alternatives are discussed in Volume 2, Chapter 5, and would be small for all of the alternatives evaluated.

04.03 (048) Alternatives Analyzed

COMMENT
The commentor states that all storage should be monitored and not be in caverns or where it cannot be monitored and retrieved if necessary.

RESPONSE
Volume 1, section 3.1 summarizes the alternatives considered for managing SNF in this programmatic EIS. All of the alternatives considered would provide monitored and retrievable storage over the 40-year period discussed in this EIS.

04.03 (049) Alternatives Analyzed

COMMENT
The commentor suggests that the No Action alternative take maximum actions for safe and secure management of spent nuclear fuel.

RESPONSE
DOE agrees that actions must be taken for safe and secure SNF management. Volume 1, section 3.1 describes the No Action alternative, which is required by NEPA.

The DOE assessment of SNF vulnerabilities summarized in Volume 1, section 1.1 demonstrates that DOE must implement a minimal program to protect the environment and the health and safety of workers and the public. The No Action alternative provides a baseline for comparison of the impacts of the other alternatives. These impacts are summarized in Volume 1, Table 3-1.

04.03 (051) Alternatives Analyzed

COMMENT
The commentor states that the alternatives are not acceptable.
RESPONSE
This EIS considers management of DOE SNF pending ultimate disposition. DOE believes the analyses in this EIS are adequate to support a decision on this subject.

The NEPA, 42 USC Section 4371 et seq., and CEQ regulations at 40 CFR Section 1500 et seq. require that an EIS describe the purpose and need for the proposed action; alternatives, including no action; the affected environment; and environmental consequences associated with the proposed action and alternatives. Volumes 1 and 2 of this EIS meet these requirements. In each volume, Chapter 2 describes the purpose and need for the proposed action; Chapter 3 describes the alternatives being considered; Chapter 4 describes the affected environment; and Chapter 5 describes the environmental consequences.

04.03 (052) Alternatives Analyzed
COMMENT
The commentor states that the EIS does not cover research and development activities to render the spent nuclear fuel to a stable, environmentally benign form.

RESPONSE
Volume 1, section 3.1 and Appendices A through F cover a range of research and development activities, including an overview of potential technologies for SNF management. DOE's preferred alternative for SNF management, discussed in Volume 1, section 3.1, states that research and development would be undertaken for SNF management, including stabilization technologies.

04.03 (055) Alternatives Analyzed
COMMENT
The commentor asserts that the document indicates differences between alternatives and suggests that the alternatives that are better than others be identified.

RESPONSE
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts associated with all the alternatives considered in this EIS. The analysis shows that the impacts for all the alternatives considered would be small. While there are differences in the impacts among all these alternatives, the differences, by themselves, do not distinguish between the alternatives. Additional factors, such as agency mission, costs, ease of implementation, and public comments were considered in the identification of the preferred alternatives. These alternatives are identified in Volume 1, section 3.1 and Volume 2, section 3.4. See also the responses to comments 04.04 (008) and 04.04 (011).

04.03 (054) Alternatives Analyzed
COMMENT
The commentor states that foreign and private domestic processing of spent nuclear fuel must be included as an alternative in the EIS.

RESPONSE
Volume 1, Chapter 3 describes the alternatives considered in this programmatic EIS. Based on public input, Volume 1, section 3.2 was revised to include the evaluation of an option for foreign processing of N-Reactor SNF for the purposes of stabilization. No private facilities are known to exist for the processing of DOE SNF that could serve as reasonable alternatives compared with those evaluated in the EIS. Whereas DOE has an obligation under the NEPA to evaluate a range of reasonable alternatives (including the No Action alternative, whether deemed reasonable), NEPA and CEQ regulations clearly give deference to the discretion of the agency, in this case DOE, to dismiss alternatives that the agency considers unreasonable given the parameters of the purpose and need for the agency action. DOE believes this EIS presents a reasonable range of alternatives, and has been responsive to public comments by evaluating the option of foreign processing in Volume 1, section 3.2, as discussed. See also the response to comment 04.03.01 (001).

DOE has evaluated the potential need for processing SNF for stabilization purposes. Details can be found in Volume 1, Appendices A through C. Volume I, Appendix D, section 3.6.2 has been expanded to further explain why this alternative is not reasonable for Naval SNF.

04.03 (055) Alternatives Analyzed
COMMENT
The commentor questions why the alternative with the least environmental impact is not identified and preferred.

RESPONSE
There are no clear environmental discriminators between alternatives.

04.03 (056) Alternatives Analyzed
COMMENT
The commentor states that the EIS should discuss the use of existing spent nuclear fuel handling facilities at the Nevada Test Site, specifically E-MAD and R-MAD, in tandem with disposal at the Yucca Mountain site as a viable and cost-effective alternative that would minimize transportation requirements.
RESPONSE

Although the Nevada Test Site (NTS) is evaluated in the EIS as an alternative site for SNF management activities, DOE does not consider it to be a preferred site because Nevada is the host site for the Yucca Mountain Site Characterization Project and the Nevada Test Site lacks current SNF handling experience. As stated in Volume 1, Appendix F, Part Two, section 3.1, the Nevada Test Site provides a contrast to other potential sites because it represents a site that has no existing SNF infrastructure and does not currently generate or store any SNF. The existing SNF handling facilities mentioned by the commentor were not built or maintained to current design standards and without extensive analysis it is uncertain whether they may meet the minimum requirements necessary to consider them for modification. See also the response to comment 04.04 (008).

04.03 (057) Alternatives Analyzed

COMMENT

The commentor states that the Barnwell Plant should be considered and discussed in more detail as a viable alternative site for spent nuclear fuel management.

RESPONSE

The Barnwell Plant is considered for examination and storage of Naval SNF. A description of the Barnwell Plant and a discussion of its capabilities for Naval SNF storage and examination work is in Volume 1, Appendix D, Attachment E. As summarized in Attachment E, the Barnwell Plant would have to be acquired by DOE from its present private owners, and it would cost about $800 million to acquire and modify the plant. Once modified, the plant would provide the full range of water-pool and shielded-cell examination capabilities; however, the capability of the plant could be less than that of existing facilities at INEL.

04.03 (058) Alternatives Analyzed

COMMENT

The commentor expresses an opinion that the EIS does not address alternatives, it simply moves spent nuclear fuel around.

RESPONSE

Further shipments of spent nuclear fuel (SNF) would likely be needed when a decision is made regarding ultimate disposition in a repository. Assessment of the impacts of these shipments is not included in this EIS because the method for ultimate disposition has not been selected and such analyses would be premature. Volume 1 of the EIS describes the alternatives for managing of SNF until 2035. This amount of time may be required to make and implement a decision on ultimate disposition of DOE SNF. DOE has evaluated in the EIS a range of reasonable alternatives for safely managing SNF during the period 1995 to 2035.

To inform the public concerning SNF transportation issues, this EIS evaluates the impacts of transportation for a reasonable range of alternatives. The alternatives vary from no action, involving limited transport of radioactive material, to centralization, which involves extensive transport of radioactive material. The analyses in the EIS show that the potential risks from transportation of SNF would be small for all the alternatives considered. Based on comments received during public review of this EIS, minimizing transportation is one of the factors to be considered in the DOE decision-making process that will ultimately lead to a ROD.

04.03 (061) Alternatives Analyzed

COMMENT

The commentor states that the EIS fails to adequately assess alternatives, stating that high-level waste remains at the INEL under all alternatives analyzed. A specific example given was that all of the alternatives presented by DOE keep INEL high-level waste management activities at the Idaho Chemical Processing Plant, a site directly above the Snake River Plain aquifer.

RESPONSE

The EIS adequately considers a reasonable range of alternatives for managing high-level wastes. The commentor's implication that DOE should consider an alternative to move high-level waste to another site is not technically feasible. Because the Snake River Plain aquifer is hydrologically connected to, or beneath, the entire INEL site, on-site movement of the calcine for storage achieves no reduction in perceived risk to the aquifer. Liquid high-level waste can be transported, only by pipeline. Any alternative that would move this waste to another location, whether onsite or offsite, is thus considered unreasonable. The amount of high-level waste that is subjected to calcining to convert from a liquid to a solid waste form does, however, vary by alternative. The option of relocating the calcine bins from the Idaho Chemical Processing Plant to another DOE facility is not reasonable because the cost of constructing new bins is prohibitive. Therefore, for purposes of this EIS, proposed high-level waste management activities are assessed at the INEL Idaho Chemical Processing Plant.

04.03 (063) Alternatives Analyzed

COMMENT

The commentor requests that the EIS include specific corrections regarding spent nuclear fuel storage at the Oak Ridge Reservation.

RESPONSE

Volume 1, section 4.5 summarizes the affected environment of the Oak Ridge Reservation (ORR). This section has been modified to clarify that the Y-12 Plant stores SNF but does not generate or manage high-level waste or transuranic waste.
04.03 (064) Alternatives Analyzed

COMMENT

Commentors question DOE's expertise and infrastructure with regard to capability to handle spent nuclear fuel.

RESPONSE

DOE has a program to safely manage and store radioactive materials (including both radioactive wastes and SNF) at each of the sites considered in this EIS. The potential impacts of storing SNF and associated mitigation measures are discussed in Volume 1, Chapter 5. Supporting information on types of SNF and storage options for them is provided in Volume 1, Appendix J. Management and storage of radioactive wastes at INEL are described in Volume 2, Chapters 1 and 2. DOE's policy is to comply with all applicable Federal, State, and local regulations and DOE Orders. All radioactive materials will be managed to ensure protection of the environment and the health and safety of the public and site employees.

One of the concerns that must be addressed prior to ultimate disposition is that the waste may outlast some storage methods. While ultimate disposition is outside the scope of this EIS, DOE is researching and developing disposition technologies that will address the issue of the longevity of the waste and ensure that the public and environment are protected.

General solutions proposed for managing SNF fuel are discussed in Volume 2, Chapters 1 and 2. However, alternatives for safety managing SNF in the meantime are discussed in Volume 1, section 3.1.

04.03 (065) Alternatives Analyzed

COMMENT

The commentor states that placement of the West Bear Creek Valley site for spent nuclear fuel use demonstrates a total lack of regard for local populations and the environment.

RESPONSE

In response to public comments during the scoping process for this EIS, DOE conducted a screening process to identify additional reasonable alternative sites. The screening process was used solely to identify additional reasonable alternative sites for consideration and analysis in the EIS. Thus, the existing reasonable alternatives were not included in this process, because they had already been selected as reasonable potential sites by DOE. Pursuant to the screening process, the Oak Ridge Reservation (ORR) in Oak Ridge, Tennessee, and the Nevada Test Site (NTS) near Las Vegas, Nevada, were added as reasonable alternatives for the full scope of SNF management activities, bringing the number of sites to be analyzed to 10. Other sites were not considered reasonable for analysis in this EIS.

Identification of potential sites was based on factors including land ownership or current use, current or former spent nuclear fuel management infrastructure, transportation, and relocation of spent nuclear fuel. Realistic sites then were evaluated by using statutory and regulatory restrictions, environmental factors, socioeconomic and transportation factors, and implementation considerations. Final decisions also considered factors such as programmatic needs, mission conflicts, and timing. The conduct of and conclusions from this process are documented in the Alternative Site Selection Decision Process Report, which is summarized in Volume 1, section 3.2.3.

Specific information is not available on facilities that have not been fully designed and constructed. Such data are also not available for future activities, such as decontamination projects that have not occurred and treatment of waste streams whose treatment plans have not been finalized. Generic projects have been included in the EIS to present readers with as comprehensive a range of forthcoming projects as possible. These projects or facilities may require additional analysis under the National Environmental Policy Act. By analyzing generic projects at the various alternative sites, DOE can reasonably compare the impacts of these activities on a programmatic level.

4.3.1 Siting Alternatives

04.03.01 (001) Siting Alternatives

COMMENT

Commentors request that sites being analyzed in the EIS be removed from consideration, stating facilities at various locations may be illegal, and that other sites represent reasonable, or more reasonable alternatives, than those under consideration. One commentor notes the distinction between a prohibited monitored retrievable storage facility and facilities under the Centralization alternative.

RESPONSE

In response to public comments during the scoping process for this EIS, DOE conducted a screening process to identify additional sites to the eight sites then considered reasonable alternatives for managing SNF. As a result of the screening process, ORR near Oak Ridge, Tennessee, and NTS near Las Vegas, Nevada, were added as reasonable alternative sites for the full scope of SNF management activities, bringing the number of sites to be analyzed to 10. Other sites were not considered reasonable for analysis in this EIS.

Potential sites were identified based on such factors as land ownership or current use, current or former SNF management infrastructure, transportation, and relocation of SNF. Realistic sites then were evaluated considering statutory and regulatory restrictions, environmental factors, socioeconomic and transportation factors, and implementability. As a result of this screening process, based largely on the
basic qualities and locations of the sites, a list of seven sites was forwarded to the decisionmakers as reasonable siting alternatives in addition to the eight sites already deemed reasonable. In addition to site qualities and location, the decisionmakers also considered factors such as programmatic needs, mission conflicts, and timing. The conduct and conclusions of this process are documented in the *Alternative Site Selection Decision Process Report*, which is summarized in Volume 1, section 3.2.3 of the EIS.

Section 145(g) of the Nuclear Waste Policy Act, as amended (the Act), prohibits the construction of a monitored retrievable storage facility [pursuant to Section 142(b) of the Act] in the State of Nevada. However, a facility to manage DOE SNF would not be classified as a monitored retrievable storage facility within the meaning of Section 142(b) of the Act. A facility to manage DOE SNF would be classified as constructed and operated pursuant to the Atomic Energy Act of 1954 and would serve a different purpose from that served by a monitored retrievable storage facility.

DOE believes that the range of alternatives analyzed in this EIS are inclusive and in accordance with the philosophy of considering a full range of reasonable alternatives required by provisions of NEPA and CEQ regulations. Analysis and discussion of all alternatives that can be postulated is an impossibly large task and is not required by existing regulations. Although a site may represent a reasonable alternative for analysis in the EIS, no decision has been made as to the level of SNF management activity at any site. This decision will be made by the Secretary of Energy in a published ROD.

04.03.01 (002) Siting Alternatives

**COMMENT**

Commentors request that the Oak Ridge Reservation or the Nevada Test Site be removed from consideration, stating that state legislative actions or the Nuclear Waste Policy Act prohibit other spent nuclear fuel storage at these sites. Other commentors also question why only two sites were added to the original three sites selected for possible spent nuclear fuel management.

**RESPONSE**

The Nuclear Waste Policy Act, as amended [section 145(g)], prohibits the storage of commercial SNF in a monitored retrievable storage facility in Nevada. In addition, the Nuclear Waste Policy Act, as amended [section 142(a)], annulled and revoked the DOE proposal to locate a monitored retrievable storage facility on or near ORR in Tennessee. However, a facility to store DOE SNF is not considered monitored retrievable storage under the Nuclear Waste Policy Act, as amended. Consequently, NTS and ORR are viable alternatives for the purposes of this EIS and, therefore, were added to the original three sites.

In response to public comments during the scoping process for this EIS, DOE conducted a screening to identify additional sites to the eight sites then considered reasonable alternatives for the managing of SNF. As a result of a disciplined screening, ORR and NTS were added as reasonable alternative sites for the full scope of SNF management activities, bringing the number of sites to be analyzed to 10. Other sites were not considered reasonable for analysis in this EIS. The Nevada Test Site is not considered to be a preferred site because of the state's current role as the host site for the Yucca Mountain Site Characterization Project and due to the site's lack of SNF infrastructure.

Potential sites were identified based on such factors as land ownership or current use, current or former SNF management infrastructure, transportation, and relocation of SNF. Realistic sites then were evaluated considering statutory and regulatory restrictions, environmental factors, socioeconomic and transportation factors, and implementability. Final decisions also considered such factors as programmatic needs, mission conflicts, and timing. The conduct and conclusions of this process are documented in the *Alternative Site Selection Decision Process Report*, which is summarized in Volume 1, section 3.2.3 of the EIS.

As indicated in the May 9, 1994 Amendment to the Implementation Plan for the Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Impact Statement, DOE developed a three-step process to screen the potentially infinite number of siting options that could exist for various levels of SNF management activity. During the public hearings, DOE became aware that some commentors thought the amendment to the Implementation Plan was intended to be the detailed report of the alternative site-selection process. Commentors were referred to the *Alternate Site Selection Decision Process Report* for the details and conclusions of the conduct of the process.

04.03.01 (003) Siting Alternatives

**COMMENT**

The commentor notes that the location selected for the potential spent nuclear fuel management facility at the Oak Ridge Reservation will be next to the Y-12 "walk-in pits," which contain shock-sensitive pyrophoric chemicals.

**RESPONSE**

The Y-12 pits are actually 4 miles from the West Bear Creek Valley site selected for potential SNF management activities at ORR. The distance is accounted for in accident impacts and in cumulative impacts in the EIS, and no significant adverse environmental or health and safety impacts are reasonably foreseen as a result of the proximity of the Y-12 pits.
04.03.01 (005) Siting Alternatives

COMMENT

The commentor is of the opinion that the selection of the West Bear Creek Valley site on the Oak Ridge Reservation was improper and did not adequately consider the site's geology. The commentor questions locating the proposed spent nuclear fuel management facilities in the watershed of Grassy Creek. The commentor also indicates that State of Tennessee geologists have concluded that hydrogeological conditions indicate that Bear Creek Valley is not suitable for storing or disposing of hazardous waste material of any type, as stated in a U.S. Geological Survey report. The commentor expresses the opinion that the mechanism for transport of contaminants in the subsurface is too complex to model, and that there is too great a potential for contaminating the Knox aquifer.

RESPONSE

ORR and NTS were selected as alternative sites as a result of the public comments received during the EIS scoping process. Information about the selection process for the site on ORR is provided in Request for Support in Preparing the Spent Nuclear Fuel and INEL Environmental Restoration and Waste Management Environmental Impact Statement. The selection of the West Bear Creek Valley Site on ORR did include consideration of impacts to geology and water resources. The West Bear Creek Valley Site was selected and evaluated and compared in the EIS. Adequate information is provided to make programmatic decisions. If ORR is selected to be the SNF management facility, more detailed analysis of the site would be performed in tiering NEPA documentation.

There is very little potential for water quality impacts to Grassy Creek and the Clinch River from the operation of proposed SNF management facilities, which are designed to have no liquid release of waste water with hazardous chemical or radiological characteristics. These facilities would be designed to include secondary containment, leak detection, and water balance monitoring equipment. No significant impacts to water quality in either Grassy Creek or the Clinch River are anticipated from the sanitary effluent outfall to Grassy Creek. This outfall would be a permitted discharge that is monitored as required for permit compliance. Therefore, no significant environmental consequences related to water resources are anticipated from the operation of SNF management facilities.

The State of Tennessee Department of Environment and Conservation correspondence dated August 31, 1994, commented extensively on the EIS. State geologists cite Geologic and Hydrologic Studies by the U.S. Geological Survey (1959) as concluding, "It appears that the favorable areas available are not sufficient to warrant consideration of Bear Creek Valley for use as a regional burial ground for solid radioactive waste." The EIS does not consider any burial alternatives for SNF management. The alternatives considered include only SNF interim storage and treatment facilities.

The ORR Energy Systems Waste Management Office has identified large portions of ORR as suitable waste management areas. The proposed SNF management site is included in the areas. The suitability of the site is due primarily to soil type that meets specific waste management criteria and the geographic location within the ORR. Again, no materials would be buried would be buried as part of the proposed action or any of the alternatives in this EIS.

If ORR is chosen as a site for SNF management, site-specific surface and groundwater studies may be required to support follow-up NEPA reviews.

There is very little potential for contamination of the Knox aquifer from the operation of proposed SNF management facilities, which are designed to have no liquid release of waste water with hazardous chemical or radiological characteristics. These facilities would be designed to include secondary containment, leak detection and water balance monitoring equipment. Therefore, no significant environmental consequences related to water resources are anticipated from the operation of SNF management facilities.

Impacts to geology and water resources for ORR are discussed in the EIS in Volume 1, Appendix F, Part Three, sections 5.6 and 5.8, respectively.

04.03.01 (006) Siting Alternatives

COMMENT

The commentor indicates that the selection of the Oak Ridge Reservation and the Nevada Test Site does not logically flow from the siting parameters stated. In addition, the commentor indicates that conflicts in program missions were not considered and that DOE ought to better coordinate the activities of defense programs with the Office of Civilian Radioactive Waste Management.

RESPONSE

As documented in the Alternative Site Selection Decision Process Report, the parameters quoted by the commentor were used to evaluate categories of sites, such as DOE sites with infrastructure. The commentor is also referred to this report for details as to the conduct of the process that is summarized in the EIS, Volume 1, section 3.2.3. Once categories of sites were considered realistic based on this initial screening, individual sites were evaluated through a set of screening factors to identify those sites that appeared attractive for further consideration by DOE decisionmakers. Thus, sites like ORR and NTS passed both screenings, along with five others sites, and were considered candidates for consideration as reasonable sites. NTS, which has no SNF infrastructure, passed the initial screening due to a bypass on
the logic diagram (Attachment 1 to the report) designed to allow consideration of sites without infrastructure. Both sites were considered reasonable for consideration due to attributes discussed in the report.

The site-selection task process was designed to present DOE managers with a list of sites that appeared most attractive based on individual site qualities, including relative location, without programmatic considerations such as conflict in site missions. Although in cases the site-selection task group did indicate potential mission conflict concerns (see Attachment 4 to the report), the weighing of programmatic considerations such as mission conflicts and implementation practicabilities were left to the decisionmakers. There are regular coordination of activities between the Office of Civilian Radioactive Waste Management and Defense Programs concerning DOE SNF covered in this EIS.

04.03.01 (007) Siting Alternatives

COMMENT

The commentor states that the proximity to an aquifer or the presence of groundwater contamination being characterized as a disadvantage when evaluating alternative sites for consideration in the EIS requires the same disclosure for the INEL. The commentor also states that hydrogeologic conditions are of great importance in the siting decisions for spent nuclear fuel. Groundwater concerns become pertinent in the event of releases from leaks or spills. Also the potential for seismic action should have been considered evenhandedly in the selection of sites to be considered for SNF management activities.

RESPONSE

Under NEPA, DOE is required to consider a full range of reasonable alternatives, which in this EIS includes sites with nearby surface-water and groundwater resources. The potential environmental consequences of implementing the alternatives at the alternative sites have been evaluated in Volume 1, Chapter 5 of the EIS, which concludes that such impacts from all alternatives would be small. This conclusion includes the potential impacts on nearby or adjacent water resources at each of the potential sites. A discussion of this topic can be found in the water resources sections in Volume 1 and its associated site-specific Appendices A through F. DOE will consider these potential impacts when making its final decision.

The site-selection task did consider the proximity to aquifers and seismic concerns as a relative disadvantage in evaluating a number of potential sites through detailed screening criteria. This comparison is in Attachment 4 to the Alternative Site Selection Decision Process Report. This set of screening criteria was used to identify sites that appeared attractive for further consideration by DOE decisionmakers. Proximity to aquifers and areas of high seismicity are certainly appropriate considerations in siting DOE activities, including managing SNF.

INEL was one of three DOE and five Naval sites originally identified as reasonable siting alternatives for consideration in this EIS. In response to public comments during the scoping process for this EIS, DOE committed to conduct a screening process to identify additional sites for managing SNF. The original three DOE and five Naval sites were not considered in this process.

The EIS pays particular attention to geologic considerations such as seismicity at each of the sites under consideration, including the Snake River Plain, upon which INEL is located. Characterization of seismicity and its potential impacts were evaluated and discussed in the EIS.

04.03.01 (009) Siting Alternatives

COMMENT

The commentor expresses the opinion that potential sites on the priority list for cleanup under the Comprehensive Environmental Response, Compensation, and Liability Act are being characterized as disadvantages when evaluating alternative sites for consideration in the EIS requires the same disclosure for INEL.

RESPONSE

DOE did consider that potential sites were on the priority list for cleanup under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as a relative disadvantage in evaluating a number of potential sites through detailed screening criteria. This comparison is in Attachment 4 to the Alternative Site Selection Decision Process Report. This set of screening criteria was used to identify sites that appeared attractive for further consideration by DOE decisionmakers. Concerns over conflicts with CERCLA activities are certainly appropriate to consider in siting DOE activities, including SNF management activities.

INEL was one of eight sites originally identified as reasonable siting alternatives for consideration in this EIS. In response to public comments during the scoping process for this EIS, DOE committed to conduct a screening process to identify additional sites. The original eight sites were not reevaluated in this process.

The EIS characterizes sites under consideration including INEL, as to CERCLA activities. Volume 2 of the EIS bounds such activities within the alternatives under consideration for INEL through 2005. Siting of SNF management activities (or any activities) at each of the sites must integrate ongoing activities, including those being managed under CERCLA. Large sites, such as INEL, usually present more opportunities to accommodate siting additional activities without conflicts to those committed to or in progress.
04.03.01 (010) Siting Alternatives

COMMENT
The mentor expresses the opinion that in several instances, the process used to evaluate alternative sites considered proximity to tribal lands and cultural resources as a disadvantage, yet the EIS dismisses the interests of tribes in the proximity of sites originally considered for evaluation in the EIS, such as the INEL.

RESPONSE
The site-selection task team did consider the proximity to tribal lands and cultural resources as a relative disadvantage in comparing a number of potential sites through detailed screening criteria. This comparison is in Attachment 4 to the Alternative Site Selection Decision Process Report. The set of screening criteria identified sites that appeared attractive for further consideration by DOE decisionmakers. Proximity to tribal lands and cultural resources is certainly appropriate to consider in siting DOE activities, including SNF management.

INEL was one of eight sites originally selected as reasonable siting alternatives for consideration in this EIS. In response to public comments during the scoping process for this EIS, DOE committed to identify additional sites. The original eight sites were not considered in this process.

DOE does not dismiss the interests of the tribes near existing sites, nor take them lightly in siting and operating its facilities. Consultations have taken place during the preparation and review of the EIS, and continue. DOE has discussed the concerns of the tribes with respect to their comments regarding the adequacy of the EIS, as well as their concerns regarding the potential effects of decisions facing DOE on the tribes’ homelands and interests. The EIS has been revised to more adequately address the tribes’ concerns as presented in the tribes’ comments on the EIS and in related consultations.

04.03.01 (012) Siting Alternatives

COMMENT
Commentors note that the site-selection process used to identify additional reasonable sites for consideration in the EIS was skewed away from sites where interim storage only can occur, and away from port sites where spent nuclear fuel has been handled. Processing decisions have not been made and are unlikely to be made in the future. Commentors also state that too much emphasis is placed on site size and available infrastructure in evaluating potential alternative sites for consideration in the EIS, though these factors were not used for the baseline decision, interim storage.

RESPONSE
In response to public comments during the scoping process for this EIS, DOE committed to identify additional sites to the eight sites then considered reasonable siting alternatives for SNF management.

The conduct and conclusions of this process are documented in the Alternative Site Selection Decision Process Report, which is summarized in Volume 1, section 3.2.3 of the EIS.

Potential sites were identified based on such factors as land ownership or current use, current or former SNF management infrastructure, transportation, and relocation of SNF. Realistic sites then were evaluated considered statutory and regulatory restrictions, environmental factors, socioeconomic and transportation factors, and implementability. Final decisions also considered such factors as programmatic needs, mission conflicts, and timing.

Site size and location is an appropriate consideration for interim management of SNF pending ultimate disposition. In addition to SNF storage, there is a possibility that additional processes will need to be sited and operated to further stabilize and possibly tailor SNF to meet whatever criteria evolves from eventual decisions as to ultimate disposition of the various types of SNF. Therefore, as discussed in the decision process report, assumptions were made as to minimum order of magnitude site sizes for foreseeable potential activities. The larger sites provide more flexibility to fully manage SNF pending ultimate disposition than the smaller sites, and thus have the attractive advantage of possibly precluding additional shipments of SNF to larger sites for further processing or tailoring in the future, as possibly dictated by criteria for ultimate disposition. The Alternative Site Selection Decision Process Report states these considerations and the basis for assumptions used in the conduct of the process. In addition to evaluating large sites for consideration, smaller sites were also evaluated for a lesser scope of SNF management activity, limited to storage and research and development only. Only sites considered too small for basic storage operations were eliminated from further consideration of any management activity.

The sites that were ultimately recommended to the decisionmakers as appearing most attractive were mostly larger sites due to the relative attractiveness that site size presents from not only the ability to site more complex activities, but also to provide more isolation from the public and present more opportunities to site activities without conflict with other activities on site, either current or reasonably foreseen.

04.03.01 (014) Siting Alternatives

COMMENT
The mentor expresses an opinion that the EIS improperly excludes sites from consideration as alternatives. The mentor further states that the criteria used to select candidate sites is too narrow, favors remote sites, and involves shipments to INEL under all spent fuel management alternatives.
RESPONSE

INEL is one of three DOE and five Naval sites originally selected as reasonable alternative sites for consideration in this EIS. INEL was selected because of the many years of DOE experience conducting large-scale SNF management operations at that site. The same is true for the Savannah River Site in South Carolina and the Hanford Site in Washington. Accordingly, these sites, and the five sites limited to Naval fuel only (which have similar years of SNF management experience), were considered reasonable alternatives for consideration of various levels of programmatic SNF management activities. INEL would receive SNF for management under all alternatives except No Action and Centralization of all SNF activities at one of the other five main sites. INEL would continue to receive SNF under all other alternatives due largely to its current infrastructure and historical expertise in managing such materials. Under the No Action alternative, there is a 3-year transition period in which the Navy would continue to ship SNF to INEL for examination.

In response to public comments during the EIS scoping, DOE screened to identify additional reasonable alternative sites for consideration and analysis in the EIS. Thus, the existing reasonable alternatives were not reevaluated in this process, because they had already been selected as reasonable potential sites by DOE.

Potential sites were identified based on such factors as land ownership or current use, current or former SNF management infrastructure, transportation, and relocation of SNF. Realistic sites then were evaluated considering statutory and regulatory restrictions, environmental factors, socioeconomic and transportation factors, and implementability. As a result of this screening process and based largely on the basic qualities and locations of the sites, a list of the seven sites was forwarded to the decisionmakers for consideration in the EIS in addition to the eight sites already deemed reasonable. In addition to site qualities and location, the decisionmakers ultimately also considered such factors as programmatic needs, mission conflicts, timing, expertise, and infrastructure. The conduct and conclusions of this process are documented in the Alternative Site Selection Decision Process Report, which is summarized in Volume 1, section 3.2.3 of the EIS.

Pursuant to the screening process, ORR and NTS were added as reasonable alternatives for the full scope of SNF management activities, bringing the number of sites to be analyzed to 10.

DOE believes that the range of alternatives analyzed in the EIS is inclusive and in accordance with the philosophy of considering a full range of reasonable alternatives required by NEPA and CEQ regulations.

04.03.01 (017) Siting Alternatives

COMMENT

The commentors express an opinion that DOE consider sites such as the Capitol building, the Pentagon, and the like for the management of spent nuclear fuel.

RESPONSE

Such comments do not provide substance conducive to a response. DOE recognizes that some commentors disagree with the need for and reasonable alternatives being considered to manage SNF. Volume 1 section 3.1 describes DOE's preferred alternative.

04.03.01 (019) Siting Alternatives

COMMENT

The commentor states that the sites selected initially as reasonable alternatives for the management of spent nuclear fuel were selected only because they already manage nuclear waste.

RESPONSE

The original eight sites selected as reasonable alternatives for some level of SNF management activity have experience in such activities, which range from large-scale SNF management (storing, reprocessing, etc.) at the three large DOE sites, to handling activities limited to Naval SNF at the five smaller sites. Accordingly, these sites represent reasonable siting alternatives for a range of SNF management activities proposed in this EIS, per the October 29, 1993, Implementation Plan for the Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Impact Statement.

In response to public comments during the scoping process for this EIS, DOE committed to identify any additional reasonable sites for SNF management. After a screening process, ORR and NTS were added as reasonable alternatives for the full scope of SNF management activities, bringing the number of sites to be analyzed to 10.

Potential sites were identified based on such factors as land ownership and current use, current or former SNF management infrastructure, transportation, and relocation of SNF. Realistic sites then were evaluated by considering statutory and regulatory restrictions, environmental factors, socioeconomic and transportation factors, and implementability. Final decisions also considered programmatic needs, mission conflicts, timing, etc. The conduct and conclusions of this process are documented in the Alternative Site Selection Decision Process Report, which is available in the reading rooms and information locations identified in the EIS.
Potential sites were identified based on such factors as land ownership and current use, current or former spent nuclear fuel management infrastructure, transportation, and relocation of SNF. Realistic sites then were evaluated considering statutory and regulatory restrictions, environmental factors, socioeconomic and transportation factors, conflicts, timing, etc. The conduct and conclusions of this process are documented in the Alternative Site Selection Decision Process Report, which is available in the reading rooms and information locations identified in the EIS.

04.03.01 (023) Siting Alternatives

COMMENT

The commentor raises questions about what might actually be done with spent nuclear fuel at the Savannah River Site and about future site-specific decisions.

RESPONSE

Ultimate disposition of DOE SNF is a high priority. For planning purposes, DOE had determined that the SNF managed by DOE that is not otherwise dispositioned (e.g., chemically separated, with the high-level waste being converted into a vitrified glass for repository disposal) is authorized for disposal in the first repository. This authorization is subject to the physical and statutory limits of the first repository, DOE SNF meeting repository acceptance criteria, and payment of fees. As part of its SNF management program, DOE would (1) stabilize the SNF as needed to ensure safe interim storage, (2) characterize the existing SNF inventory to assess compliance with the first repository's acceptance criteria, and (3) determine what processing, if any, is required to meet the criteria. Decisions regarding the actual disposition of DOE SNF would follow appropriate review under NEPA and be subject to licensing by NRC. This path forward would be implemented so as to minimize impacts on the first repository schedule.

Future site-specific decisions will involve NEPA reviews tiered from this programmatic EIS. These decisions will also include input from the public as appropriate under NEPA.

04.03.01 (025) Siting Alternatives

COMMENT

The commentor states that nowhere in the EIS can one find consideration of the suitability, or lack thereof, of the sites being considered for spent nuclear fuel management.

RESPONSE

Volume 1, section 1.3.1 summarizes the consideration of the suitability of the sites selected. Additional details are in the Alternative Site Selection Decision Process Report, which is referenced in the EIS.
04.03.01 (028) Siting Alternatives

COMMENT
The commenter states that the logic of designating the Nevada Test Site as a "nonpreferred" site based on equity concerns and lack of infrastructure is flawed. The commenter states that there is no provision in the National Environmental Policy Act for a nonpreferred alternative, and nothing in the Nuclear Waste Policy Act would prohibit storage of DOE spent nuclear fuel in Nevada. The commenter also states that in the event that DOE does not site the repository in Nevada, a reasonable site for spent nuclear management will have been eliminated without cause. Further, the commenter states that equity is not a reasonable basis to designate the Nevada Test Site as nonpreferred, because other sites have spent nuclear fuel currently in storage; nor is the site's lack of infrastructure a reasonable basis to designate it as nonpreferred, because any greenfield site lacks infrastructure, and the EIS acknowledges the need to build additional spent nuclear fuel storage facilities at any of the sites under consideration.

RESPONSE
The designation of NTS as a nonpreferred site is to alert EIS reviewers that DOE has both technical and equity reservations that make NTS less attractive than other reasonable alternatives. This designation was intended to communicate DOE's programmatic reservations with this site.

DOE identified NTS as a reasonable alternative site despite its lack of infrastructure. Although reasonable, the lack of infrastructure may be considered unfavorably in comparison with the other sites being considered, as one of numerous considerations in arriving at a ROD. The consideration of sites without infrastructure is in keeping with public comments on the EIS Implementation Plan.

DOE recognizes that the other four DOE sites being evaluated as reasonable alternatives have managed SNF for years, and may continue to do so for the period of time analyzed in this EIS. However, SNF management at these sites will either decrease, increase, or remain the same. DOE agrees that nothing in the Nuclear Waste Policy Act (NWPA), as amended, would preclude siting SNF management facilities for DOE SNF in Nevada. However, the provisions of NWPA, as amended, that preclude siting monitored retrievable storage facility at NTS are based partially on equity. NTS is currently the only site designated by Congress in the NWPA, as amended, for the characterization of the nation's first geologic repository for SNF and high-level waste. At present, the Yucca Mountain Project is primarily designated for commercial fuel disposal, but DOE SNF and high-level waste not exceeding 10 percent (by weight) of the repository capacity limit (70,000 tons metric tons heavy metal) could be placed in the repository.

Decisions regarding actual disposition of DOE SNF will follow appropriate NEPA review. This "path forward" would be implemented so as to minimize impacts on the first repository schedule. See also the response to comment 04.04 (088).

04.03.01 (031) Siting Alternatives

COMMENT
The commenter indicates that although DOE conducted a site-selection process that allowed for consideration of greenfield sites, only the Nevada Test Site was selected, and it was effectively dismissed as a site under its designation as a "nonpreferred alternative."

RESPONSE
The alternative site selection process, as documented in the Alternative Site Selection Decision Process Report did allow for the consideration of sites with no current spent nuclear fuel infrastructure or expertise to be considered. The screening process was used to evaluate every DOE site and a sizable number of Department of Defense (DOD) sites, which appeared to be reasonably representative of all DOD sites. NTS is a greenfield site, in that it is not involved in, nor does it have the infrastructure related to, management of SNF. DOD sites, which were also greenfield sites, were considered unreasonable due to the conflict in DOE missions with those conducted by DOD.

Due to its lack of infrastructure and equity concerns with the potential siting of the nation's first geologic repository, DOE considers NTS a less attractive alternative than the other DOE sites under evaluation. Despite this nonpreferred status, NTS is evaluated in the EIS to the same level as the other reasonable alternatives and, thus, gives the public a basis for comparative review of a reasonable greenfield site, as well as giving decisionmakers the tools to fully consider NTS as a reasonable site for the management of spent nuclear fuel. Decisionmakers will consider the environmental impacts, programmatic needs, costs, and public comments in arriving at a ROD.

See also the response to comment 04.03.01 (028).

04.03.01 (032) Siting Alternatives

COMMENT
The commenter states that DOE arbitrarily excluded potential greenfield sites from consideration in the EIS; instead DOE predetermined a greenfield site that could be readily struck down as inappropriate.

RESPONSE
No sites evaluated in the EIS have been eliminated from consideration for the management of spent nuclear fuel. It is true that a number of representative Department of Defense "greenfield" sites were considered attractive by DOE's site-selection team, based largely on the relative location and quality of these sites. However, consultations with the Department of Defense regarding the availability of these sites resulted in their elimination due to mission conflicts with current site activities. Nevertheless, it is DOE's opinion that the analysis of NTS gives decisionmakers (and the reviewing public) the full perspective of the environmental impacts of a representative greenfield site to form a basis for
comparison with other reasonable sites analyzed in the EIS. In addition, nothing in the EIS eliminates or disfavors NTS on the basis of environmental impacts. The programmatic considerations of lack of infrastructure and the existence of concerns over equity will be part of decisionmaking, as well as factors such as cost, implementability, environmental impacts, and technical considerations. See response to comment 04.03.01 (028).

04.03.01 (033) Siting Alternatives

COMMENT
The commenter is of the opinion that DOE improperly excludes foreign facilities from consideration as alternative fuel repositories.

RESPONSE
DOE has an obligation under NEPA to evaluate a range of reasonable alternatives, which must include a No Action alternative. NEPA and the CEQ regulations clearly give deference to the discretion of the agency. In this case DOE, to dismiss alternatives that the agency considers unreasonable given the parameters of the purpose and need for agency action. DOE does not consider storing DOE-owned and domestically stored SNF in foreign countries to be reasonable compared with the range of reasonable domestic storage and management alternatives analyzed in this EIS, for which the analyses show that the impacts of all alternatives would be small.

The alternative of foreign storage of foreign research reactor (FRR) SNF of U.S. origin is beyond the scope of this EIS, which evaluates the management of any such SNF once it is returned to the U.S. The decision whether FRR of U.S. origin is returned to the U.S., and the reasonable alternatives to returning such material, is within the scope of the FRR EIS.

Volume 1 of this EIS assumes that all FRR EIS spent nuclear fuel is returned for domestic management so that the environmental impacts of managing a reasonably foreseeable inventory can be evaluated in the EIS. If a decision is made not to return FRR SNF to the U.S., the EIS analysis would be additionally conservative in its evaluation of cumulative impacts due to the reduced domestic inventory to be managed.

In response to public comments, Volume 1, section 3.2 of the EIS has been expanded to discuss the option of processing DOE N-Reactor SNF overseas for the purpose of stabilization as an example for evaluating reasonably foreseeable impacts. See also response to comment 04.03.01 (054). Unlike foreign storage of domestic SNF, overseas processing presents a reasonable option to domestic processing of such materials both in cost and availability of facilities.

4.3.2 Action alternatives

04.03.02 (003) Action Alternatives

COMMENT
The commenter notes that for many activities, the Minimum Treatment, Storage, and Disposal alternative is no different than the No Action alternative for the INEL.

RESPONSE
While many activities may be similar in the alternatives cited, there are also differences, as shown in the shaded box in Volume 2, section 3.1.3. Different activities and projects are planned for each high-level waste alternative. Shaded boxes identify the major activities by alternative for each waste stream. These shaded boxes are in Volume 2, section 3.1.3 for transuranic waste, low-level waste, mixed low-level waste, greater-than-Class-C waste, and hazardous waste. Additional activities are shown in section 3.1.1 for spent nuclear fuel, section 3.1.2 for environmental restoration, and section 3.1.3 for infrastructure projects.

04.03.02 (004) Action Alternatives

COMMENT
Commentators state that the EIS should consider an alternative that truly calls for management of the spent nuclear fuel at those sites in closest proximity to origin of the fuel, thereby minimizing transportation of spent nuclear fuel.

RESPONSE
The EIS does consider managing SNF at or close to sites closest to the fuel's origin under the No Action alternative, discussed in Volume 1, section 3.1.1, and the Decentralization Alternative, discussed in Volume 1, section 3.1.2. The EIS demonstrates that SNF can be safely managed with minimal transportation.

04.03.02 (006) Action Alternatives

COMMENT
The commenter suggests that Volume 1 alternatives, except for No Action, be modified to include a general statement that the alternative would include any actions necessary to permit continued reactor operation or to place spent nuclear fuel in safer storage, including shipping offsite or constructing storage onsite.

RESPONSE
The programmatic action that DOE ultimately selects is not necessarily limited to one of the alternatives. For example, a hybrid alternative could be developed that would incorporate actions from one or more of the five alternatives analyzed. Moreover, the programmatic decisions will not identify all site-specific...
SNF management options. If appropriate, the decisions would be made after additional site-specific NEPA evaluation.

04.03.02 (007) Action Alternatives

COMMENT
The commenter states that completely remediating the Idaho National Engineering Laboratory is summarily dismissed.

RESPONSE
Remediation of INEL site has been negotiated and documented in the FFA/CO Action Plan. As stated in Volume 2, section 3.1.2, of this EIS, FFA/CO Action Plan would be followed under each alternative, subject to funding constraints, except the No Action alternative. The Maximum Treatment, Storage, and Disposal alternative analyzes remediating INEL under a residential land use scenario, which would result in substantial cleanup of the site with little contamination left in place.

4.3.2.1 No Action

04.03.02.01 (001) No Action

COMMENT
The commenter states that there are waste shipments to DOE sites from non-DOE sites under the Decentralization alternative, including spent nuclear fuel from foreign research reactors. The commenter is of the opinion that allowing these shipments to take place will erode support for development of a permanent waste repository.

RESPONSE
The EIS addresses a number of alternatives for SNF management, including the Decentralization alternative. The Decentralization alternative considers SNF management essentially where it is currently stored or generated, with the basic exception of fuels from university research reactors and/or foreign research reactors, which would be managed at INEL or SRS. This is to avoid constructing facilities at university campuses, or forcing such reactors to shut down due to the lack of such facilities, either here or overseas. Conversely, the No Action alternative does not accommodate the receipt of SNF from foreign research reactors and does not allow the transfer of university reactor SNF to DOE sites. Thus, the EIS does consider an alternative that the commenter appears to favor. Whether leaving SNF at the university sites places increased emphasis on the development of a permanent waste repository is a matter of conjecture beyond the scope of this EIS.

Ultimate disposition of DOE SNF is a high priority. For planning purposes, DOE had determined that the SNF managed by DOE that is not otherwise dispositioned (e.g., chemically separated, with the high-level waste being converted into a vitrified glass for repository disposal) is authorized for disposal in the first repository. This authorization is subject to the physical and statutory limits of the first repository, DOE SNF meeting repository acceptance criteria, and payment of fees. As part of its SNF management program, DOE would (1) stabilize the SNF as needed to ensure safe interim storage, (2) characterize the existing SNF inventory to assess compliance with the first repository's acceptance criteria, and (3) determine what processing, if any, is required to meet the criteria. Decisions regarding the actual disposition of DOE SNF would follow appropriate review under NEPA and be subject to licensing by NRC. This path forward would be implemented so as to minimize impacts on the first repository schedule.

04.03.02.01 (002) No Action

COMMENT
The commenter expresses the opinion that the assumptions on which the spent nuclear fuel No Action alternative are based are not valid in light of current ongoing INEL activities; specifically, discussion of remediation activities are limited to activities already planned for removal of fuel from ICPP-603 storage pools, but the necessary increased rack capacity needed at ICPP-666 is not included, nor is the stored fuel in other areas of the Idaho National Engineering Laboratory.

RESPONSE
The No Action alternative, as described in Volume 2, section 3.1, includes activities and projects that have already been initiated or that may be initiated after June 1, 1995, and have been evaluated under the provisions of NEPA by June 1, 1995.

New activities would be limited to minor environmental safety and health activities needed to maintain safe operations. There would be no new major upgrades, and the use of ICPP-603 storage pools would be phased out. The ICPP-603 fuel is being removed under the Court Order. Reracking at ICPP-666 is not necessary to accommodate that fuel. Other on-site fuel consolidation activities are continuing under separate NEPA documentation, as described in Volume 2, section 2.1.3 for other NEPA review activities at INEL. The No Action alternative, as described in Volume 1, section 3.1, represents a baseline for comparison with the other alternatives. Projected impacts of alternative management schemes are compared in the EIS with those impacts projected for the existing conditions against plans involving both greater and lesser activities. DOE believes that the No Action alternative in the EIS satisfies the NEPA requirements to include a No Action alternative, and that the activities under the alternative are consistent with assumptions stated in Volume 1, section 3.1.
4.4 Preferred Alternative

04.04 (001) Preferred Alternative

COMMENT

Commentors express the opinion that the EIS does not define a preferred alternative that includes reprocessing as a reasonable option.

RESPONSE

DOE believes that the range of alternatives analyzed in the EIS is inclusive and in accordance with the philosophy of considering a full range of reasonable alternatives, as required by NEPA and CEQ regulations. Analysis and discussion of all alternatives that can be postulated is an impossibly large task and is not required by existing regulations. Volume 1, section 3.1 describes the preferred alternative for SNF management. Volume 1, Appendices A, B, C, and J discuss stabilization activities, including processing, passivation and canning, that could be employed at the sites for current and/or future SNF management activities. See also the response to comment 04.04 (008).

04.04 (008) Preferred Alternative

COMMENT

Commentors question DOE's preference for alternatives and intentions or agendas the management of spent nuclear fuel. Some commentors feel decisions have already been made and that their opinions will be ignored.

RESPONSE

After carefully considering the results of the analysis of alternatives in the EIS and considering programmatic needs, cost, implementation, and public comments, DOE identified its preferred alternative for programmatic SNF management (see Volume 1, section 3.1). The preferred alternative is Regionalization by fuel type.

The decision as to whether the preferred alternative is selected for implementation over other reasonable alternatives evaluated in the EIS will be made by the Secretary of Energy in the ROD. Based on the analysis in the EIS, all environmental impacts would small and there is no environmental discriminator that would clearly favor one alternative over another. Thus, DOE based its decision largely on programmatic management needs, known vulnerabilities, and the need to maintain maximum flexibility to stabilize SNF and meet criteria for ultimate disposition, when ultimate disposition is ready for decision in another EIS.

Under the preferred alternative, DOE management of SNF would be centered on activities at INEL, SRS, and Hanford. INEL could manage nonaluminum-clad types, and could receive nonaluminum-clad...
nonproduction fuels from Hanford. SRS could manage aluminum-clad fuel types, and could receive aluminum-clad fuels from INEL. Hanford would manage defense SNF such as the N-Reactor graphite fuel, and would not receive any significant amount of SNF from other sites. Naval SNF would be managed in accordance with the Navy's preferred alternative, which was stated in the Draft EIS, and is consistent with DOE's preferred alternative. Foreign research reactor SNF would be managed at either INEL, SRS, or both. In a publicly available cost analysis (independent of this EIS), the DOE preferred alternative is estimated to cost between $9 billion and $18 billion over the 40-year interim management period between 1995 and 2035.

Under all alternatives (over a 40-year period), the estimated number of latent cancer fatalities to the public from DOE SNF management activities (facility operations plus transportation) would be less than two latent cancer fatalities. There are no significantly high and adverse impacts identified for minority and low-income communities under the preferred alternative.

04.04 (010) Preferred Alternative

COMMENT
The commentor notes that detailed evaluations of environmental and human exposure pathways are more appropriate when selected alternatives are detailed in a Final EIS and site-specific National Environmental Policy Act reviews are conducted.

RESPONSE
More specific analysis is possible when details about implementation of programmatic decisions are available. Many of the issues the commentor expressed interest in would be best directed to follow-up NEPA reviews of site-specific projects. Such NEPA analyses will be performed when and as appropriate.

04.04 (011) Preferred Alternative

COMMENT
The commentors are reluctant to have the Idaho National Engineering Laboratory play a major role in processing waste materials from other sites until a permanent storage site is available.

RESPONSE
After careful consideration of the results of the analysis of alternatives in the EIS and consideration of program needs, implementation of program needs, public comments, and the draft site treatment plan, DOE identified its preferred alternative for SNF management, environmental restoration, and waste management at INEL (see Volume 2, section 3.4). The preferred alternative is similar to the Ten-Year Plan alternative, but includes elements of other alternatives for same waste type. Ongoing SNF management, environmental restoration, and waste management activities would be continued and enhanced to meet current and expanded needs. The amount of newly generated waste would increase to reflect regulatory requirements and environmental restoration activities. Transuranic and mixed low-level wastes received from other sites would be treated and the residues would be returned to the generating DOE site or transported to an approved off-site disposal facility, as negotiated under the INEL FFA/CO. Environmental Restoration activities would be conducted in accordance with FFA/CO and its action plan. Volume 2, section 3.4 and Chapter 5 show that the impacts of the preferred alternative would be small.

04.04 (017) Preferred Alternative

COMMENT
The commentor believes that a hybrid alternative being announced in the Record of Decision is unacceptable.

RESPONSE
Under NEPA and CEQ regulations, a hybrid of the alternatives discussed in the EIS may be chosen in the ROD. The alternatives examined in the EIS represent a range of reasonable alternatives, and the agency is allowed to chose among variations of those alternatives, as long as the hybrid alternative is still "qualitatively within courted spectrum of alternatives" that were discussed in the EIS. See the CEQ's Forty Most Asked Questions Concerning CEQ's NEPA Regulations, 46 FR 18026 (March 23, 1981).

4.4.1 Decision Process

04.04.01 (001) Decision Process

COMMENT
The commentor expresses the opinion that the Navy and DOE have already selected a preferred alternative.

RESPONSE
In accordance with NEPA, no decision on the alternative to be implemented has been made or will be made until the Final EIS is issued and a 30-day waiting period has passed. No actions are being taken in the meantime that would prejudice future decisions. The final decision and the basis for it will be documented in the ROD, which will be published in the Federal Register in June 1995.

At the time the Draft EIS was issued, DOE had not identified a preferred alternative. The Navy stated its preferred alternative in the Draft EIS and discussed how this alternative would support the Navy's mission, as established by Congress. Upon consideration of public comments received on the Draft EIS and other factors, DOE identified preferred alternatives. The decision process that led to the
identification of these preferred alternatives is provided in Volume 1, Chapter 3, and Volume 2, Chapter 3.

04.04.01 (002) Decision Process

COMMENT
The commenter is of the opinion that the decision process represented by the Draft EIS suggests a rushed process with no vision, only fix-ups.

RESPONSE
NEPA, 42 USC Section 4321 et seq., and CEQ regulation at 40 CFR Part 1500 et seq. require that an EIS describe the purpose and need for the proposed action; alternatives, including no action; the affected environmental; and the environmental consequences associated with the proposed actions and alternatives. Volume 1 and 2 of this EIS meet these requirements.

Input was solicited from the public during a 90-day public comment period on the Draft EIS, which allowed commenters to provide comments and attend one or more of the 33 public hearings held in 20 locations around the United States. Comments were received from 1,430 individuals, agencies and organizations. Many comments resulted in enhancement to the EIS (see Volume 1, section 1.4 and Volume 2, section 2.1.5). Comments were also considered in the identification of DOE's preferred alternatives [see the response to comment 04.04 (008)].

Despite the aggressive schedule for completion, the environmental analyses presented in the EIS have been very carefully and thoroughly examined for completeness and accuracy. The decision to be made will provide a path forward for a effective DOE SNF management program and will establish an effective INEL program for the foreseeable future.

04.04.01 (005) Decision Process

COMMENT
The commenter recommends that specified criteria related to how waste material would be handled once onsite be considered in DOE's decision-making process.

RESPONSE
Information on technical options for managing SNF at SRS can be found in Volume 1, Appendix C. Environmental evaluation of waste management practices and options at SRS may be found in the DOE Savannah River Site Waste Management Draft EIS.

04.04.01 (006) Decision Process

COMMENT
The commenter states that past experience with spent nuclear fuel needs to be a criteria for spent nuclear fuel management decisions.

RESPONSE
SNF management experience was a factor used in determining DOE's and the Navy's preferred alternatives. See Volume 1, section 3.1.

04.04.01 (007) Decision Process

COMMENT
The commenter suggests that a hasty decision is being made with respect to the storage of spent nuclear fuel.

RESPONSE
DOE is devoting adequate time to evaluate a full range of reasonable alternatives for safely managing SNF, including the need for interim storage capabilities.

Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. Volume 1, section 3.1 discusses DOE's preferred alternative for managing SNF. The analyses show that the impacts of all alternatives would be small. While there are differences in the impacts among the alternatives, they are not sufficient to distinguish between alternatives based on impact alone. See the response to comment 04.04 (008) regarding the preferred alternative for SNF management.

4.5 Miscellaneous

04.05 (001) Miscellaneous

COMMENT
The commenter states that because the EIS did not find important environmental impact differences among the alternatives to the proposed action, the final decision will be political.

RESPONSE
The content of the EIS follows CEQ and DOE regulations implementing NEPA, including factoring in topics of concern raised during the public scoping meetings. The analyses, data, and supporting conclusions in the EIS have been prepared and reviewed by subject-matter experts and critically reviewed by an interdisciplinary team to ensure that environmental factors are fully considered in the decision-making process. Other factors, including public comments, economic and technical considerations, and agency mission, will be considered.
The commenter states that DOE's conclusion that the INEL compares favorably with other potential sites is not justified, and the suitability of the INEL should be compared in detail with other potential sites.

**RESPONSE**

INEL is one of eight sites originally selected as reasonable alternative sites for consideration in this EIS. INEL was selected because of the many years of DOE experience conducting large-scale SNF management operations at that site. The same is true for SRS and Hanford. Accordingly, these sites, as well as five other sites limited to Naval fuel only and with years of SNF management experience, were considered reasonable alternatives for consideration for various levels of programmatic SNF management activities.

In response to public comments during scoping for this EIS, DOE conducted a screening process to identify additional reasonable alternative sites. The screening was used solely to identify additional reasonable alternative sites for consideration and analysis in the EIS. Thus, the existing reasonable alternatives were not included in this process, because they had already been selected as reasonable potential sites by DOE. Pursuant to the screening process, ORR and NTS were added as reasonable alternatives for the full scope of SNF management activities, bringing the number of sites to be analyzed to 10. Other sites were not considered reasonable for analysis in this EIS.

Potential sites were identified based on such factors as land ownership or current use, current or former SNF management infrastructure, transportation, and relocation of SNF. Realistic sites then were evaluated considering statutory and regulatory restrictions, environmental factors, socioeconomic and transportation factors, and implementability. As a result of this screening process, based largely on the basic qualities and locations of the sites, a list of the seven most attractive sites was forwarded to the decisionmakers for consideration in the EIS as reasonable siting alternatives in addition to the eight sites already deemed reasonable. In addition to site qualities and location, the decisionmakers ultimately also considered such factors as programmatic needs, mission conflicts, timing, expertise, and infrastructure. The conduct of this process and its conclusions are documented in the Alternative Site Selection Decision Process Report and summarized in Volume 1, section 3.2.3 of the EIS.

Regarding the concern of diverting resources from waste management to SNF management, the Secretary of Energy has publicly affirmed that current DOE policy and practice emphasizes safety and environmental considerations above other program goals. In this regard, DOE is working to remediate and eliminate adverse environmental impacts from past programs, as well as to safely manage waste and SNF today and in the future. The integration and relative emphasis between waste management, environmental restoration, and SNF activities for the INEL through the year 2005 is addressed in Volume 2 of the EIS for a range of alternatives. Although DOE will use the EIS as a basis for a decision regarding these site-wide programs, implementation of decisions is subject to processes such as funding and permitting.
EIS, DOE would limit actions to the minimum necessary to safely and securely manage SNF at or close to the generation site or current storage location.

04.05 (009) Miscellaneous

COMMENT
The commentor recommends that the legal and technical constraints at the Nevada Test Site, outlined in the commentor's letter, be included in DOE's decision-making process for selecting a preferred alternative.

RESPONSE
All comments received during the public comment period were carefully reviewed and considered by DOE in preparation of the EIS and identification of the preferred alternative.

Although NTS is evaluated in the EIS as an alternative for SNF management activities, DOE did not consider it to be a preferred site in the EIS, because Nevada is the host site for the Yucca Mountain Site Characterization Project and because of NTS lack of current SNF handling experience. As stated in Volume 1, Appendix F, section 3.1, NTS provides a contrast to other potential sites because it represents a site that has no existing SNF infrastructure and does not currently generate or store any SNF. See also the responses to comments 04.03.01 (28) and 04.04 (008).

04.05 (010) Miscellaneous

COMMENT
The commentor notes that environmental restoration and waste management activities have not been assessed separately for the INEL.

RESPONSE
Environmental restoration and waste management activities cannot be separated entirely because environmental restoration is a major waste generator. Reasonably foreseeable waste from environmental restoration will in part dictate waste management activities. Volume 2 of the EIS provides extensive detail on and analysis of these subjects.

The alternatives analyzed were designed to cover the spectrum of potential impacts, from maximum activities (the Maximum Treatment, Storage, and Disposal alternative) to minimum activities (the No Action alternative). As identified in Volume 2, section 2.1.2, environmental restoration and waste management activities discussed in the EIS are evaluated at both the site-wide level by waste stream management and project-specific levels. For environmental restoration, potential impacts at INEL are addressed only at the site-wide level. Project-specific impacts of these activities at INEL will be quantified and evaluated in the future, as appropriate, as part of the CERCLA process.

The comparison of impacts is in Volume 2, section 3.3. This brief comparison of impacts is presented to help decisionmakers and the public understand the potential environmental consequences of proceeding with each of the alternatives at INEL. In the ROD, DOE may also choose to combine projects and activities from more than one alternative.

04.05 (011) Miscellaneous

COMMENT
The commentor recognizes that the Savannah River Site may need to manage some spent nuclear fuel until ultimate disposition is available.

RESPONSE
Under all alternatives, some SNF would be managed at SRS for a number of years, even if the ROD selects the Regionalization or Centralization alternative at a non-SRS location.

04.05 (012) Miscellaneous

COMMENT
The commentor suggests that intermediate processing at multiple sites other than the final disposition site increases the potential for damage at multiple sites.

RESPONSE
The EIS evaluates the impacts of managing SNF at multiple sites; the impacts would be small.

04.05 (013) Miscellaneous

COMMENT
The commentor points out the benefits of the nuclear industry to U.S. citizens and the military and suggests it is time to recognize the responsibility of safely storing the "remnants of the industry."

RESPONSE
Volume 1, section 3.1 describes the preferred alternative for programmatic SNF management; Volume 2, section 3.4 describes the preferred alternative for SNF management, environmental restoration, and waste management at INEL. See also the responses to comments 04.04 (008) and 04.04 (011).

04.05 (014) Miscellaneous

COMMENT
The commentor wants information on efforts to scale back the production of nuclear waste.

RESPONSE
This EIS considers management of DOE SNF pending ultimate disposition. DOE believes the analyses in this EIS are adequate to support a decision on this subject. General discussions of waste management procedures and plans are covered in Volume 2, Chapters 1 and 2. DOE has committed to a strategy
emphasizing waste minimization and avoidance, where most new radioactive waste will be created during desirable cleanup activities and decommissioning of contaminated facilities that no longer serve essential missions. Most DOE SNF was generated in DOE production and experimental reactors that have ceased to operate, so considerable source reduction has already occurred.

04.05 (015) Miscellaneous

COMMENT
The commentor states that additional information is required to determine the extent to which the No Action alternative in Volume 2 would not meet current regulatory agreements in place at the INEL.

RESPONSE
The No Action alternative, as described in Volume 2, section 3.1, includes activities and projects that have been initiated or that may be initiated after June 1, 1995, and have been evaluated under the provisions of NEPA by June 1, 1995.

New activities would be limited to minor environmental safety and health activities needed to maintain safe operations. There would be no new major upgrades and the use of ICPP-603 storage pools would be phased out. The ICPP-603 fuel is being removed under the Court Order. Reracking at ICPP-666 is not necessary to accommodate that fuel. Other on-site fuel consolidation activities are continuing under separate NEPA documentation, as described in Volume 2, section 2.1.3 for other NEPA review activities at INEL. The No Action alternative, as described in Volume 1, section 3.1, represents a baseline for a comparison of the other alternatives. Projected impacts of alternative management schemes are compared in the EIS with those impacts projected for the existing conditions against plans involving both greater and lesser activities. DOE believes that the No Action alternative in this EIS satisfies the NEPA requirements to include a No Action alternative, and that the activities under the alternative are consistent with assumptions stated in Volume 1, section 3.1.

04.05 (016) Miscellaneous

COMMENT
The commentor states that the alternatives for the INEL EIS are poorly labeled and organized.

RESPONSE
The Summary describes the relationship between Volumes 1 and 2, as well as the relationship between the alternatives in the two volumes. The Summary also lists the key points in each of the Volume 2 alternatives.

04.05 (018) Miscellaneous

COMMENT
Commentors state that technologies and or proper storage sites for safe, long-term storage of nuclear waste may not exist.

RESPONSE
DOE has a program (including research, development, and demonstration activities) for safely managing and storing all radioactive materials at each of the sites considered in the EIS. General solutions for managing SNF, including storage, are discussed in Volume 1, section 1.1.3 and Appendix J. Current management practices for radioactive wastes are described in Volume 2, section 2.2.7, which is specific to INEL, but also generally applies to wastes at other DOE sites.

The potential impacts of storing SNF and associated mitigation measures are discussed in Volume 1, Chapter 5. Supporting information on types of SNF and their storage options is provided in Volume 1, Appendix J. Management and storage of radioactive wastes at INEL are described in Volume 2, Chapters 1 and 2. DOE’s policy is to comply with applicable Federal, state, and local regulations and DOE Orders. All radioactive materials are managed to ensure protection of the environment and the health and safety of the public and site employees.

04.05 (019) Miscellaneous

COMMENT
The commentor emphasizes that the EIS and Record of Decision have the flexibility for a hybrid alternative.

RESPONSE
The programmatic action that DOE ultimately selects is not necessarily limited to one of the alternatives. A hybrid alternative could be developed that would, for example, incorporate actions from one or more of the five alternatives analyzed. Moreover, the programmatic decisions will not identify all site-specific SNF management options. If appropriate, the decisions would be made after additional site-specific NEPA evaluations.

04.05 (020) Miscellaneous

COMMENT
The commentor suggests that information on the No Action alternative in the Summary is contradictory.

RESPONSE
The Summary has been revised to clarify that the minimum facility upgrades necessary to ensure the safe interim storage of SNF would be completed.
04.05 (021) Miscellaneous

**COMMENT**
The commenter suggests DOE evaluate the railroad rights-of-way for temporary storage of spent nuclear fuel.

**RESPONSE**
Because railroad rights-of-way are privately owned and do not provide infrastructure for DOE SNF concerns, such as exposure to the public and potential for accidents, railroad rights-of-way are unattractive. This was not considered to be a reasonable alternative.

04.05 (022) Miscellaneous

**COMMENT**
The commenter requests specific information on secondary wastes to be produced from hypothetical activities or not-yet-existent facilities related to possible processing of spent nuclear fuel, specifically the radioactive scrap/waste facility. In addition, the commenter states that the EIS fails to discuss the alternatives cited in the Spent Fuel Working Group Report on Inventory and Storage of the Department’s Spent Nuclear Fuel and Other Reactor Irradiated Nuclear Materials and Their Environmental, Safety and Health Vulnerabilities and that continued avoidance of planning for the final disposition in a repository extends the risk and hazards of storage at the Idaho National Engineering Laboratory.

**RESPONSE**
Specific information is not available on facilities that have not been constructed or activities that have not been conducted to acquire a valid baseline. Generic projects have been included in the EIS as "placeholders" to present readers with as comprehensive a range of forthcoming projects as is currently possible. These projects or facilities would require additional analysis under NEPA. At such time, accurate information on secondary waste generation will be provided for an assessment of impacts on waste management. DOE acknowledges and discusses the vulnerability assessment in Volume 1, section 1.1.2. The action plans for the correction of the vulnerabilities identified are referenced in the EIS and are available in libraries and reading rooms that received this EIS.

04.05 (023) Miscellaneous

**COMMENT**
The commenter notes that Volume 2, Table 3.3-1 and section 5.19 need to be clearly linked. Also, specific discussion on safety requirements and other resources needed to implement the mitigation measures and monitoring for each alternative should be presented in the Final EIS.

**RESPONSE**
Volume 2, section 5.19 of the EIS has been revised to show clear links between the sections on mitigation and Table 3.3-1.

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5. TECHNICAL ISSUES

5.1 Aesthetic and Scenic Resources

05.01 (001) Aesthetic and Scenic Resources

**COMMENT**
The commenter states that the EIS ignores the presence of unusually aesthetically pleasing landforms, particularly the buttes, on and adjacent to the Idaho National Engineering Laboratory. The commenter notes that the Middle Butte and other sites on the Idaho National Engineering Laboratory are significant to the Shoshone-Bannock Tribes. The commenter also states that visual impacts should not be analyzed based on what could be seen from the Idaho National Engineering Laboratory boundary or a road, but that the EIS should also analyze visual impacts for tribal members who have been granted a unique right of access to the site.

**RESPONSE**
Volume 2, section 4.2 identifies that portion of the Idaho National Engineering Laboratory (INEL) within the Big Butte Resource Area, which is administered by the Bureau of Land Management. Volume 2, section 4.5 has been revised to acknowledge that features of the natural landscape have special significance to the Shoshone-Bannock Tribes.

Volume 2, section 5.5 discusses the impacts of proposed projects on aesthetic and scenic resources at INEL for the various EIS alternatives. Most of the proposed projects would be confined to existing developed areas and be in size and shape to adjacent structures. The locations of some new facilities have not been determined for the Ten-Year Plan alternative; however, such facilities probably would be within 2 miles of existing facilities and at least 1/2 mile from public roads. Although no final siting for these projects is expected to occur on or near the buttes, the final siting determination will consider preservation of aesthetically pleasing landforms.

Volume 2, section 5.4 has been revised to state that the Shoshone-Bannock Tribes would be consulted before any project is developed that could impact resources of importance to the Tribes.

05.01 (002) Aesthetic and Scenic Resources

**COMMENT**
The commenter states that impacts to visibility and enjoyment of view at the Fort Hall Reservation, as well as effects on tourism, are not considered in the EIS.
RESPONSE

The Fort Hall Reservation is approximately 27 miles southeast of the southern boundary of INEL. Although a specific analysis was not performed for the Fort Hall Reservation, the analysis performed for the EIS concluded that the potential for impairment of the visual resource at Craters of the Moon National Monument, which is approximately 12 miles west of INEL's western boundary, could not be ruled out.

The analysis used very conservative methods, including assumptions that many of the important proposed sources of emissions would not incorporate emissions controls, and that pristine conditions currently exist at Craters of the Moon. However, DOE would not be able to obtain an air permit for these emissions sources unless it could be shown to the satisfaction of the Idaho Division of Environmental Quality that there would be no perceptible impacts on visibility at the Craters of the Moon National Monument, which is the nearest Class I area to INEL. The control measures that would be required to avoid any impacts at Craters of the Moon would also serve to prevent impairment of visibility or enjoyment of the view at the Fort Hall Reservation.

In addition, the Fort Hall Reservation lies outside the path of prevailing winds flowing across the INEL site. As noted in Volume 1, Appendix B, section 4.7, the mountain ranges bordering INEL normally channel the prevailing westerlies into a southwest wind, away from the reservation.

05.01 (003) Aesthetic and Scenic Resources

COMMENT

Commentors urge that the beauty of Idaho be preserved.

RESPONSE

DOE agrees. In developing the alternatives for management of spent nuclear fuel (SNF) and environmental restoration and waste management at INEL, DOE was sensitive to the impacts that could be caused by disturbance of the natural landscape. Thus, for new facilities, DOE would use land that has already been disturbed or land that is adjacent to developed land. The amount of land required for new facilities would also be minimized. Even for the case in which all SNF would be shipped to INEL, only 31 acres (0.01 percent of the site land area) would be devoted to new facilities. In developing this land, there would be efforts to prevent degradation of views and prevent environmental damage that might cause the loss of natural flora and fauna.

5.2 Air Quality

05.02 (001) Air Quality

COMMENT

The commentor wonders about the effects on air quality of releases of polluting chemicals and radioactive materials to the air.

RESPONSE

DOE's policy is to comply with all applicable Federal, state, and local regulations and DOE Orders, and to protect human health and the environment. Where possible, potential concentrations of air pollutants from the various alternatives have been estimated, considering appropriate local meteorology and other data for each site. DOE employs pollution reduction techniques to minimize air releases when designing, constructing, and operating facilities.

Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts, including impacts to air quality, for all the alternatives considered in this EIS. The analyses show that the impacts for all alternatives would be small.

05.02 (003) Air Quality

COMMENT

The commentor states that the radiological risks of the various alternatives in the EIS are impressively low and are consistent with other studies that have concluded that the risks of handling the larger problems of defense high-level waste or commercial fuel are not large.

RESPONSE

The comment is consistent with the EIS, which shows that the radiological risks associated with the various alternatives would be low, including the risks of interim storage of high-level waste.

The risks of handling commercial SNF, with the exception of certain special-case fuels managed by DOE, are beyond the scope of this EIS.

05.02 (004) Air Quality

COMMENT

The commentor questions the appropriateness of the units of measure (picocuries per milliliter) used in Volume 1, Appendix C, Table 4-18 to describe tritium activity in air moisture.
05.02 (005) Air Quality

COMMENT
The commenter indicates that the Hanford Site is in a noncompliant area for particulates.

RESPONSE
The commenter is correct. According to Volume 1, Appendix A, Table 4-7, the maximum 24-hour average particulate concentration exceeds State of Washington standards. The EIS has been changed to reflect this fact.

05.02 (006) Air Quality

COMMENT
The commenter states that a definition of 95 percent meteorology should be provided in Volume 2.

RESPONSE
The commenter is correct. According to Volume 1, Appendix A, Table 4-7, the maximum 24-hour average particulate concentration exceeds State of Washington standards. The EIS has been changed to reflect this fact.

05.02 (007) Air Quality

COMMENT
The commenter cannot tell from the EIS analysis if susceptible populations, such as those in nursing homes, have been considered, or whether pollutant deposition on local food crops has been considered.

RESPONSE
DOE can determine no cases where susceptible subgroups, such as nursing home occupants, require specific evaluation. The basis for this statement is (1) air quality impacts at all populated (off-site) areas are well below health-based standards for all pollutants considered, and (2) the applicable standards are based on dose-response data, which have already accounted for susceptible subgroups.

Pollutant deposition on local food crops has been directly assessed in the case of radionuclides, and indirectly assessed in the case of criteria pollutants. In the latter case, all off-site concentrations of criteria pollutants are below the secondary air quality standards, which have been established to prevent adverse effects to vegetation, property, or other elements of the environment.

DOE has added a better explanation of source terms and a description of the indirect exposure assessment and secondary pathways that were evaluated and included in the EIS. (See Volumes 1 and 2, Chapter 5.)

05.02 (008) Air Quality

COMMENT
The commenter considers the EIS presumptions to claim that levels of all nonradiological pollutants, with the possible exception of hydrochloric acid, which results from the incineration at INEL of low-level and mixed low-level waste, are below applicable standards. The commenter states that only trial burns can confirm this, and it is impossible to be so positive about any proposed incinerator. The commenter also asks if this incinerator is being evaluated under the Environmental Protection Agency's new "Combustion Strategy."

RESPONSE
With respect to hydrochloric acid, the incinerator in question is the Waste Experimental Reduction Facility. This facility is included in Volume 2 for the Ten-Year Plan and Maximum Treatment, Storage, and Disposal alternatives for processing low-level and mixed low-level waste. However, it is not a "proposed incinerator," but rather an existing facility that has had several trial burns and has processed low-level waste and limited amounts of mixed wastes. Thus, a considerable amount of test data and operating experience exists. The Waste Experimental Reduction Facility has an air quality permit that has specific limitations for various pollutants. The facility can continue to operate with existing permits. The reviewing agency will evaluate all data under applicable standards and guidelines, which may include the Environmental Protection Agency's (EPA's) new "Combustion Strategy," and will apply all required restrictions and emissions standards designed to ensure compliance.

Other incinerators proposed under these alternatives (e.g., the Idaho Waste Processing Facility, the Mixed Low-Level Waste Treatment Facility, and the private-sector Alpha-Mixed Low-level Waste Treatment Facility) are early in the conceptual design stage of development, and the projects' emissions are less certain. Annual average increment levels, exclusive of baseline levels, should be used to compare recently promulgated State of Idaho standards for noncarcinogenic toxics, including hydrochloric acid. The analyses presented in the EIS used maximum 8-hour concentrations in accordance with previous State of Idaho guidelines. Due to the conservative approach used in these analyses, and the additional analyses and conditions that will be applied by the State of Idaho Division of
Environmental Quality as part of its permit review function, DOE can state with confidence that all pollutant levels would be well below applicable standards.

05.02 (009) Air Quality
COMMENT
The commentor objects to any promise of adding combustion controls to mitigate impacts. The commentor cites the case in which DOE received a permit for nitrogen oxide emissions from the Idaho Chemical Processing Plant in 1989, and although the permit contained a requirement to install abatement equipment for those emissions, the equipment has yet to be installed.
RESPONSE
The activity in question was the Fuel Processing Restoration (FPR) Project. The permit was contingent on operation of the FPR project and was not independently applicable. The FPR project did not proceed and the increases in nitrogen oxide emissions did not materialize. With regard to this EIS, DOE does not promise to add combustion controls to mitigate impacts. Rather, each new project would be evaluated to determine whether controls are required or warranted. In some cases, combustion controls may be required by the State of Idaho Division of Environmental Quality before a facility will be granted a construction permit.

05.02 (010) Air Quality
COMMENT
The commentor states that Idaho air quality rules should be specified as "Rules for the Control of Air Pollution in Idaho," and references to the Air Quality Bureau should be updated.
RESPONSE
The commentor is correct. References to Idaho air quality rules and the Air Quality Bureau have been updated in Volume 2.

05.02 (011) Air Quality
COMMENT
The commentor states that ambient air concentrations at the Idaho National Engineering Laboratory should be modeled at the inner boundary of the grazing area on the site, because the public is allowed access to that area.
RESPONSE
As defined in Rules for the Control of Air Pollution in Idaho, "ambient air" refers to that portion of the atmosphere to which the general public has access. This is not the case with grazing areas on the INEL site. Access to these areas is controlled and is restricted to certain individuals or groups; the general public does not have access. DOE's position is that these grazing areas do not meet the definition of areas that contain "ambient air." Therefore, ambient air quality standards do not apply, and impact modeling is not required for these areas.

05.02 (012) Air Quality
COMMENT
The commentor asked DOE to explain why the latest version of the SCREEN air quality model (called SCREEN2) was not used.
RESPONSE
The EIS used air quality baseline data for some toxic air pollutants that had been generated by previous modeling efforts, which used the SCREEN model. Rather than repeat these analyses using SCREEN2, an approach was taken whereby: (a) for any screening level, baseline toxic results that approached about one-half an applicable standard were reassessed using the more refined Industrial Source Complex Short Term-2 (ISCST-2) model; and (b) comparison tests were run to determine if there were significant differences in the results obtained using SCREEN versus SCREEN2. For the manner in which the SCREEN model was applied, test runs indicated that no difference would be obtained by reassessing the baseline cases that had previously been performed. There is no requirement in Rules for the Control of Air Pollution in Idaho to perform the analyses that were done using SCREEN. The analyses to determine compliance with toxic increment standards were performed using ISCST-2.

05.02 (013) Air Quality
COMMENT
The commentor disagrees with the statement about krypton-85 being "by far, the radionuclide with the highest emission rate." The commentor also states that since reprocessing has been suspended, argon-41 is the radionuclide with the highest emission rate.
RESPONSE
The statement cited by the commentor is from Volume 1, Appendix B. Volume 2 makes it clear that krypton-85 has historically been the radionuclide with the highest emission rate, but that fuel reprocessing, the activity primarily responsible for krypton-85 emissions, ceased in 1992. The wording in Volume 1, Appendix B, section 4.7 has been changed to correspond to that in Volume 2, section 4.7.
05.02 (014) Air Quality
COMMENT
The commenter questions why Volume 1, Table 4.7.3 and Volume 2, Table 4.7.1 list noble gas emissions from Argonne National Laboratory-West that are higher than those listed in the 1991 Radioactive Waste Management Information System and the 1991 Idaho National Engineering Laboratory National Emission Standard for Hazardous Air Pollutants, Annual Report.
RESPONSE
As indicated in footnotes on the tables cited by the commenter, the emissions estimates include those from existing facilities and reasonably foreseeable increases to the baseline. Included in the latter category is the Fuel Cycle Facility at Argonne National Laboratory-West. This facility has significant emissions of krypton-85 (11,500 curies) and xenon-131m (127 curies), which account for the difference between the values listed in the tables and the values reported in the Radioactive Waste Management Information System and 1991 Idaho National Engineering Laboratory National Emission Standard for Hazardous Air Pollutants, Annual Report.

05.02 (015) Air Quality
COMMENT
The commenter states that emissions and visibility impacts should be evaluated for fossil-fuel-burning equipment associated with plant services that would be needed to support the Regionalization or Centralization alternatives at Idaho National Engineering Laboratory.
RESPONSE
The specific projects associated with the alternatives for Regionalization or Centralization of SNF at INEL would not require additional fossil-fuel-burning equipment beyond that which is already installed, with the exception of one minor source, a diesel generator associated with the Fort St. Vrain Spent Fuel Storage Project. The emissions from this source would be very low, and the statement that these emissions would not add a measurable increment to emissions at INEL is accurate. Visibility impacts from this minor source would be small. A visibility impact analysis was also performed for the closest Class I area (Craters of the Moon National Monument) for the cumulative emissions of all applicable sources comprising each Volume 2 alternative.

05.02 (016) Air Quality
COMMENT
The commenter states that mercury is shown to slightly exceed the State of Idaho criteria for two of the alternatives. The commenter states that given the uncertainty known to exist in the Industrial Source Complex model, it is not possible to judge the health implications of this information.
RESPONSE
The mercury levels reported in the Draft EIS are the maximum 8-hour levels that would be expected. The EIS reflects State of Idaho standards effective May 1, 1994, for calculating the effect of mercury emissions on air quality. The State of Idaho now requires that state annual averages levels should be used. As discussed in Volume 2, section 5.7, revised calculations show that mercury levels are now well below the Idaho standard. The revised mercury level is less than 3 percent of the state standard. These levels are predicted if mercury-bearing waste were processed at a very high rate. Feed rate limits or engineering controls could be employed to minimize and ensure that levels approaching the standard would not result.

The EIS has been changed from an 8-hour reporting level to a 24-hour reporting level.

05.02 (018) Air Quality
COMMENT
The commenter makes the following recommendations: (a) use the same baseline year for radionuclides, criteria pollutants, and toxic air pollutants, (b) clarify the distinction between existing emissions and projected emissions for some cases, and (c) present air emissions for 1990, 1991, and 1992, and an analysis for each of these years.
RESPONSE
The rationale for using different baseline years for radionuclides, criteria pollutants, and toxic air pollutants follows: Generally, the most representative baseline year is the most recent year. However, at the time the analyses were performed, the availability of data varied for the three classes of airborne emissions. For radionuclides and criteria pollutants, 1991 was the most recent year for which data were available when the baseline studies were conducted, and these were the data that were used. However, some SNF processing took place that year at the Idaho Chemical Processing Facility. SNF processing is no longer performed at this facility and radionuclide emissions for this activity are therefore not representative of baseline conditions. Moreover, processing is an activity assessed in association with some of the alternatives, and inclusion of these emissions in both the baseline and alternative impact scenarios would cause double counting. That is why the 1993 radionuclide emissions were used for this facility. With respect to toxic air pollutant emissions, only 1989 data were and currently are available for analysis.

The only distinction made between existing emissions and a future baseline involves increases due to specific projects that are expected to become operational before June 1, 1995 (that is, before the time
period covered by the EIS alternatives. These projects are identified in Volume 2, sections 4.7 and Appendix F-3. The analysis is conservative in that no credit is taken for future reductions in emissions.

DOE does not agree that 3 years of emissions should be analyzed. Conservative emissions estimates were used for the baseline year, and all impacts based on these estimates represent an upper bound to the impacts that would actually occur. For example, the maximum emissions scenario used for criteria and toxic air pollutants exceeds actual emissions by a substantial margin (as illustrated in Volume 2, Figure 4.7-4) and bounds the baseline conditions.

05.02 (019) Air Quality

COMMENT
The commentor states that the only Air Quality Related Value considered was visibility, and no justification was given for not including other Air Quality Related Values, such as impacts to soils and plants.

RESPONSE
Air Quality Related Values other than visibility were assessed. Volume 2, section 5.7.4 discusses impacts to soils and vegetation and impacts due to secondary growth. All off-site concentrations of criteria pollutants are below the secondary air quality standards, which have been established to prevent adverse effects on vegetation, property, or other elements of the environment. Standards for protection of vegetation have also been established for fluorides, although impacts of fluoride emissions were modeled only for comparison to the Toxic Air Pollutant Increments. Fluoride emissions associated with the alternatives would be very low and would not be expected to result in any impact. Also, pollutant deposition on local food crops has been directly assessed for radionuclides; the results include the dose from ingestion of contaminated food products. With respect to other Air Quality Related Values, evaluations were performed and described for ozone formation, stratospheric ozone depletion, acidic deposition, and global warming.

05.02 (020) Air Quality

COMMENT
The commentor points out that the statement "emissions of volatile organic compounds would be expected to have a negligible effect on ozone formation" is incorrect. The commentor states that the 1990 emission inventory indicates emissions of more than 600 tons per year of volatile organic compounds. The commentor recommends that the amount of ozone formation be estimated.

RESPONSE
The 1990 emissions inventory for INEL quantifies the maximum potential emissions of volatile organic compounds (VOCs) as more than 600 tons per year. VOC emissions from actual operations are less than 100 tons per year. VOC emissions from the proposed projects would be less than 10 tons per year of the applicable State of Idaho standards' significant level of 40 tons per year that would necessitate an ozone formation analysis. From Volume 2, Table 5.7-2 it can be seen that volatile organic compound emissions range from 5.583 kilograms (6.1 tons) per year for the No Action alternative to 8,882 kilograms (9.8 tons) per year for the Maximum Treatment, Storage, and Disposal alternative. The low potential for ozone formation from the proposed projects precludes the need for a detailed assessment. For those projects requiring air quality permits, analyses for impacts resulting from specific pollutants, in this case VOCs, would be performed, contingent on regulatory requirements.

05.02 (021) Air Quality

COMMENT
The commentor states that releases of carbon tetrachloride, freon, and greenhouse gases are described as extremely small compared with global loading, and considers this an unreasonable comparison.

RESPONSE
The statement in question attempts to characterize emissions associated with the alternatives in terms of potential for stratospheric ozone depletion (carbon tetrachloride and freon) and global warming (greenhouse gases, including carbon dioxide, methane, nitrous oxides, and chlorofluorocarbons). These are global (not regional) effects, which are associated with global emissions. The emissions from alternatives represent an extremely small fraction of global levels, and it is reasonable to conclude that these emissions would have small impacts with respect to global effects. INEL has an ongoing program to reduce or eliminate the use of chlorofluorocarbon compounds.

05.02 (022) Air Quality

COMMENT
The commentor requests that DOE demonstrate how the emission rates and concentrations for air pollutants summarized in Volume 2, section 4.7 were calculated.

RESPONSE
The methods used to calculate emission rates and concentrations are described in Volume 2, Appendix F-3. Additional details on these methods are provided in the Technical Support Document for Air Resources, which is referenced in Appendix F-3. For radiological releases and assessments, additional details are provided in Estimated Radiological Doses Resulting from Airborne Radionuclide Released by Facilities at the Idaho National Engineering Laboratory, and Maximum Individual, Collocated Worker.
and Population Doses from INEL Proposed Action and No Action Sources, which are also cited in Appendix F-3. The referenced reports are available for review in the reading rooms and information locations listed in the EIS.

05.02 (023) Air Quality

COMMENT

The commentor points out that previous documents have established that adequate upper air (mixing height) data are not available for the Idaho National Engineering Laboratory vicinity and asked DOE to describe the upper air meteorological data used for modeling.

RESPONSE

Verified measurements of on-site mixing height for the INEL vicinity are not available at this time. The original nonradiological analyses (modeling of the baseline concentrations and impacts of alternatives) conservatively assumed a mixing height of 100 meters for modeling of both short- and long-term (annual average) concentrations. The radiological modeling (which only involves annual averages) used a mixing height of 800 meters. Additional nonradiological modeling, which has since been performed to assess compliance with Prevention of Significant Deterioration (PSD) increment limits, used values of 150 meters for 3-hour and 24-hour averaging periods, and 800 meters for annual average assessments. These are considered more reasonable estimates for short- and long-term mixing heights. The basis for the short-term value is that 150 meters is reportedly the lowest mixing height ever observed at INEL. (Air Permitting Handbook, Page 4-48). The 800-meter value is recommended by the National Oceanic and Atmospheric Administration as appropriate for long-term modeling (Sangendorf, J., U.S. Department of Commerce, National Oceanic and Atmospheric Administration. Averaging INEL Mixing Depths, Memo to M. Abbott, EG&G-Idaho, Inc., February 11, 1991). For short-term calculations, the same results are obtained whether 100 or 150 meters is used; this is because the highest short-term concentrations are predicted to occur during conditions of slight-to-moderate atmospheric stability (that is, stability classes E and F), in which cases mixing height data are not used by the Industrial Source Complex Short Term-2 model.

05.02 (024) Air Quality

COMMENT

The commentor points out that the toxic standards are now listed as increments and the New Source Review Toxic Policy was eliminated.

RESPONSE

Volume 2, Figure 4.7-2 has been revised to reflect recent updates to the Idaho Toxic Air Pollutant Standards. The New Source Review Toxic Policy was incorporated into the Rules for Control of Air Pollution in Idaho.

05.02 (025) Air Quality

COMMENT

The commentor points out that the power of 10 is missing in the value of foreseeable increases in carbon tetrachloride emissions in Volume 2, Table 4.7-2.

RESPONSE

Volume 2, Table 4.7-2 has been corrected to show the value for foreseeable increases in carbon tetrachloride emissions as 4.5 x 10-5 kilograms per year.

05.02 (026) Air Quality

COMMENT

The commentor notes that the correct characterization for the area around the Idaho National Engineering Laboratory site is “in attainment or unclassified” for all National Ambient Air Quality standards.

RESPONSE

The commentor is correct. Volume 2, section 4.7.4 has been revised to read: “The area around the Idaho National Engineering Laboratory site is in attainment or unclassified for all National Ambient Air Quality Standards.”

05.02 (027) Air Quality

COMMENT

The commentor states that the estimated impacts on air quality, especially on visual air quality, were not presented for operation of the New Waste Calculining Facility and questions whether this facility’s impacts are included in Volume 2, Figure 5.7-4. The commentor states that NOx reduction in the New Waste Calculining Facility plume should be evaluated.

RESPONSE

The impacts on air quality have been assessed for emissions associated with the New Waste Calculining Facility. These impact assessments included comparison with ambient air quality standards, but did not include potential impacts on visibility. Visibility impacts were indirectly assessed in that the background visual range used for the visibility analysis of alternative projects reflects conditions during which the New Waste Calculining Facility was operating. Volume 2, section 5.7 discusses impacts to visibility. The
Waste Immobilization Facility, which would eventually replace the New Waste Calcining Facility (and which also has similar projected NOx emissions), has been evaluated for visibility impacts. There is currently no requirement to evaluate the New Waste Calcining Facility for NOx reduction. Visibility impacts will be evaluated in conjunction with obtaining necessary permits.

05.02 (028) Air Quality

COMMENT
The commenter notes that: (a) the discussion of cumulative effects of airborne emissions at the Idaho National Engineering Laboratory omits discussion of visibility impacts and does not discuss the synergistic effects of exposure to multiple pollutants or long-term dose or risk from historic operations; and (b) operational accident scenarios do not seem reasonable.

RESPONSE
Visibility impacts from airborne emissions are discussed in the Volume 2, section 5.15. The impacts assessed for the alternatives are cumulative because the analysis determines the potential impairment of the visual resource over the existing background, which is representative of conditions resulting from existing emissions.

Potential synergistic effects from multiple chemical exposures are extremely difficult to assess quantitatively because there is insufficient data to indicate synergistic effects. However, the potential for synergistic effects is small where the concentrations for each individual compound are low, as is the case for the alternatives evaluated in this EIS. To ensure that potential impacts are bounded, conservatively high releases and exposure conditions were assumed. Further, the point of highest concentration for each chemical occurs at different times and places. It is unlikely that any one individual could be exposed to more than one chemical species at the concentrations reported in this EIS.

Radiation doses from historic operations are discussed in Volume 2, section 5.15.B. More information is available in referenced technical support documents, which are available for review in public reading rooms that received copies of this EIS. DOE is not aware of any generally accepted analysis methodology that has been developed to evaluate synergistic effects due to several airborne chemical constituents. DOE is aware that research into this area is continuing.

The evaluation of cumulative effects considers historic accidents only. The implementing regulations for the National Environmental Policy Act (NEPA) at 40 CFR Paragraph 1508.7 specifies "that cumulative impacts result from past, present, and reasonably foreseeable future actions..." For cumulative impacts, DOE has consistently interpreted "reasonably foreseeable" to include construction, operation,

05.02 (029) Air Quality

COMMENT
Referring to Volume 2, section 5.18.2, the commenter points out that application of refined modeling methods is not a mitigation measure.

RESPONSE
The commenter is correct. While the information derived from the application of refined modeling methods may eliminate the need for mitigation measures, the process is technically not a mitigation measure. The sentence in question has been revised. It clarifies what measures would be required if the results of refined modeling confirm the findings of the screening-level analysis; that is, visibility at the Class I area of Craters of the Moon would be perceptibly impaired as a result of projected emissions.

05.02 (030) Air Quality

COMMENT
The commenter points out that the key word "net" is missing from the description of when a Prevention of Significant Deterioration analysis must be performed.

RESPONSE
Volume 2, Appendix F, section F-3.3.1 has been revised to clarify that a Prevention of Significant Deterioration (PSD) review is required whenever any modification would result in a significant net increase of any air pollutant.

05.02 (031) Air Quality

COMMENT
The commenter states that trace elements such as nickel may also be emitted by combustion sources (e.g., generators and boilers) associated with the Pit 9 waste retrieval project.

RESPONSE
At the time the Draft EIS was prepared, no generators or boilers were proposed for the Pit 9 Retrieval Project. Since that time, however, the project has been expanded to include two boilers. The dispersion modeling now includes the projected emissions from these boilers, which include the trace elements of nickel, lead, and chromium. Emissions tables and dispersion modeling results in the EIS have been updated.
05.02 (032) Air Quality

COMMENT
The commentor notes that radiological assessment methodology for air impacts treats input data and output results as constants with no uncertainty or variability, which is not consistent with the state-of-the-art of environmental risk assessment. The commentor recommends that confidence statements be provided for estimates of the true, but unknown, value being calculated or the true, but unknown, distribution of values.

RESPONSE
The radiological assessment of air impacts used the GENII code to perform calculations of dose. The results represent best estimates for dose to an off-site individual, on-site individual, and the surrounding population. They are based on conservative release estimates, representative meteorology, and conservative assumptions regarding the location and habits of the receptors (especially for the maximally exposed off-site individual). The dispersion model algorithms are generally accepted as appropriate for this type of assessment (as opposed to research applications, in which a quantitative uncertainty analysis would be appropriate), and the computer code has been benchmarked as defined by the International Atomic Energy Agency. It can be said with confidence that the dose results, especially those for the maximally exposed off-site individual, overstate the doses that would actually occur, yet these results are still well below the most restrictive limit. Using a computer code that has been extensively tested and meets rigorous quality assurance requirements is considered sufficient for an assessment of this type under NEPA.

05.02 (033) Air Quality

COMMENT
The commentor recommends that the EIS clarify that a segment of past meteorological measurements has been chosen for the radiological assessments to be representative of average conditions to be expected for the 10-year period covered by the EIS.

RESPONSE
Volume 2, Appendix F-3.4.2 states that the meteorological data used for the radiological assessments were obtained at the various facility monitoring stations over the 5-year period 1987 through 1991. However, it was not explicitly stated that these conditions are assumed to be representative of the years covered by the EIS. Volume 2, Appendix F-3.4.2 has been revised to clarify this assumption.

05.02 (034) Air Quality

COMMENT
The commentor states that when comparing predicted concentrations of toxic air pollutants with the increment standards contained in the May 1, 1994, Idaho rules, the concentrations should be based on annual averages.

RESPONSE
The analyses in Volume 2, sections 4.7 and 5.7 compare predicted 8-hour concentrations with noncarcinogenic increments. The analyses for noncarcinogenic emissions have been revised to reflect annual average concentrations.

05.02 (035) Air Quality

COMMENT
The commentor questions the basis for 1.0 x 10+4 curies of noble gases from the Idaho Chemical Processing Plant listed in Volume 1, Appendix B, Table 4.7-3 and Volume 2, Table 4.7-1.

RESPONSE
The value of 1.0 x 10+4 curies represents an upper bound to the annual emissions of krypton-85 from the Idaho Chemical Processing Plant for a recent 1-year period. The actual releases for recent years have been classified. Actual baseline krypton-85 emissions from this facility are very much lower than this value. The value of 1.0 x 10+4 curies was used in the radiological dose assessment. Because the dose from krypton-85 at these levels is not a large fraction of the overall dose, this release estimate is adequate for evaluation and comparison of alternatives required for a programmatic EIS.

05.02 (036) Air Quality

COMMENT
The commentor points out that Volume 1, Appendix B, Table 5.7-1 lists ammonium hydroxide and hydrofluoric acid as toxic air pollutants (carcinogens), yet these substances are not listed in Idaho's Toxic Air Pollutants Increments.

RESPONSE
The commentor is correct. Ammonium hydroxide and hydrofluoric acid are not carcinogens and are not listed in Idaho's Toxic Air Pollutants Increments. Hydrofluoric acid emissions were listed in the table because total fluoride emissions are listed in Idaho's Toxic Air Pollutants Increments. Ammonium hydroxide emissions were assessed conservatively as ammonia, a substance that is listed in the Toxic Air Pollutants Increments. DOE has clarified that these pollutants are not carcinogens and the basis for their inclusion (as stated above) in the EIS.
05.02 (037) Air Quality

COMMENT

The commentor states that current emissions and projected increases should be listed separately in Volume 2, and the basis for projected increases in baseline emissions should be explained.

RESPONSE

The comment concerns the listing of radionuclide emissions for potential projects. These emissions are considered reasonably foreseeable increases to the baseline. These increases currently are reflected in the data in Volume 2, Table 4.7-1, but are not listed separately. They are listed separately in the Technical Support Document for Air Resources, which is included as a reference for Volume 2. Emission rates for these projects were estimated in the same manner as described for alternative projects in Volume 2, Appendix F-3.4.1.

05.02 (038) Air Quality

COMMENT

The commentor states that analyses of air impacts should be compared with Prevention of Significant Deterioration limits, which are typically two to four times more stringent than National Ambient Air Quality Standards. The commentor points out that the Idaho National Engineering Laboratory has triggered the Prevention of Significant Deterioration baseline dates for nitrogen oxides, sulfur dioxide, and particulates and that the baseline conditions in Volume 2, section 4.7 are not Prevention of Significant Deterioration baseline conditions.

RESPONSE

The baseline date for a criteria pollutant establishes the date to start tracking consumed increments. Additional analyses have been performed to characterize the existing baseline conditions and impacts of alternatives in terms of the amount of PSD increment consumed. The methodology used was discussed with the Idaho Division of Environmental Quality, and a report documenting the methods and results has been completed and included as a reference in Volume 2. The results indicate that existing baseline conditions are within allowable increment consumption limits. When the contributions of emissions from the alternatives are added, the amount of increment consumption remains below the allowable limits for each of the alternatives. The PSD baseline analysis have been incorporated into Volume 2, section 5.7. Volume 2, Appendix F-3 has been revised to reflect the methods used to calculate PSD increment consumption.

05.02 (039) Air Quality

COMMENT

Commentors state that DOE should analyze the existing and potential air quality impacts to the Fort Hall Reservation using air pollutant radar data that indicate possible contributions from the Idaho National Engineering Laboratory site.

RESPONSE

The air quality analyses in the EIS were based on meteorological data appropriate to the various facilities at INEL. The analyses used the hourly meteorological data obtained from three on-site monitoring stations for 1991 and 1992 and are graphically presented as wind roses in Volume 2, Figure 4.7-1. These stations are in the southeast, central, and northern sections of INEL. Similar analyses were performed for each facility. Maximum emissions concentrations from each facility were summed at specific receptor locations to determine the maximum baseline air quality impacts from present operations and the cumulative impacts from proposed actions. Additional analyses were performed to ensure that the impacts at points beyond the site boundary were less than those at the boundary (such as might occur if a facility with a tall stack were located in close proximity to the boundary). Similar analyses have been conducted to determine the air quality impacts to various locations on the Fort Hall Reservation. The air quality impacts to the Fort Hall Reservation can be found in Volume 2, sections 4.7 and 5.7, and all of these impacts would be small for the alternatives considered in this EIS.

05.02 (040) Air Quality

COMMENT

The commentor states that the Tribes object to any attempt to locate projects to avoid impacts at Craters of the Moon Class I area if such relocation results in impacts to the Tribes, especially where those impacts have not been evaluated.

RESPONSE

There are no specific proposals to relocate projects to avoid impacts at the Class I area of Craters of the Moon National Monument. However, in cases where visibility impacts to the pristine conditions at Craters of the Moon are shown to be a potential problem, all options, including changing or relocating the project in question, would be evaluated. Potential visual impacts must be further defined and resolved before projects can proceed. Additional emissions controls and relocation of projects may be required to reduce potential impacts below acceptable criteria. As changes in visual setting, particularly in the Middle Butte area located in the southern portion of the INEL site, are seen by the Shoshone-Bannock Tribes to be an adverse effect on an important Native American resource, the Shoshone-Bannock Tribes would be consulted before any project is developed that could have impacts to resources of importance to the Tribes.
05.02 (041) Air Quality
COMMENT
The commentor suggests that the impacts from fugitive dust emission modeling should differentiate between fugitive emissions from temporary and permanent sources.

RESPONSE
The text in Volume 2, Appendix F-3.4.3 has been revised to more clearly distinguish between fugitive sources that are temporary (such as construction and demolition projects) and those that are more permanent (such as unpaved roads and landfill operations). The specific fugitive sources analyzed have been identified.

05.02 (043) Air Quality
COMMENT
The commentor notes there seem to be variations in the application of models from one location to another, virtually no information regarding source terms is given, and it is difficult to know if fugitive emissions have been considered and what emissions data were used.

RESPONSE
In general, models were applied consistently between sites. However, site-specific conditions may have required a unique application. For example, the commentor mentions that site boundary impacts are assessed at some sites, but in other cases, off-site locations are considered. The EIS evaluation first identified the ambient air location of highest predicted impact to the public and then estimated the maximum pollutant concentrations at that location for comparison with applicable standards. In the case of INEL, the maximum impacted ambient air locations tend to be along public roads that traverse the site. At other sites, the nearest ambient air location may be the site boundary, because public roads do not traverse the site.

Temporary fugitive dust activities such as construction and demolition are exempt from compliance with air quality standards; nevertheless, fugitive dust impacts from construction activities were assessed and are reported in Volume 1, and Appendices A through F.

For the other DOE sites evaluated in Volume 1, source emission rates are provided, but source characteristics (e.g., elevations, velocity, temperatures) are not provided in all cases. This level of detail is more appropriate for a site-specific EIS. A discussion of the modeling and emissions is in Volume 1, Appendices A through F.

05.02 (044) Air Quality
COMMENT
Commentors assert that DOE cannot avoid responsibility for its past practices of contaminating the air by categorizing its past activities as irreversible commitments of resources. Commentors state that DOE has put forward no compelling argument for further degrading the air of both the occupied and unoccupied land surrounding the Idaho National Engineering Laboratory and object to any irreversible commitment of air quality resources that could affect the 'Tribes' air quality, and also tourism. Commentors further note that DOE provides no assurances that controls would be installed to avoid adverse impacts on the air quality and visibility.

RESPONSE
The air quality impact analyses have detailed the potential for air quality impacts at ambient air locations. The analyses, for the most part, have been conducted for the site boundary and roads that traverse the site. Additional analyses have been conducted for the Craters of the Moon National Monument and the Fort Hall Reservation. The analyses for criteria pollutant impacts have shown that impacts will be below all applicable ambient air quality standards. PSD standards, which have been established specifically to prevent the degradation of air quality, would be met. Toxic pollutant impacts would also be below all applicable criteria. Impacts to air quality and visual resources at the Fort Hall Reservation from INEL operations will be even less, and this should not impact tourism.

Visual resource screening analyses were conducted at Craters of the Moon National Monument. The analyses used a screening methodology to determine the potential for worst-case impacts (i.e., during maximum operating scenarios and adverse meteorological conditions). These analyses used very conservative assumptions, including that many of the important proposed sources of emissions would incorporate no or minimal emission controls. In many cases, projects are in conceptual design stages, and adequate design of emission controls is not yet available. However, impacts are not likely to be underestimated when conservative assumptions are used. A key aspect of the screening analysis is distance from the source to the potential impact area. The analysis showed some potential for adverse impacts during the worst-case conditions. Methods to decrease the impact have not been determined, but as discussed in the EIS, they will likely include controls to further reduce emissions of pollutants impacting visibility. Siting factors will also be considered, as will refined modeling analyses (in lieu of conservative screening analyses). Through the Idaho Division of Environmental Quality's Permit to Construct process, proposed projects are required to demonstrate that there will be no adverse impacts on the ambient air quality and on visibility at Craters of the Moon. Any controls needed to avoid adverse impacts to air quality and visibility would be specified in permits.
Impacts to visibility, as well as criteria and toxic pollutant loading, should not be considered irreversible and irretrievable commitments of resources, but rather short-term impacts over the life of each project. Volume 2, section 5.18 has been revised to state that impacts to air quality and visibility are not irreversible and irretrievable commitments of resources.

05.02 (047) Air Quality

COMMENT
The commentor points out that the model receptor grid spacing is very large, and that a more dense grid spacing is necessary in areas of maximum predicted impact.

RESPONSE
After the Draft EIS was completed, DOE performed additional analyses, primarily for PSD increment consumption. As part of this analysis, a finely spaced receptor array was developed. This array includes receptor points spaced at approximately 100-meter intervals in those areas where the maximum impact is predicted to occur. This dense array has since been used in the PSD analyses for existing increment-consuming sources, and for sources associated with the EIS alternatives. The additional analyses have been incorporated into the appropriate sections of the EIS.

05.02 (048) Air Quality

COMMENT
The commentor notes that statements in Volume 2 that ozone levels are "not recognized as a problem in the region" and that the Idaho Division of Environmental Quality has determined that "ozone levels within the state are well below the standard" inaccurately describe ozone levels. The commentor states the more correct situation is that the Idaho Division of Environmental Quality has no ozone monitoring data from the vicinity and is not aware of problematic ozone levels in the area.

RESPONSE
The statements cited by the commentor reflect verbal comments that were obtained by the authors from the Idaho Division of Environmental Quality. The authors acknowledge, however, that the current wording of the statements could be misinterpreted to mean that ozone levels are not a problem in the area; in fact, data to substantiate this claim may not be available. The statements in Volume 2 have been replaced with the following: "The Division of Environmental Quality has no ozone monitoring data from the vicinity and is not aware of problem ozone levels in the area."

05.02 (049) Air Quality

COMMENT
The commentor considers the statement that "no previous projects have consumed increments" (at Craters of the Moon National Monument) to be unreasonable.

RESPONSE
The commentor raises a valid question. Increment consumption is established by assessments that are submitted with PSD permit applications, and accepted by the Division of Environmental Quality. Although two PSD permit applications have been previously submitted for the INEL projects, the amount of increment consumption at Craters of the Moon National Monument, if any, had not been established. One of the two (the Fuel Processing Restoration Project at Idaho Chemical Processing Plant) has since been withdrawn and currently is being modified. The other application (for the Special Manufacturing Capability at Test Area North) had not been formally "closed out" at the time the Draft EIS was prepared. As a result of discussions with the Division of Environmental Quality, it was decided that analyses were required to firmly establish the amount of increment consumption at the time that the Special Manufacturing Capability permit application was submitted and accepted, as of May 1, 1994. Additionally, it was decided that further analyses showing increment consumption by sources associated with the EIS alternatives was also required. These analyses have been completed. The statement to which the commentor refers has been revised to reflect the updated results.

05.02 (050) Air Quality

COMMENT
The commentor points out that the assumption of Gaussian dispersion tends to break down over long distances, or where flow direction changes. The commentor further states that Gaussian models can seriously underpredict impacts in these scenarios, and predictions for the Idaho National Engineering Laboratory boundary locations may be low.

RESPONSE
While it is true that Gaussian models used to estimate upper bound levels of toxic and critical impacts may be subject to the shortcomings noted by the commentor, the Industrial Source Complex Short Term-2 (IS CST-2) model is generally regarded as appropriate for the type of modeling performed for this EIS. In virtually every nonradiological case modeled, the highest ambient air impact occurred at public road locations. In these cases, the transport distances are not long and are well within the distances for which the ISCST-2 model is considered appropriate. Results of calculations indicate 80 to 85 percent of a dose occurs in the first 20 miles. Calculational assumptions selected by DOE were conservative to cover the uncertainties in calculational models.
05.02 (051) Air Quality

COMMENT

The commentor notes that there is a lack of any recent or reliable data about the effectiveness of the filtering and ventilation systems in the building where the Fort St. Vrain spent fuel would be stored at the Idaho National Engineering Laboratory. The commentor further states that the lack of these data creates uncertainty about the degree to which radionuclides emitted from the spent fuel might be vented to the environment through the storage facility's stack.

RESPONSE

There is no lack of recent reliable data about the effectiveness of the filtering and ventilation systems for the Irradiated Fuels Storage Facility where Fort St. Vrain spent nuclear fuel is stored at INEL. The facility is equipped with high efficiency particulate air (HEPA) filters having a verified filtration efficiency of 99.97 percent. Filter efficiency has been verified annually using standard Diocetyl Phthalate testing methodology. Records of these filter tests are available from 1979 to the present.

Regarding the commentor's statement about releases to the environment, stack releases are continuously monitored and records show that nearly all radioactivity has been below detectable levels. To more accurately assess historical releases to the environment, samples were obtained from the HEPA filters that have been in place since the facility was constructed. From the analysis of the filter samples, the average annual radionuclide emission rate and annual dose to a maximally exposed individual was calculated to be 4.8 x 10^-6 millirem, which is significantly less than 1 percent of the limit of 10 millirem per year required for DOE facilities by the Federal National Emission Standards for Hazardous Air Pollutants.

05.02 (052) Air Quality

COMMENT

The commentor asserts that it is incorrect to state that the GENII code tends to overestimate actual doses. The commentor further asserts that neither the GENII code nor CAP-88 (with which it is compared) has undergone a comprehensive validation study in the Idaho National Engineering Laboratory environment.

RESPONSE

The commentor refers to a statement in Volume 2, Appendix F-3 to the effect that the dose results for the baseline assessment are not likely to underestimate actual baseline or future doses. Part of the basis for this statement is that baseline results in the EIS (which were modeled with GENII) were higher than results contained in the 1991 and 1992 National Emission Standards for Hazardous Air Pollutants Reports (which were modeled with CAP-88). A study benchmarking these models in INEL settings has been published recently (Radioactive Waste Management Complex Low-Level Waste Radiological Performance Assessment) and is discussed in Volume 2, Appendix F-3. The point of the study is that the application of the model, including source-term and receptor-related assumptions, produces results that are likely to be conservative. The EIS has been revised to clarify this.

05.02 (053) Air Quality

COMMENT

The commentor notes that Volume 1, Appendix A, Table 5.7-1 does not show tritium releases from the K-basins.

RESPONSE

Tritium emissions from the K-basins have not been monitored because the emissions have been estimated to contribute a very small amount to the dose received by the maximally exposed individual from airborne releases at the Hanford Site. In 1993, the average measured tritium concentration at the Hanford Site boundary was 0.90 picocurie per cubic meter and the maximum concentration was 9.9 picocurie per cubic meter. In 1993, the dose to the hypothetical maximally exposed individual from all Hanford Site emissions to the atmosphere was estimated to be 0.01 millirem. Volume 1, Appendix A, section 5.7 has been revised to reflect these data.

05.02 (054) Air Quality

COMMENT

The commentor suggests that releases from four thermal treatment facilities at the Idaho National Engineering Laboratory should be included in the EIS.

RESPONSE

The four facilities identified by the commentor are the Waste Experimental Reduction Facility, the Process Experimental Pilot Plant, the Idaho Chemical Processing Plant Denitrification Facility, and the New Waste Calcining Facility. These facilities exist at INEL and are included in the baseline for emissions from the site. The Idaho Chemical Processing Plant Denitrification Facility uses the main stack at the Idaho Chemical Processing Plant and is included in that source. Other thermal treatment facilities were analyzed in Volume 2, Appendix C. The sources of emissions from site facilities appear in Volume 2, sections 4.8 and 5.8, and are discussed in Volume 2, section 7.3.

05.02 (055) Air Quality

COMMENT

The commentor suggests that there is a lack of information concerning model use and input data, which hinders review and verification of the EIS.
RESPONSE
Volume 2, Appendix F-3 discusses air dispersion modeling data and assumptions and health effects for each INEL facility. Actual and foreseeable doses are a very small fraction of established DOE dose limits, and are well below the National Emission Standards for Hazardous Air Pollutants (40 CFR 61, Subpart H) limit of 10 millirem per year.

05.02 (056) Air Quality
COMMENT
The commenter asks about the purpose of the comparison of hazard indices contained in Volume 1, Appendix B.
RESPONSE
Hazard indexes are compared to show that the data indicate no change from the baseline criteria pollutant hazard indexes under any of the alternatives. Volume 2, section 4.7 discusses the effects of INEL air emissions. DOE has expanded the language in Volume 1, Appendix B, section 5.12 to clarify the relationship between hazard indexes and reference concentrations or doses.

5.3 Cultural Resources

05.03 (001) Cultural Resources
COMMENT
Commentors suggest that requirements under Section 106 of the National Historic Preservation Act be implemented early in the project planning process at the Idaho National Engineering Laboratory.
RESPONSE
DOE agrees that this evaluation should be done early enough to allow historic properties to be considered fully during site selection and facility design. Requirements of the National Historic Preservation Act are implemented during conceptual design if DOE proceeds with a proposed project.

05.03 (002) Cultural Resources
COMMENT
Commentors assert that the EIS does not adequately address impacts on cultural resources from the various alternatives affecting the Idaho National Engineering Laboratory.
RESPONSE
The EIS identifies the number of known sites (approximately 1,500) on and percentage (4) of INEL surveyed only to indicate the magnitude of potential sites at INEL. Volume 2, section 4.4 discusses the use of predictive models and discusses the National Historic Preservation Act inventories that must be completed prior to any actions. Volume 2, section 5.19 further discusses the National Historic Preservation Act Section 106 requirements concerning the evaluation of sites and mitigation of impacts.

A comprehensive inventory of prehistoric cultural resources within the boundaries of INEL is under way. To date, surveys to identify these resources have been focused on areas where adverse impacts are most likely to occur (i.e., facility perimeters, along major roadways and utility corridors, gravel pits, etc.). In addition, a preliminary predictive model has been developed to identify zones of prehistoric cultural resource density across the entire 890-square-mile facility. This model can be used by INEL project managers during the initial stages of project planning to avoid areas where prehistoric resources appear to be particularly dense, thus reducing the impact of INEL activities on sensitive cultural materials. Refinement and testing of this model are also under way through the INEL Cultural Resource Management Office. This office also maintains a complete record of all cultural resource investigations completed at INEL, as well as a database of all known cultural resources. Prior to conducting any ground-disturbing activities, INEL project managers are directed to consult with the INEL Cultural Resource Management Office to avoid damage to any sensitive materials. Under the 1992 Working Agreement Between the Shoshone-Bannock Tribes of the Fort Hall Indian Reservation and the Idaho Field Office of the DOE Concerning Environment, Safety, Health, Cultural Resources and Economic Self-Sufficiency, the Tribes are consulted and are given the opportunity to comment on any INEL project that has the potential to impact any cultural resource.

Based on public comments, DOE has expanded the EIS definition of cultural resources. For example, Volume 2, section 4.9 now includes a list of plants and vegetation important to the Tribes.

05.03 (003) Cultural Resources
COMMENT
The commenter expresses the opinion that there are not adequate agreements in place to protect the Shoshone-Bannock Tribes' archaeological artifacts and that options for removal of the artifacts for display and study should be considered, including executing a curation agreement.
RESPONSE
DOE has initiated the Working Agreement, Policy on Native American Consultation to ensure communication with the Shoshone-Bannock Tribe relating to treatment of archaeological sites during excavation, as mandated by the Archaeological Resources Protection Act, and protection of human remains, as required under the Native American Graves Protection and Repatriation Act. In keeping with DOE's Native American Policy (Memorandum EH-1: Management of Cultural Resources at Department of Energy Facilities, U.S. Department of Energy, Washington, DC, February 23, 1990), DOE consults
with Native Americans during the planning and implementation of all proposed alternatives. If human remains are discovered, DOE notifies all tribes that have expressed an interest in the repatriation of graves, as required under the Native American Graves Protection and Repatriation Act. The tribes then have the opportunity to claim the remains and associated artifacts. Also, the DOE Idaho Operations Office is preparing a curation agreement pursuant to the Archaeological Resources Protection Act and is also drafting a programmatic agreement for the protection of historic properties pursuant to the National Historic Preservation Act. The handling of Native American cultural resource items pursuant to the Native American Graves Protection and Repatriation Act will be addressed by both of these agreements. Mitigation measures will be developed after these agreements are implemented.

Volume 2, section 4.3 has been changed to reflect these agreements.

05.03 (004) Cultural Resources
COMMENT
The commenter suggests that the EIS include mitigation measures in case cultural resources are inadvertently discovered during construction.

RESPONSE
This EIS is a programmatic document, based on current information and designed to provide decisionmakers a broad base of knowledge about the affected environment, any foreseeable impacts, and any potential mitigation measures for an identified environmental impact associated with a specific course of action. Providing specific, detailed mitigation measures, especially in areas where no environmental impact is foreseen, is beyond the scope of this document. Each DOE operations office is responsible for developing mitigation agreements, including actions to be taken in the event of discovery of archaeological resources or human remains during construction. Such agreements will be negotiated with appropriate tribes and State Historic Preservation Officers. These agreements would be referenced in future site-specific NEPA documentation when appropriate. The discussion in the EIS has been expanded to include this information.

05.03 (005) Cultural Resources
COMMENT
The commenter asserts that contamination resulting from transporting or storing SNF waste could affect hunting and gathering, which is as an irreplaceable part of the food supply and an important cultural and economic activity for the residents of the Fort Hall Reservation.

RESPONSE
There is a comprehensive environmental monitoring program at INEL, and the results are reported annually in the INEL Site Environmental Report. The monitoring conducted to date has not shown contamination in game species or food stuffs that would preclude or limit hunting and gathering. The site environmental monitoring programs gather game species and food stuffs from a wide area in southeastern Idaho, extending well beyond the boundaries of INEL in all directions.

Volume 1, Appendices D and I discuss impacts from both incident-free transportation and transportation accidents. The analysis shows that impacts from transportation activities for all alternatives would be small.

05.03 (006) Cultural Resources
COMMENT
The commenter objects to DOE’s cultural resource impact analysis, because it minimizes impacts by fragmenting them and focuses solely on material culture.

RESPONSE
DOE performs an analysis first by looking at the individual parts. This approach allows experts on ecology, water use, land use, air quality, etc., to evaluate impacts specific to their disciplines. After these impacts are evaluated, the overall impacts to the resources are evaluated, thereby providing a holistic approach. DOE agrees that impacts to the Shoshone-Bannock Tribes include all discipline areas identified in the EIS; however, it is not feasible to include all these areas under cultural impacts.

DOE does not presume to know the locations, absence or occurrence of items, sites, or resources important to the Tribes over the whole INEL site. Nor would it be more protective of the items, sites, or resources to conduct a site-wide survey than to conduct a complete site-specific analysis in conjunction with a specific project prior to any surface- or subsurface-disturbing activities. Broadly, DOE’s process is to identify a suitable site, conduct an initial survey, consult with the Tribes, and develop appropriate actions based on that consultation. The actions may include mitigation of impacts up to or including selection of another alternative site.

Volume 2, section 4.3 has been changed to discuss the Tribes’ broad view of cultural resources. See also the response to comment 05.03 (002).

05.03 (007) Cultural Resources
COMMENT
Commentators assert that the EIS does not adequately address impacts on cultural resources from the various alternatives affecting the Idaho National Engineering Laboratory and that the EIS represents an opportunity for DOE to continue consultations with the Tribes.
RESPONSE

The number of known sites (approximately 1,300) and the portion (4 percent) of the INEL site that has been surveyed are identified in the EIS only to suggest the large number of potential sites at INEL. Volume 2, section 4.4 discusses the use of predictive models and discusses the National Historic Preservation Act inventories that must be completed prior to any actions. Volume 2, section 5.19 further discusses the National Historic Preservation Act Section 106 requirements concerning the evaluation of sites and mitigation of impacts.

A comprehensive inventory of prehistoric cultural resources within the boundaries of INEL is under way. To date, surveys to identify these resources have been focused on areas where adverse impacts are most likely to occur (i.e., facility perimeters, along major roadways and utility corridors, gravel pits, etc.). In addition, a preliminary predictive model has been developed to identify zones of prehistoric cultural resource density across the entire 890-square-mile facility. This model can be used by INEL project managers during the initial stages of project planning to avoid areas where prehistoric resources appear to be particularly dense, thus reducing the impact of INEL activities on sensitive cultural materials. Refinement and testing of this model are also under way through the INEL Cultural Resource Management Office. This office also maintains a complete record of all cultural resource investigations completed at INEL, as well as a data base of all known cultural resources. Prior to conducting any ground-disturbing activities, INEL project managers are directed to consult with the INEL Cultural Resource Management Office to avoid damage to any sensitive materials. Under the 1992 Working Agreement Between the Shoshone-Bannock Tribes of the Fort Hall Indian Reservation and the Idaho Field Office of the DOE Concerning Environment, Safety, Health, Cultural Resources and Economic Self-Sufficiency, the Tribes are consulted and are given the opportunity to comment on any INEL project that has the potential to impact any cultural resource.

Based on public comments, DOE has expanded the EIS definition of cultural resources. For example, Volume 2, section 4.9 now includes a list of plants and vegetation important to the Tribes.

DOE has increased its consultation with the Shoshone-Bannock Tribes. A series of consultations involving management and technical personnel from the Tribes and DOE have resulted in a better understanding and resolution of mutual concerns. DOE continues to meet with the Tribes and plans to do so when implementing the actions proposed in the EIS.

5.4 Biological Resources

05.04 (002) Biological Resources

COMMENT

The commenter notes that many studies have been conducted by biologists, botanists, etc., around the Hanford Site and Idaho National Engineering Laboratory areas with intriguing results.

RESPONSE

Every effort has been made to review all pertinent studies for inclusion in the EIS. The public hearing moderator requested that the speaker identify any pertinent additional studies so that they may be evaluated. None was provided by the commenter.

05.04 (004) Biological Resources

COMMENT

The commenter suggests that the EIS considers the Arco desert to be a wasteland suitable for storage of spent nuclear fuel, which the commenter believes is a gross misunderstanding of the ecosystem and surrounding geography.

RESPONSE

DOE and the Navy consider sensitive ecosystems and habitats when designing and siting projects and comply with the laws and regulations protecting wildlife resources, including those protecting threatened and endangered species, to ensure the impacts of proposed activities are minimal. As described in Volumes 1 and 2, Chapter 5, measures for protecting ecological resources would be developed in consultation with the appropriate agencies if any sensitive ecosystems or habitats are identified on a project site. Preconstruction surveys would be conducted to determine the presence of these resources. DOE has designated INEL a National Environmental Research Park.

05.04 (005) Biological Resources

COMMENT

The commenter states that Idaho National Engineering Laboratory operations have caused minimal harm to animals and endangered species.

RESPONSE

DOE agrees with the commenter and notes that it has designated INEL a National Environmental Research Park. DOE considers threatened and endangered species and sensitive habitats when designing and siting its programs. It complies with the laws and regulations protecting wildlife resources, including those protecting threatened and endangered species, to ensure that the impacts of DOE activities are minimal. As described in Volume 1, section 5.7.7, measures to avoid or mitigate impacts to
ecological resources would be developed in consultation with the appropriate agencies if any threatened or endangered species or sensitive habitats are identified on a project site. Preconstruction surveys would be conducted to determine the presence of these resources.

05.04 (006) Biological Resources

COMMENT
The commenter asks about risks to the fragile ecosystem of marine waters near Seattle, Washington.

RESPONSE
Volume 1, Chapter 5, Appendices D and K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analysis shows that the impacts of all alternatives would be small. While there are differences in the impacts among the alternatives, these differences by themselves are not sufficient to distinguish between alternatives.

05.04 (007) Biological Resources

COMMENT
The commenter states that the EIS must address wildlife management practices at the Idaho National Engineering Laboratory as well as the impacts to wildlife that could result from the alternatives, and that the Tribes should be afforded hunting rights on the site.

RESPONSE
While DOE manages the game habitat at INEL, the State of Idaho manages wildlife and has jurisdiction over hunting rights within the INEL boundary. Issues relating to wildlife management or requests for hunting rights must be addressed to the state.

Impacts to wildlife that could occur as a result of the various alternatives, and subsequent mitigation measures, are discussed in Volume 2, Chapter 5, sections 5.9 and 5.19.

05.04 (008) Biological Resources

COMMENT
The commenter states that Idaho National Engineering Laboratory impacts cannot be evaluated without specific sites selected for certain new construction projects, and that DOE should minimize impacts on wildlife habitat by clustering new facilities near currently disturbed areas.

RESPONSE
Volume 2, Appendix C specifies the location of potential disturbances. DOE has attempted to site proposed activities in the most environmentally benign locations that will meet health and safety requirements. Siting was considered in the following order of preference: (1) locate in existing facilities, (2) locate in existing industrial areas on previously disturbed areas, (3) locate in industrial areas on undisturbed areas, (4) locate outside, but immediately adjacent to, industrial areas, and (5) locate outside and away from existing industrial areas.

The three projects that would cause most of the disturbance outside and separate from the current industrial areas are the Idaho Waste Processing Facility, the Alpha-Mixed Low-Level Waste Treatment Facility, and the Alpha-Mixed Low-Level Waste Disposal Facility. All three projects are still in the conceptual design phase and would require project-specific NEPA documentation before resources are committed. Because it is still in the design phase, the specific location for the Idaho Waste Processing Facility is not well defined. The EIS states that it may be located near the Radioactive Waste Management Complex (RWMC) or at other existing industrial locations on the INEL site. For purposes of analysis in the ecological consequences section of the EIS, the Idaho Waste Processing Facility was located 4 kilometers (2.5 miles) east of the RWMC. This is the most conservative siting method because it would result in the largest impact to ecological resources. Similarly, the Alpha-Mixed Low-Level Waste Treatment Facility and the Alpha-Mixed Low-Level Waste Disposal Facility may be located in or adjoining existing INEL facilities. The most conservative assumption used was for the analysis: that a private facility would be build 4 kilometers (2.5 miles) west of the RWMC.

As stated in the EIS, DOE would perform site-specific preactivity surveys to identify any sensitive resources on the site to ensure that impacts from the proposed actions are identified and that mitigation measures can be developed and integrated into the project.

05.04 (009) Biological Resources

COMMENT
The commenter states that Volume 1, Appendix F should include language to ensure that actions will preserve wetland resources, if such resources exist. The commenter also states that the presence of wetlands on a proposed construction site is not addressed.

RESPONSE
As discussed in Volume 1, Appendix F, Part Two, sections 4.9.2 and 5.9.1, there are no wetlands on the proposed SNF site at the Nevada Test Site (NTS); thus, no special preservation efforts are currently required.

Oak Ridge Reservation (ORR) wetlands are discussed in Volume 1, Appendix F, Part Three, sections 4.9.2 and 5.9.1. It is DOE policy to comply with Executive Order 11990, Protection of Wetlands, which directs government agencies to avoid any short- and long-term adverse impacts on wetlands wherever there is a practicable alternative. If ORR is chosen as a site for SNF management, the potential for
impacts on wetland resources on the site would be specifically analyzed, along with potential opportunities to avoid or otherwise mitigate impacts. Unavoidable impacts to wetlands would be mitigated according to DOE policy.

05.04 (010) Biological Resources

COMMENT
The commentor states that mitigation measures, including those for the desert tortoise, are not adequately addressed in Volume 1, Appendix F.

RESPONSE
A biological opinion concerning the desert tortoise has been issued by the U.S. Fish and Wildlife Service covering current projects at the NTS. (See Volume I, Appendix F, Part Two, section 4.9.4.) As described in Volume I, Appendix F, Part Two, section 5.9, recommended mitigation measures included preactivity surveys for the tortoises and their removal from affected areas, as well as periodic inspections and eventual backfilling, covering, or installation of tortoise-proof fencing around open construction trenches and excavations, and reducing speed limits on site roadways. After consulting with the U.S. Fish and Wildlife Service and the Nevada Division of Wildlife, similar recommendations would be implemented, as appropriate, if NTS were selected as the location for a SNF facility. Providing specific, detailed mitigation measures is beyond the scope of this EIS and will be addressed in tiering NEPA documentation when appropriate.

05.04 (011) Biological Resources

COMMENT
Commentors state that the EIS failed to consider potential impacts on fish and wildlife from transportation of spent nuclear fuel and other hazardous materials. This includes accidents, alternative route analysis, threat reduction, and mitigation of impacts to wildlife from transportation accidents.

RESPONSE
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small, including the impacts to fish and wildlife. While there would be differences in the impacts among the alternatives, these differences by themselves are not sufficient to distinguish between alternatives.

Volume 2, section 5.19 addresses mitigation for both operations and accident conditions. Volume 2, section 5.11 covers all transportation impacts, including incident-free transportation and transportation accidents. Regional traffic impacts are also covered. As noted in Volume 2, section 5.11, the increased

movements of materials and people due to all alternatives would result in no change to the level of service of U.S. Highway 20, the regional highway with the highest use around INEL.

An accident with a release of radionuclides or hazardous material into the environment could result in temporary exposures of biota. The impact would likely be localized and of short duration. State and U.S. Fish and Wildlife Departments and Natural Resource Trustees would be consulted to receive input for the most appropriate response for the specific accident and current conditions. The emergency response efforts would focus on cleaning the site and removing contaminants as completely and as rapidly as possible. While radiological impacts from accidents could result in loss of individual animals and plants, long-term losses or large-area losses would not be anticipated. Impacts to fish would depend on the material and quantity spilled into the aquatic environment, and must be evaluated on a case-by-case basis.

Volume 2, Chapters 4 and 5 have been modified to include information on threat reduction and evaluation of the impacts of collision accidents wildlife.

05.04 (013) Biological Resources

COMMENT
The commentor states big game kills by trains are not reported in the EIS, and increased risk of wildlife kills by train transport are not addressed in the EIS.

RESPONSE
Information was obtained from the State of Idaho Division of Wildlife Management concerning incidents involving trains killing large numbers of pronghorn antelope. This information has been included in Volume 2, section 4.11. See also the response to comment 05.04 (011) regarding changes in the EIS to evaluate impacts of transportation accidents.

05.04 (014) Biological Resources

COMMENT
The commentor asks about depredation problems associated with antelope and elk in the Idaho National Engineering Laboratory area.

RESPONSE
The alternatives would disturb up to 726 acres of land outside of current facility fences or boundaries. While depredation may increase, the increase is likely to be low because most of the disturbances would be located about 5 kilometers (3 miles) from the RWMC, which is located within the INEL boundary and
far from any croplands. Policies concerning restrictions on hunting at INEL are not within the scope of this EIS.

05.04 (015) Biological Resources

COMMENT
The commentor notes that a statement that no Federally listed species are expected to be affected by construction and operation of the spent nuclear fuel management facility is in conflict with Volume 1, Appendix F, Part 3, Table 4.9-1.

RESPONSE
Volume 1, Appendix F, Part 3, Table 4.9-1 lists species that "potentially occur on or in the vicinity of the Oak Ridge Reservation" but not necessarily on the project site. Volume 1, Appendix F, Part Three, section 4.9.4 describes the expectation of species occurrence on the proposed project site and identifies the species most likely to occur on the project site, none of which is Federally listed. None of the species listed in Table 4.9-1 has been observed on the proposed project site. No species listed as threatened or endangered by the U.S. Fish and Wildlife Service, in accordance with the Endangered Species Act, are expected to occur on the site and, thus, they would not be impacted. Impacts to state-listed and other special-status species are described in Volume 1, Appendix F, Part Three, section 5.9.1. There may be cumulative impacts on other special-status species, which consist of two plant and five raptor species. The cumulative effect to wildlife habitats is discussed in Volume 1, Appendix F, Part Three, section 5.16.1. Any loss of forested habitat would be a small percentage of the total forested area on or in the vicinity of ORR.

05.04 (016) Biological Resources

COMMENT
The commentor expresses the opinion that storing spent nuclear fuel at the Savannah River Site presents a potential ecological problem.

RESPONSE
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small. While there are differences in the impacts among the alternatives, these differences by themselves are not sufficient to distinguish between alternatives.

For the Savannah River Site (SRS), potential effects from operations conditions would be primarily from disturbance of habitat, rather than effects from radionuclides. Potential effects from accidents would result in exposures to biota. However, emergency response would limit the potential impacts to a small localized area.

05.04 (017) Biological Resources

COMMENT
The commentor suggests that terrestrial biota may be subject to more radiation exposure than humans, because human exposure can be limited by special clothing and protective equipment.

RESPONSE
Terrestrial biota are not subject to exposure under conditions that would require special clothing or protective equipment for humans. Work areas where potential radiation exposure is high and where monitored site workers use protective equipment have controlled access measures that limit entry by biota. So long as exposure limits protective of humans are not exceeded, no substantial radiological impact on biota would be expected as a result of waste management activities at the proposed spent nuclear fuel facility.

Volume 1, Appendix F, Part Two, section 5.9 has been modified to clarify that most waste management activities take place in enclosed environments and that outdoor radiation exposures are usually below regulatory requirements.

05.04 (018) Biological Resources

COMMENT
The commentor states that until surveys are conducted at the Oak Ridge Reservation facility, the status of sensitive flora, fauna, and habitat is in question and could be a factor in selection of a final management plan.

RESPONSE
The commentor is accurate in stating that until site surveys are completed, the status of the flora, fauna, and habitat remain in question and could be a factor in the selection of the specific sites at ORR. Site-specific analyses are not appropriate for a programmatic EIS and would only be performed if ORR is selected. The analyses in the EIS are based on existing documentation.

05.04 (019) Biological Resources

COMMENT
The commentor suggests that animals near proposed new or expanded facilities in Idaho should be relocated to a similar environment.
RESPONSE
Generally, it is not feasible to relocate all animals disturbed by construction activities. Most animal species that would be displaced include insects, reptiles, and small mammals. Preactivity surveys would be conducted to determine if any endangered species or sensitive habitats are in the area. Where practical, proposed facilities are clustered near existing facilities to minimize impacts to undisturbed areas. Measures to minimize impacts to wildlife at INEL are discussed in Volume 2, section 5.19.6.

05.04 (020) Biological Resources

COMMENT
One commenter states that DOE and the Navy have failed to study the possibility that fish migrating up the Columbia and Snake Rivers to Idaho could pick up radioactive particles, contaminate pristine Idaho wilderness areas, and impact endangered species. Another commenter states that the Hanford Site would be a poor storage area unless the already "depleted salmon" are protected.

RESPONSE
Volume 1, Appendix A. sections 4.8 and 4.9 have been modified to address potential impacts on aquatic life in the Columbia River. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in the EIS. The analyses show that the impacts of all alternatives would be small.

All liquid effluents from Hanford Site facilities are monitored to ensure that aquatic resources are protected. Fish populations are safe for human consumption. Radionuclide levels in fish from the Hanford Reach are not significantly higher than those of fish found upstream. Fish migrating from the Columbia River up the Snake River to Idaho would not pass through the Hanford area, because the confluence of the two rivers is downstream from the Hanford Site. Fish inhabiting or moving through downstream areas would also not be expected to have elevated radionuclide levels.

Any new facility would be built using technologies to protect these resources, including leak detection and water-balance monitoring equipment. Excess process water from the proposed facility would be treated before it is released to surface water or groundwater.

In some accident scenarios, such as a seismic event at Hanford with a frequency of occurrence of once every 1,000 years, contamination could reach the Columbia River. Individual fish in the affected reach of the river could become contaminated. However, contamination spread by the fish, and any associated risk, would be small compared with the environmental risk posed by more direct pathways in an accident scenario. Monitoring at DOE facilities indicates the most critical pathways for environmental contamination are generally through direct airborne and waterborne releases, rather than contamination spread through animals or fish.

05.04 (021) Biological Resources

COMMENT
The commenter states that impacts of transport, storage, and accidental releases on threatened, endangered, and sensitive species should be considered.

RESPONSE
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS, including those to threatened and endangered species. The analyses show that the impacts of all the alternatives would be small.

Threatened and endangered species and habitats are considered in the design and siting of programs and facilities. Volumes 1 and 2, section 7.2.1 identify all Federal environmental statutes and regulations, including the Endangered Species Act, that may apply to the programmatic alternatives for SNF management. DOE and the Navy comply with all applicable laws and regulations designed to protect wildlife resources to ensure impacts are minimal. These regulations include U.S. Department of Transportation (DOT) regulations on transport of hazardous and/or radioactive materials. Measures for minimizing impacts to sensitive species are described in Volumes 1 and 2, Chapter 5.

05.04 (022) Biological Resources

COMMENT
The commenter states that there are virtually no data or literature references to support the Idaho National Engineering Laboratory ecological analyses and conclusions.

RESPONSE
The Environmental Resource Document for the Idaho National Engineering Laboratory referenced in the EIS provides an extensive compendium of documentation concerning the Idaho National Engineering Laboratory (INEL) environment and ecology. Additionally, Radiocology of the Idaho National Engineering Laboratory (Draft) provides a literature search and an evaluation of radiological impacts of current INEL operations. Both of these documents are referenced in the EIS and are available in reading rooms and information locations listed in the EIS.
COMMENT
The commentor questions the effects on endangered species in the Twin Falls Thousand Springs area as a result of impacts to the Snake River aquifer.

RESPONSE
Under all alternatives considered, possible future sources of aquifer contamination would be small. Water quality in the aquifer would be expected to improve under current waste management practices under all alternatives. Increased water use at INEL would range from 1.3 percent under the No Action alternative to 4.0 percent for the Ten-Year Plan alternative; or approximately 0.43 to 1.3 percent of the total aquifer flow beneath INEL. Currently, a substantial portion of water pumped from the aquifer at INEL is discharged to the surface and eventually returned to the aquifer. The current water withdrawal rate is equivalent to 56 percent of a typical irrigation well pumped 365 days per year. Because of the small percentage of water consumed, there would be a small impact to water levels or quantities in the aquifer, or to threatened or endangered species in the Thousand Springs area. A discussion and evaluation of present and potential impacts to water quality and quantity under the alternatives analyzed is provided in Volume 2, sections 4.8 and 5.8.

COMMENT
The commentor states that it would be inappropriate to ship spent nuclear fuel through Puget Sound, a great natural area.

RESPONSE
The EIS evaluates potential environmental impacts of transporting SNF in the Puget Sound area. Naval Nuclear Propulsion Program shipments of Naval SNF are made in accordance with all applicable regulations. Shipments of radioactive materials associated with Naval SNF have never resulted in any measurable release of radioactivity to the environment, nor has there ever been an accident involving the release of radioactive material during shipment since the Naval Nuclear Propulsion Program began. The potential impacts to the local environment at Puget Sound from transportation of Naval SNF are discussed in Volume 1, Appendix D, Chapter 5 and Attachment A.

COMMENT
The commentor states that the EIS neither describes ongoing activities nor analyzes their impacts in association with past and future activities and is therefore not comprehensive.

RESPONSE
Volume 2, Chapter 4 describes the existing environment at INEL. Volume 2, Chapter 2 discusses the current activities, facilities, and missions at INEL. Site-specific impacts, including cumulative impacts are presented in Volume 2, Chapter 5 and Appendix F. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize all of the alternatives considered in this EIS. The analysis show that the impacts of all alternatives would be small.

COMMENT
The commentor states that the Draft EIS should address loss of habitat at the Oak Ridge Reservation and the effects on the regions ecosystems by a change in land use.

RESPONSE
Both land use and habitat loss are considered in Volume 1, Appendix F. ORR occupies an area of 140 square kilometers (54 square miles). In 1980, DOE designated 54 square kilometers (21 square miles) of undeveloped ORR land to a National Environmental Research Park. Approximately 58 percent of the land on ORR (80 square kilometers (31 square miles)) can be classified as undeveloped due to its current land designation. By comparison, the SNF program would require about 0.36 square kilometers (0.14 square miles). Volume 1, Appendix F, Part Three, section 5.9 assesses impacts to ecological resources for both the Centralization and Regionalization alternatives. Neither alternative would present any significant impacts to ecological resources through alterations or loss of habitat.

5.5 Geology

05.05 (011) Geology
COMMENT
The commentor notes that no geologists from the Oak Ridge area were used to help prepare Volume 1, Appendix F, Part Three.

RESPONSE
The document was prepared using existing references and currently published information. The references cited for the Volume 1, Appendix F, Part Three discussion of ORR include current information on geology in that area.
COMMENT
The best available information relative to seismic hazards and geologic events is provided in Volumes 1 and 2. The five formations are the Copper Ridge Dolomite, the Chepultepec Dolomite, the Longview Dolomite, the Kingsport Formation, and the Mascot Dolomite.

RESPONSE
DOE Order 5480.28, *National Phenomena Hazards Mitigation*, specifically requires facilities to be reevaluated when there is any change in design and construction standards. Existing facilities at INEL have undergone continual safety analysis and seismic design review. Several of the projects described in Volume 2, Appendix C are proposed by DOE to replace or upgrade facilities at INEL. Likewise, actions such as the transfer of fuels from potentially vulnerable facilities to modern facilities, have resulted from the ongoing safety analysis and seismic design reviews. Volume 2, Table 2.2.1 addresses the correction of seismic deficiencies identified with fuel storage facilities at INEL.

COMMENT
The commenter notes that the Knox Group is divided into five formations, not four. The five formations are the Copper Ridge Dolomite, the Chepultepec Dolomite, the Longview Dolomite, the Kingsport Formation, and the Mascot Dolomite.

RESPONSE
The commenter states that the EIS does not address correcting current seismic deficiencies at Idaho National Engineering Laboratory facilities.

RESPONSE
DOE Order 5480.28, *National Phenomena Hazards Mitigation*, specifically requires facilities to be reevaluated when there is any change in design and construction standards. Existing facilities at INEL have undergone continual safety analysis and seismic design review. Several of the projects described in Volume 2, Appendix C are proposed by DOE to replace or upgrade facilities at INEL. Likewise, actions such as the transfer of fuels from potentially vulnerable facilities to modern facilities, have resulted from the ongoing safety analysis and seismic design reviews. Volume 2, Table 2.2.1 addresses the correction of seismic deficiencies identified with fuel storage facilities at INEL.

COMMENT
The commenter states that storing radioactive material in a seismically active area like the Idaho National Engineering Laboratory could result in catastrophic consequences.

RESPONSE
Seismic hazards and geologic analyses can be found in Volume 1, section 4.2 and Appendix B, section 4.6, and Volume 2, section 4.6 and Appendix F-2. Seismically induced accidents are discussed in Volume 2, section 5.14 and Appendix F-5. The results of accident analyses (including seismically induced accidents) indicate that the risk to the public from INEL operations is small. DOE takes seismic hazards very seriously, and INEL uses independently and extensively reviewed analyses to support the enforcement and implementation of DOE Orders and standards. An INEL seismic hazard assessment was completed in 1990. A more recent seismic hazard assessment for INEL is referenced in the EIS as Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National Engineering Laboratory (Draft). See also the response to comment 05.05.01 (040).

COMMENT
Several commentors state that geologic conditions at the Idaho National Engineering Laboratory could result in a sequence of events that would cause contamination of the Snake River Plain aquifer.

RESPONSE
An accident scenario resulting in maximum potential for groundwater contamination at INEL was analyzed in the EIS in Volume 2, section 5.14 and Appendix F to determine the effects of such an accident on the Snake River Plain aquifer. The hypothetical accident involves the instant failure of a high-level waste tank due to an earthquake. The groundwater analysis assumed failure of the containment and no mitigating measures to minimize flow from the waste tank into the soil immediately following the failure. This hypothetical scenario represents the situation with the maximum reasonably foreseeable impact on the aquifer. Maximum radionuclide concentrations would be predicted to reach the INEL boundary 300 years after the hypothetical accident in concentrations less than EPA maximum contaminant levels (MCLs) or DOE derived concentration guidelines (DCGs). See also the response to comment 05.08.01 (030).

COMMENT
Commentors express opinions that the selection of the Oak Ridge Reservation as an alternative site was performed in haste, and/or did not adequately consider the geology of the West Bear Creek Valley site.

RESPONSE
The selection of ORR and NTS as alternative sites resulted from public comments received during the scoping process for this EIS. Information about the site-selection process at ORR is provided in Request for Support in Preparing the Spent Nuclear Fuel and Idaho National Engineering Laboratory.

The West Bear Creek Valley site was selected for evaluation and comparison in this EIS. Published geologic information was considered in making this selection. Adequate information is provided to make programmatic decisions and evaluate alternatives in this EIS.

05.05 (026) Geology

COMMENT
The commentor states that significant adverse geologic events could cause radioactive releases.

RESPONSE
The general geological features of the alternative sites are described in Volume 1, Chapter 4 and potential impacts associated with geologic events are summarized in Volume 1, Chapter 5, section 5.2.4. Details on the geological features and potential dangers associated with those features are in Volume 1, Appendices A through F for the alternative sites. DOE recognizes the potential adverse effects that geologic events can have on facilities, and the EIS includes analysis of accidents and the potential consequences associated with geologic events, such as earthquakes. The accidents evaluated included those with an estimated probability ranging from once in 1 million years to once in 10 million years. As described in Volume 1, section 5.1.6, the probabilities of accidents with the potential for significant impacts occurring would be small. The risks to the public from radioactive releases would be small for all of the impacts considered. See also the response to comment 05.05.01 (016).

05.05 (028) Geology

COMMENT
The commentor states that it is appropriate to acknowledge the zinc and fluor spar districts are to the northeast of Knoxville, Tennessee, and southwest of the Oak Ridge Reservation, respectively. The commentor also notes that zinc prospects and sulfide mineralization may occur in the Oak Ridge area.

RESPONSE
As required by Council on Environmental Quality (CEQ) regulations, the description of the affected environment is no longer than is necessary to understand the effects of the alternatives. No impacts to geologic resources are expected from any of the alternatives; therefore, impacts to remote mineral districts are not expected. If ORR is chosen as a site for new SNF management facilities, site-specific geologic studies would be performed as necessary to determine the full extent of geologic resources at the proposed site.
A discussion of the geologic resources at ORR is presented in the EIS in Volume 1, Appendix F, Part Three, section 4.6.

5.5.1 Seismic Characteristics

05.05.01 (001) Seismic Characteristics

COMMENT
The commenter questions the adequacy and conservatism of seismic hazard studies at the Idaho National Engineering Laboratory.

RESPONSE
Seismic hazards and geologic analyses for INEL can be found in Volume 1, section 4.2; Volume 1, Appendix B, section 4.6; and Volume 2, section 4.6 and Appendix F-2. Seismically induced accidents are discussed in Volume 2, section 5.14 and Appendix F-5, and Volume 1, Appendix B, section 5.15. The accident analyses (including seismically induced accidents) indicate that the risk to the public from INEL operations is small. DOE takes seismic hazards very seriously, and INEL uses independently reviewed analyses to support the enforcement and implementation of DOE Orders and standards.

Major DOE Idaho Operations Office-managed nuclear facilities currently in use at INEL were built or have been evaluated to design basis accelerations that exceed accelerations that would result from a 7.0 moment magnitude earthquake at the southern end of the Lemhi fault zone. There has been an extensive effort over the past several years to upgrade DOE Orders and standards related to natural phenomena hazards.

DOE Order 5480.28, Natural Phenomena Hazards Mitigation, sets forth DOE procedures to design, assess, and operate DOE facilities so that workers, the general public, and the environment are protected from the impacts of natural phenomena hazards on DOE facilities. This Order specifically requires facilities to be reevaluated when there is any change in design and construction standards. Existing INEL facilities have undergone substantial safety analysis and seismic design review. Several of the projects described in Volume 2, Appendix C of the EIS are proposed by DOE to replace or upgrade facilities at the site. Likewise, actions such as the transfer of fuels from potentially vulnerable facilities to modern facilities have resulted from the ongoing safety analysis and seismic design reviews.

The data and methods used in the seismic hazard report referenced in Volume 2, section 4.6 as Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National Engineering Laboratory (Draft) were extensively and independently reviewed. This report includes graphs showing rate of occurrence versus acceleration for seismic events for each major facility at INEL. The seismic hazard curve for the Idaho Chemical Processing Plant was included as an example of the information contained in the INEL seismic hazard analysis. The final versions of this report may be incorporated into the INEL architectural and engineering standards after review by the INEL Natural Phenomena Committee.

The previous INEL seismic analysis (Earthquake Strong Ground Motion Estimates for the Idaho National Engineering Laboratory: Final Report) was also extensively reviewed and incorporated into the INEL standards after review by the Natural Phenomena Committee in 1992.

This report is referenced in Volume 2, section 4.6 and Volume 2, Appendix F-2 and contains facility- and location-specific seismic hazard information.

The EIS summarizes current scientific evidence relevant to understanding the existing environment, identifying reasonably foreseeable impacts, and evaluating potential consequences. The evaluation of impacts is based on methods generally accepted by the scientific community.

See also the response to comment 05.05.01 (007).

05.05.01 (002) Seismic Characteristics

COMMENT
The commenter states that the Basin and Range Province north of the Idaho National Engineering Laboratory lacks adequate seismic monitoring.

RESPONSE
During 1991 and 1992, DOE increased its network of seismic monitoring stations from 11 to 26 locations, including stations in the Basin and Range Province. This network supplements measurements continuing by U.S. Geological Survey (USGS) facilities. INEL regularly exchanges data with other seismic monitoring networks around the region, including data for earthquakes that occur between networks. INEL scientists currently are supporting studies of the 1994 Raney Peak earthquake sequence and have supported some of the 1983 Borah Peak earthquake studies.
05.05.01 (003) Seismic Characteristics

COMMENT
The commentor questions why the overall level of seismic hazard calculated in the EIS for Idaho National Engineering Laboratory is lower than the seismic hazard curves for either the Hanford Site or the Savannah River Site.

RESPONSE
The possible reasons for the relatively low seismicity, with respect to the more seismic Basin and Range Province, for the Eastern Snake River Plain (ESRP) are discussed in Volume 2, section 4.6. The differences noted by the commentor result from the site-specific data used to assess seismic hazards. In particular, INEL has modeled ground motions based on site-specific analyses. Ground-motion attenuation characteristics result from using source parameters for Basin and Range Province earthquakes, lower stress drops, lower recurrence intervals for the southern segments of the Basin and Range Province faults (Lemhi, Lost River, and Beaverhead), and the unique subsurface geology (interbeds of basalt and sediment) that tend to deamplify ground motions.

Additional factors contributing to the relatively low seismic hazard for INEL are the distance from the facilities to Basin and Range Province faults, INEL-specific attenuation characteristics, and the low seismicity of the ESRP.

The Hanford Site models use empirical data derived from California earthquakes and considers a magnitude 9 subduction zone earthquake. SRS has a thicker layer of soil and subsurface geology that results in less scattering during transmission of seismic waves. Both of these conditions tend to amplify ground motions at SRS.

05.05.01 (004) Seismic Characteristics

COMMENT
The commentor notes that within 125 miles of the Idaho National Engineering Laboratory, 232 possibly active fault segments, including 20 with proven late Quaternary or younger displacement, exist. The commentor suggests that this observation is inconsistent with the relatively low seismic hazard for the Idaho National Engineering Laboratory presented in the EIS.

RESPONSE
In the Probabilistic Seismic Hazard Assessment studies [Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National Engineering Laboratory (Draft)] referenced in the EIS, DOE assessed and determined the major seismic sources in the vicinity of INEL. Because most of the seismic sources noted by the commentor are some distance from INEL, they are not significant contributors to the seismic hazard. The closest and most significant seismic sources, the Beaverhead, Lost River, and Lemhi faults, are considered in INEL seismic hazard assessments. The Probabilistic Seismic Hazard Assessments used at INEL have been independently reviewed and are developed consistent with the requirements of DOE Order 5480.28, Natural Phenomena Hazards Mitigation. The details of the characterization of the potential seismogenic sources, and how they are incorporated into seismic hazard assessments can be found in Volume 2, section 4.6 or its references.

The possible reasons for the relatively low seismicity, with respect to the more seismic Basin and Range Province, for the ESRP are discussed in Volume 2, section 4.6. The differences noted by the commentor result from the site-specific data used to assess seismic hazards. In particular, INEL has modeled ground motions based on site-specific analyses instead of empirical data. These curves result from using source parameters for Basin and Range Province earthquakes with lower stress drops, lower recurrence intervals for the southern segments of the Basin and Range Province faults, including the Lemhi, Lost River, and Beaverhead faults, and the unique subsurface geology of interbeds of basalt and sediment that tend to deamplify ground motions. Additional factors contributing to the low seismic hazard for INEL (relative to other DOE sites) are the distance from the facilities to Basin and Range Province faults, INEL-specific attenuation characteristics, and the low seismicity of the ESRP. See also the response to comment 05.05.01 (003).

05.05.01 (005) Seismic Characteristics

COMMENT
The commentor states that the coastal plain of South Carolina and Georgia is earthquake prone with "six faults in multiple directions" and is a poor site for temporary or long-term storage of spent nuclear fuel.

RESPONSE
The general geologic features of the alternative sites are described in Volume 1, Chapter 4 EIS and potential impacts associated with geologic events are summarized in Chapter 5, section 5.2.4. Details on the geologic features and potential dangerous events associated with those features are in Volume 1, site-specific Appendices A through F for the alternative sites. DOE recognizes the potential adverse effects that geologic events can have on facilities, and the EIS includes analysis of accidents and the potential consequences associated with geologic events, such as earthquakes. The accidents evaluated include those with an estimated probability ranging from once in 1 million years to once in 10 million years. As described in Volume 1, section 5.1.6, the probabilities of accidents occurring with the potential for significant impacts would be small. The accident analyses (including seismically induced accidents) indicate that the risk to the public from DOE operations would be small. Because DOE uses safety procedures and engineering design practices that minimize the effects of hazardous geologic phenomena,
coupled with emergency response measures, the risks to the public from radioactive releases are further reduced.

The site-specific response can be found in Volume 1, Appendix C, section 4.6.3, which describes the region's geology, including fault systems and seismic history; section 5.8, which discusses the consequences of analyzed seismic events on both surface water and groundwater resources; and Volume 1, Appendix C, Attachment A-2.1.3, which describes estimates of risk that consider both the probability of and the consequences from a wider range of seismic events, ranging from local and regional historically documented earthquakes to postulated lower probability events with potentially greater consequences.

05.05.01 (006) Seismic Characteristics

COMMENT
The commentator quotes a Woodward-Clyde study, commissioned by DOE, as having more realistic measures of likely ground motions and suggests that DOE adopt these standards as an interim measure.

RESPONSE
DOE has adopted this study. (Earthquake Strong Ground Motion Estimates for the Idaho National Engineering Laboratory: Final Report) and has incorporated the resulting seismic ground motions into the architectural and engineering standards for INEL.

05.05.01 (007) Seismic Characteristics

COMMENT
The commentator states that a great deal more research, both onsite and in the surrounding regions, is necessary before the Snake River Plain can be declared "aseismic."

RESPONSE
Seismic hazards and geologic analyses can be found in Volume 1, section 4.2; Volume 1, Appendix B, section 4.6; and Volume 2, section 4.6 and Appendix F-2. Seismically induced accidents are discussed in Volume 2, section 5.14 and Appendix F-5. The accident analyses, including seismically induced accidents, indicate the risk to the public from INEL operations would be small.

The assertion that the Snake River Plain has a low rate of seismicity compared with the Basin and Range Province. The term "aseismic" has been avoided in the EIS to eliminate confusion.

Empirical evidence does not support the commentator's assertion that a major seismic event is likely to occur in the future on the ESRP. Studies of fault scars on the ESRP indicate that a seismic event with a moment magnitude of 5.3 is the maximum event recorded in the rocks at the surface, which range in age from 1.2 million to 2.100 years old. Thus, there is long-term geologic evidence with respect to the ESRP geologic record with which to assess its magnitude of seismicity. The moment magnitude 5.3 estimate is conservative with respect to earthquake magnitudes observed in similar tectonic environments and the assumed instantaneous stress release. Further conservatism in the seismic hazard assessment cited in the EIS [Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National Engineering Laboratory (Draft)] is introduced through the use of a random ESRP earthquake, which has been assigned a moment magnitude of 5.5 to 6.0. The methods and data used in this study have been independently reviewed. The random earthquake is used to analyze the potential effects of potential seismic events related to structures that do not have a surface expression.

Stress indicators show that the ESRP is subject to the same extensional stress as the adjacent Basin and Range Province. There is geologic evidence to support the hypothesis that the ESRP is extending at the same rate as the Basin and Range Province but by the different, less seismically intense mechanism of basaltic dike injection. The rate and magnitude assumed for the random earthquake is consistent and conservative with respect to these observations. These observations also indicate that elastic energy is not being stored for release in a major seismic event. Other possible explanations for the low seismicity of the ESRP can be found in Volume 2, section 4.6. The hypothesis that stored elastic energy will result in catastrophic brittle failure of the crust below INEL is not supported by published independently reviewed earth science literature or the local geology of INEL. Despite mapping of INEL and adjacent areas, such a catastrophic faulting event has not been observed in surface basalt flows that are up to 1.2 million years old.

The EIS summarizes existing credible scientific evidence relevant to understanding the existing environment, identifying reasonably foreseeable impacts, and evaluating potential consequences. The evaluation of impacts is based on methods generally accepted by the scientific community. The analyses reported in the EIS evaluate the potential consequences of reasonably foreseeable events.
05.05.01 (008) Seismic Characteristics

COMMENT

The commenter states the potential for major earthquakes on the Plain exists, and that although earthquakes on the plain do not provide the clear threat to Idaho National Engineering Laboratory that earthquakes on the fault systems north of the plain provide, the possibility of events up to magnitude 6 on the plain cannot be discarded.

RESPONSE

DOE assumes the commenter is referring to the ESRP. Empirical evidence does not support the commenter’s assertion that a major seismic event is likely to occur in the future on the ESRP. Studies of fault scarp on the ESRP indicate that a seismic event with a moment magnitude of 5.3 is the maximum event recorded in the rocks at the surface, which range in age from 1.2 million to 2,100 years old. Thus, there is long-term geologic evidence with which to assess the magnitude of seismicity of the ESRP. The moment magnitude 5.3 estimate is conservative with respect to earthquake magnitudes observed in similar tectonic environments and the assumed instantaneous stress release. The possibility of a magnitude 6 earthquake on the ESRP was not discarded and has been considered in the seismic hazard assessment cited in the EIS [Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National Engineering Laboratory (Draft)] through the use of a random ESRP earthquake, which has been assigned a moment magnitude 5.5 to 6.0. The data and methods used in this study have been independently reviewed. The random earthquake is used to analyze the effects of seismic events related to structures that do not have a surface expression.

05.05.01 (009) Seismic Characteristics

COMMENT

The commenter states that earthquake magnitudes used for seismic analysis in the EIS are too low and that more research, both onsite and in the surrounding region, is required to adequately quantify the maximum seismic shaking possible on the INEL site.

RESPONSE

The methods and data used in the Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National Engineering Laboratory (Draft) have been independently reviewed, and the analyses contained therein, including the analysis and earthquake magnitude estimates that resulted in Figure 4.6-4, are scientifically defensible. The important parameters for the seismic hazard assessment are discussed in Volume 2, section 4.6. More detailed discussions on INEL seismic hazard assessments can be found in Volume 2, Appendix F-2. Additional detail on parameter selection and the incorporation of uncertainty into the seismic hazard assessment can be found in the Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National Engineering Laboratory (Draft). In keeping with the recommendations of CEO, the EIS contains only enough information to support decisions required by the decisionmakers. To reduce the bulk of the document, references are cited that contain the relevant technical details.

Empirical evidence does not support the commenter’s assertion that a moment magnitude 5.5 earthquake on the ESRP is too low for adequate seismic hazard analysis of ESRP earthquake sources. Studies of fault scarp on the ESRP indicate that a seismic event with a moment magnitude 5.3 is the maximum event recorded in the rocks at the surface, which range in age from 1.2 million to 2,100 years old. Thus, there is long-term geologic evidence with respect to the ESRP geologic record with which to assess the magnitude of seismicity of the ESRP. The moment magnitude 5.3 estimate is mildly conservative with respect to earthquake magnitudes observed in similar tectonic environments and the assumed instantaneous stress release. Further conservatism in the seismic hazard assessment cited in the EIS [Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National Engineering Laboratory (Draft)] is introduced through the use of a random ESRP earthquake, which has been assigned a moment magnitude 5.5 to 6.0. The methods and data used in this study have been extensively reviewed. The random earthquake is used to analyze the effects of seismic events related to structures that do not have a surface expression. Seismic hazards and geologic analyses can be found in Volume 1, sections 4.2; Volume 1, Appendix B, section 4.6; and Volume 2, section 4.6 and Appendix F-2. Seismically induced accidents are discussed in Volume 2, section 5.14 and Appendix F-5. DOE takes seismic hazards very seriously, and INEL uses independently reviewed analyses to support the implementation of DOE Orders and standards.

The accident analyses (including beyond reasonably foreseeable accidents with potential impacts greater than seismically induced accidents) indicate that the risk to the public from INEL operations would be small. Therefore, additional information on reasonably foreseeable seismic events with lesser potential impact would have no effect on the decision-making process.

No new analyses are required because, in accordance with NEPA (40 CFR 1502.22), the EIS summarizes current credible scientific information relevant to understanding the existing environment, identifying reasonably foreseeable impacts, and evaluating potential consequences. The EIS uses the most up-to-date reviewed analyses available, and the evaluation of impacts is based on methods generally accepted by the scientific community.

See also the response to comment 05.05.01 (001).
05.05.01 (010) Seismic Characteristics

COMMENT
The commentor expresses the opinion that the discussion of the Nevada Test Site is incomplete, because a magnitude 5.6 earthquake that occurred near Little Skull Mountain on June 28, 1992, may not have been factored into the analysis.

RESPONSE
The information in Volume 1 is an overview of the more detailed discussions contained within the Volume 1 appendices. In Volume 1, Appendix F, Part Two, section 4.6.3, the discussion on regional seismicity includes the Little Skull Mountain earthquake and the problems associated with recurrence statistics.

05.05.01 (011) Seismic Characteristics

The commentor states that the New Madrid Seismic Zone is close enough to the reactor at the University of Missouri to potentially cause damage should there be a large earthquake over magnitude 6.5, and that the seismic assessment for Missouri is based on outdated information.

RESPONSE
Research reactors are typically built to Uniform Building Code (UBC) requirements and are not required to meet Nuclear Regulatory Commission (NRC) requirements for power reactors. Because a more detailed seismic analysis is not likely to affect the assessment of impacts of the programmatic alternatives, no more seismic data are required in the EIS.

The data source for the research reactor at the University of Missouri was the document used to support the licensing of the research reactor in 1961. In 1974, a thorough evaluation of the seismic events in the vicinity was conducted for siting the Callaway commercial power reactor. The 1961 site-specific analysis is more appropriate than an analysis done specifically for another facility. The area is in UBC Zone 1, which demonstrates a low potential for seismic activity.

05.05.01 (012) Seismic Characteristics

COMMENT
The commentor states that the seismic wave attenuation characteristics of the eastern United States are not adequately represented.

RESPONSE
The fact that strong-motion earthquakes are felt over wider regions of the eastern United States than their counterparts in the western United States is considered in DOE site-specific seismic hazard assessments for eastern United States sites. Any new DOE construction required by a decision supported by this EIS would meet the stringent seismic hazard characterization requirements and design criteria of DOE Orders, which would include a detailed assessment of seismic attenuation characteristics.

05.05.01 (013) Seismic Characteristics

COMMENT
The commentor states that the EIS Glossary definition of seismicity is incorrect.

RESPONSE
A new definition of seismicity, which relates to the location, size, and rate of occurrence of earthquakes, has been included in the EIS Glossary.

05.05.01 (014) Seismic Characteristics

COMMENT
The commentor questions Volume 2, Figure 4.6-4 with respect to the relative magnitudes of acceleration in the seismic hazard curves describing ground motions at Idaho National Engineering Laboratory and the Savannah River Site.

RESPONSE
The reasons for a seemingly inconsistent seismic hazard at SRS with respect to INEL is, in part, due to the low attenuation characteristics of eastern bedrock, which makes sites in the eastern United States more susceptible to larger ground motions resulting from low-to-moderate magnitude earthquakes. Also, sediments of Quaternary age, which are appropriate for recording surface faulting earthquakes, are not widespread in the east. Typically, Precambrian to Mesozoic rocks are overlain only by Holocene deposits. Therefore, the number of late Quaternary surface faulting earthquakes in the eastern United States has great uncertainty, which results in conservative seismic hazard estimates. Accident analyses (including beyond reasonably foreseeable accidents with potential impacts greater than seismically induced accidents) indicate that the risk to the public from DOE operations would be small. Therefore, additional information on reasonably foreseeable seismic events with lesser potential impact would have no effect on the decision-making process. See also the response to comment 05.05.01 (003).

05.05.01 (015) Seismic Characteristics

COMMENT
The commentor maintains that the seismic hazards at the Nevada Test Site are severely understated in the EIS. The commentor states that the Nevada Test Site is in a high hazard area near major fault zones, and has experienced earthquakes triggered by other regional seismic events. Additionally, the commentor states that nuclear testing at the Nevada Test Site could have caused surface and subsurface faulting close to failure levels.
RESPONSE

The discussion of seismicity at NTS (Volume 1, section 5.2.4, and Volume 1, Appendix F, Part Two, section 4.6) will be revised to indicate that a moderate seismic potential exists at the proposed SNF management site. As stated in the 1993 Nevada Test Site Technical Site Information Report prepared by DOE, the southern Nevada region is generally characterized as an area of moderate seismic activity. NTS, including the proposed SNF management site, is located in Seismic Zone 2B, as defined in the Uniform Building Code of the International Conference of Building Officials. Zone 2B signifies areas with a moderate damage potential. Areas further to the west (western Nevada and California) are in Seismic Zones 3 and 4. Seismic Zone 3 signifies areas with a major damage potential. Seismic Zone 3 is near the western edge of NTS. Seismic Zone 4 signifies areas with a major damage potential that are near major faults. Zone 4 areas are well to the west of the site.

NTS has probably experienced earthquakes associated with regional seismic events. Some faults in the NTS region are oriented favorably for site seismicity to be influenced by other regional events. However, determining exact relationships between regional seismic events is difficult.

Nuclear testing has produced fresh fault scars and surface cracks, generally localized in the vicinity of the nuclear tests. Recent geologic mapping of NTS shows faults that have ruptured in the Yucca Flat area, presumably as a result of testing. However, wave propagation from nuclear testing is hypothesized to relieve tectonic stress. The hypothesis regarding the triggering of local earthquakes by distant seismic events is still being evaluated and tested in the scientific community and is best regarded as a working hypothesis. Any new DOE facilities required by decisions supported by this EIS will be built consistent with the requirements of DOE Order 5480.28, Natural Phenomena Hazards Mitigation, which requires a rigorous, quantitative assessment and mitigation of natural phenomena hazards.

05.05.01 (016) Seismic Characteristics

COMMENT

One commenter notes that the high seismic hazard in the vicinity of Idaho National Engineering Laboratory demands that DOE commit to an ongoing program of geologic hazards studies. Commentors question how basalt flows will interact with nuclear waste and how the risks will be minimized.

RESPONSE

Seismic hazards and geologic analyses can be found in Volume 1, section 4.2; Volume 1, Appendix B, section 4.6; and Volume 2, section 4.6 and Appendix F-2. Seismically induced accidents are discussed in Volume 2, section 5.14 and Appendix F-5. DOE takes seismic hazards very seriously, and INEL uses independently reviewed analyses to support appropriate implementation of DOE Orders and standards.

There has been an extensive effort over the past several years to upgrade DOE Orders and standards related to natural phenomena hazards. Studies have been under way for many years and are continuing at INEL to ensure that seismic hazard characterization is based on up-to-date information and state-of-the-art methods. New geologic information on seismic hazard characterization is reviewed to determine if additional geologic studies are needed.

DOE has analyzed the effects of a hypothetical lava flow event at INEL. The geologic potential of a lava flow is discussed in Volume 2, section 4.6.4, and the estimated consequences of such an event for the various alternatives are shown in Volume 2, section 5.14, Tables 5.14-3, -5.14-4, and -5.14-5. The methodology used for performing these analyses is documented in Volume 2, Appendix F-5 and in Accident Assessments for the Idaho National Engineering Laboratory Facilities. As stated in the analyses, DOE used conservative assumptions to account for the uncertainty in modeling the effects of an accident involving molten lava coming into contact with radioactive materials. The health risks to the public would be small and well below DOE's Nuclear Safety Policy.

DOE has considered the potential for a volcanic ashfall event at INEL in Volume 2, section 4.6.4 and Appendix F-2.1.2. As stated in section 4.6.4, potential ashfall events are not expected to impact the site. The risk associated with an ashfall event is bounded by the accidents evaluated in Volume 2, section 5.14. The impacts on the Hanford Site resulting from the Mount St. Helens eruption and ashfall were small. The Assessment of Potential Volcanic Hazards for New Production Reactor Site at the Idaho National Engineering Laboratory determined that hazards from volcanic events would be small for INEL. Therefore, a silicic ash-flow hazard at INEL does not represent a reasonably foreseeable significant adverse impact on the human environment.

A hypothetical accident involving the instantaneous release of the contents of a high-level waste tank represents the situation with the maximum reasonably foreseeable impact on the Snake River Plain aquifer resulting from geologic conditions at INEL and is discussed in Volume 2, section 5.14 and Appendix F-2. Under this scenario, maximum radionuclide concentrations are predicted to reach the INEL boundary 300 years after the accident and predicted concentrations will be less than EPA MCLs or DOE DCGs.

DOE Order 5480.28, Natural Phenomena Hazards Mitigation, sets forth DOE procedures to design, assess, and operate DOE facilities so that workers, the general public, and the environment are protected from the impacts of natural phenomena hazards on DOE facilities. This Order specifically requires facilities to be reevaluated when there is any change in design and construction standards. Existing
facilities at INEL have undergone substantial safety analysis and seismic design review. Several of the projects described in Volume 2, Appendix C of the EIS are proposed by DOE to replace or upgrade facilities at INEL. Likewise, actions such as the transfer of fuels from potentially vulnerable facilities to modern facilities have resulted from the ongoing safety analysis and seismic design reviews.

No new analyses are required for INEL facilities because the EIS summarizes existing credible scientific evidence relevant to understanding the existing environment, identifying reasonably foreseeable impacts, and evaluating potential consequences. The evaluation of impacts is based on methods generally accepted by the scientific community.

See also the responses to comments 05.08.01 (014) and 05.08.01 (030).

05.05.01 (017) Seismic Characteristics

COMMENT

Commentors note that the Idaho National Engineering Laboratory is designated a Uniform Building Code Seismic Zone 2B and suggest that this area is not of low seismic potential as indicated in the EIS.

RESPONSE

The UBC seismic hazard zones range from 0 to 4, with 0 being designated the lowest seismic potential. The Snake River Plain of Eastern Idaho is currently classified as Zone 2B, based on regional voting at meetings of the professional engineering community. A small portion of the INEL site is in UBC Zone 3. No INEL facilities are located in Zone 3. The characterization of DOE sites as having low-to-moderate seismic potential is correct when taken in the context of UBC Zone 4, which includes regions of relatively intense seismic activity. In fact, the UBC accelerations are up to twice those shown on National Earthquake Hazard Reduction Program Maps for most of INEL. Likewise, United States Geological Service ground motion maps (1982 and 1990) show accelerations lower than UBC values of 0.2g. These comparisons point out that the UBC maps are extremely conservative for INEL and that the actual seismic hazard is less than shown on the UBC map.

DOE Order 5480.28, Natural Phenomena Hazards Mitigation, requires that DOE facilities meet stringent natural phenomena hazards mitigation requirements. The UBC design basis acceleration for Zone 2B is 0.2g (the acceleration due to gravity is 1g). Most INEL moderate- or high-hazard facilities currently in use are designed to a design basis acceleration of 0.24g or higher. Low-to-moderate seismic hazard potential for INEL is further supported by the accelerations recorded at the site from the Borah Peak earthquake, which ranged from 0.078g to 0.017g. This earthquake had a moment magnitude of 6.9 (surface wave magnitude of 7.3).

Regardless of the adjetival characterization of the seismic hazard at the DOE sites as low or moderate, DOE Orders require a systematic quantification of the seismic hazard for its facilities. Quantitative probabilistic estimates of seismic hazards at other DOE sites have been used in the EIS when available. DOE has prepared, and INEL uses, an independently reviewed probabilistic seismic hazard assessment. This study estimates earthquake ground motions and how often they may occur. This study has been independently reviewed and will be incorporated into the INEL architectural and engineering standards after review by the site Natural Phenomena Committee per DOE Order 6130.1A, General Design Criteria. Included in this study is an estimate of ground motions at INEL facilities from a moment magnitude 7.0 earthquake occurring at the southern end of the Lemhi fault zone near the site boundary. These ground motions exceed those that would occur as a result of moment magnitude 7.0 earthquakes at the southern ends of the Lost River and Beaverhead fault zones. The 1983 Borah Peak earthquake had a moment magnitude 6.9. A study has also been performed for the Navy's Expendable Core Facility at INEL and presents detailed data and comparable results. See also the response to comment 05.05.01 (036).

Quantitative estimates of seismic hazards at INEL sites are in or referenced in section 4.6 of each of the Volume 1 appendices; Volume 1, Appendix D, section 4.2; and Volume 2, Appendix B, section 4.6. These estimates are more useful than adjectival or UBC characterizations for the decision-making process.

05.05.01 (018) Seismic Characteristics

COMMENT

The commentor indicates that the EIS is inadequate because no seismic hazard zone map is included. Specific reference was made to Volume 1, Appendix D, Part B.5.2 referring to seismic hazard maps as "zone maps" and that three of four waste water pits are not up to current earthquake codes. In addition, the commentor states that facilities should be reconstructed to meet current codes and that a seismic map of the Idaho National Engineering Laboratory with facility locations should be added.

RESPONSE

Seismic hazards and geologic analyses for INEL can be found in Volume 1, section 4.2; Volume 1, Appendix B, section 4.6; and Volume 2, section 4.6 and Appendix F.2. Seismically induced accidents are discussed in Volume 2, section 5.1.4 and Appendix F.5. DOE takes seismic hazards very seriously, and INEL uses review 3 analyses to support the implementation of DOE Orders and standards.

Volume 1, Appendix D, Chapter 4 contains sections that describe possible seismic hazards at each Navy site, provide general background information regarding the seismicity at these sites, and provide...
The effects of seismic failure of Naval SNF management facilities have been evaluated in this EIS. Volume 1, Appendix D, Chapter 5 and Attachment F provide summary and detailed discussions of the analyses that were performed and the public health risks that might result from a seismic event at each site where Naval SNF would be stored. The seismic events considered in the analyses included both an earthquake of the magnitude used as the basis for the design of the facility (design basis earthquake) and an earthquake of a magnitude, which is more severe than that for which the facility must be designed (beyond design basis earthquake). These analyses show that the risks associated with seismic events involving Naval SNF would be small for all of the alternatives and sites considered.

The three water pits that the commenter refers to were built to standards that were the acceptable criteria at the time they were built. These water pits have been reevaluated under current seismic design standards and found to be structurally adequate. An existing facility’s seismic strength and risk assessment depends on the building’s specific characteristics as well as the seismic acceleration. Also, the accident analysis bounds any seismically induced failure.

The information on seismic hazards used in this EIS was obtained from the available credible data for each site. Because this information is specific to each site, it is more useful in understanding the potential seismic hazards than the classifications provided for large regions in the UBC maps. An up-to-date seismic evaluation was completed for all of the water pools at the Expended Core Facility at INEL. The results show that they all can withstand earthquakes for both design basis events (peak ground acceleration of 0.24 g) and for beyond design basis events (peak ground acceleration of 0.4 g). The statement in Volume 1, Appendix D, Attachment B that three of the water pools were designed to the seismic hazard zone classification in effect at the time they were built is correct, but does not mean that this is all they would withstand or that they do not comply with current building codes or other applicable requirements.

DOE Order 5480.28, *Natural Phenomena Hazards Mitigation*, sets forth DOE policy to design, construct, and operate DOE facilities so that workers, the general public and the environment are protected from the impacts of natural phenomena hazards on DOE facilities. This Order specifically requires facilities to be reevaluated when there is any change in design and construction standards. Existing facilities at INEL have undergone continual safety analysis and seismic design review. Several of the projects described in Volume 2, Appendix C of the EIS are proposed by DOE to replace or upgrade facilities at the site. Likewise, actions such as the transfer of fuels from potentially vulnerable facilities to modern facilities have resulted from the ongoing safety analysis and seismic design reviews.

The data and methods used in the seismic hazard report referenced in Volume 2, section 4.6 of the EIS as Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National Engineering Laboratory (Draft) were extensively and independently reviewed. This report includes graphs showing rate of occurrence versus acceleration for seismic events for each major facility at INEL. This report may be incorporated into the INEL architectural and engineering standards after review by the site Natural Phenomena Committee. The previous INEL seismic analysis (*Earthquake Strong Ground Motion Estimates for the Idaho National Engineering Laboratory: Final Report*) was reviewed and incorporated into the site architectural and engineering standards after review by the site Natural Phenomena Committee in 1992 and is referenced in Volume 2, sections 4.6 and F-2 and contains facility- and location-specific seismic hazard information.

Most facilities currently in use at INEL are designed to withstand an earthquake acceleration of 0.24g or higher. All of the facilities at the site lie in UBC Zone 2B, which requires that buildings withstand earthquake accelerations of up to 0.2g. A small portion of the INEL site lies in UBC Zone 3, but there are no facilities in that portion of the site. DOE seismic design standards for moderate- and high-hazard facilities exceed the UBC seismic Zone 2B design criteria.

The EIS was prepared using existing references and currently published information. DOE prepared the EIS in a layered fashion and placed much of the technical details in appendices and supporting documentation. The references cited for Volume 1 and for Volume 2 include current information on existing environment and applicable environmental consequences for all sites evaluated. These original studies are referenced in Chapter 9 of both volumes and are available in reading rooms and information locations for review by the commenter and other interested members of the public.

Low-to-moderate seismic potential for INEL is further supported by the accelerations recorded at the site from the Borah Peak earthquake, which ranged from 0.078g to 0.017g. This earthquake had a moment magnitude of 6.9 (surface magnitude of 7.3).

The EIS summarizes all known credible scientific evidence relevant to understanding the environment, identifying reasonably foreseeable impacts, and evaluating potential consequences. The EIS uses the most up-to-date reviewed analyses when available, and the evaluation of impacts is based on methods generally accepted by the scientific community. The analyses reported in the EIS evaluate the potential...
consequences, including direct, indirect, cumulative, irreversible and irretrievable effects, and long-term productivity losses.

05.05.01 (019) Seismic Characteristics

COMMENT

The commenter states that the description of the Snake River Plain as having low seismicity is contradicted by the Idaho National Engineering Laboratory's 1979 to 1981 Quarterly Seismic Reports, which summarize data on earthquakes "registered on or originated on the Snake River Plain."

RESPONSE

The INEL Quarterly Seismic Reports cited by the commenter, available at the INEL Technical Library, show far fewer earthquakes originating on the Plain than recorded by INEL seismographs on or near the Plain. For example, the January 1982 report shows 470 earthquakes recorded by INEL seismographs on the Plain for the months October through December 1981 with magnitudes ranging from 0.4 to 3.5.

Out of 470 earthquakes, only one event, with a magnitude of 1.1, was possibly located within the Snake River Plain. These reports typically show one to two events per quarter originating in the Snake River Plain with magnitudes ranging from 0.1 to 1.3. When this data is compared with Figure 4.6-3, it is appropriate to describe the Snake River Plain as having a low-level of seismic activity with respect to the Basin and Range Province. The term "aseismic" has been avoided in the EIS to eliminate confusion.

Seismic hazards and geologic analyses for INEL can be found in Volume 1, section 4.2; Volume 1, Appendix B, section 4.6; and Volume 2, section 4.6 and Appendix F-2. Seismically induced accidents are discussed in Volume 2, section 5.14 and Appendix F-5.

The assertion that the Snake River Plain has a low rate of seismicity is supported by the evidence in Volume 2, Figure 4.6-3, which represents a summary of the best available data at the time the data for the EIS was compiled. The addition of subsequent seismic events in the region would not change the conclusion that the Snake River Plain has a low rate of seismicity with respect to the Basin and Range Province.

See also the response to comment 05.05.01 (007).

05.05.01 (020) Seismic Characteristics

COMMENT

The commenter notes that the Borah Peak earthquake was a magnitude 7.3 and not a magnitude 6.9, as stated in an EIS reference.

RESPONSE

The Borah Peak earthquake, as stated in Volume 2, section 4.6.1, had a surface wave magnitude of 7.3. The moment magnitude for this earthquake was 6.9. Seismologists prefer to calculate and discuss earthquake energy in terms of moment magnitude because it is based on the physical properties of the earth and repeatable measurements (such as surface rupture length) as opposed to a surface wave magnitude, which is a one-time measure of a seismograph's response to an earthquake. Other measures of magnitude (such as Richter) cannot be determined for close, large events due to instrument saturation.

05.05.01 (022) Seismic Characteristics

COMMENT

The commenter asserts that the EIS statement that the Hanford Site is historically of low seismicity is incorrect.

RESPONSE

The seismic hazards at the Hanford Site are described in Volume 1, section 4.1, and additional detail is provided in Volume 1, Appendix A, section 4.6.3. The area of the Hanford Site has historically experienced several moderate-sized earthquakes. The largest earthquakes near the Hanford Site include an approximate magnitude 4.5 event in 1918 near the town of Corfu, 35 kilometers (22 miles) north of the Hanford Site, and a second event with the same approximate magnitude and location in 1973. The largest earthquake within the Hanford Site occurred in 1971 near the location of N-Reactor on the Columbia River and had a magnitude of 3.8.

DOE Orders require rigorous quantification of seismic hazards. Seismic hazard studies have been conducted at the Hanford Site to incorporate geologic estimates for the frequency of occurrence of large earthquakes associated with geologic faults and tectonic zones, as reported in Volume 1, Appendix A. The Hanford Site is in a UBC Zone 2B (Zone 0 represents low risk and Zone 4 represents high risk), which leads to design requirements to withstand moderate earthquakes.
05.05.01 (023) Seismic Characteristics

COMMENT
The commentor states that the Idaho National Engineering Laboratory is subject to moderate seismic hazard and that other facilities at Puget Sound Naval Shipyard, the Hanford Site, Los Alamos National Laboratory, and Sandia National Laboratories have moderate-to-high seismic potential.

RESPONSE
Estimates of seismic hazards at the sites considered are in or are referenced in Volume 1, Appendices A through F, and Volume 2, Appendix F-2. Quantitative estimates are more useful than adjectival characterizations for the decision-making process. However, the comment is acknowledged and DOE has republished the description of seismic hazard at DOE sites.

DOE Order 5480.28, Natural Phenomena Hazards Mitigation, requires that DOE facilities meet stringent natural phenomena hazards mitigation requirements. The UBC design basis acceleration for Zone 2B is 0.2g (the acceleration due to gravity is 1g). Most INEL moderate- or high-hazard nuclear facilities currently in use are designed or have been evaluated to a design basis acceleration of 0.24g or higher. Low-to-moderate seismic hazard potential for INEL is further supported by the accelerations recorded at INEL from the Borah Peak earthquake, which ranged from 0.078g to 0.017g. This earthquake had a moment magnitude 6.9 (surface wave magnitude 7.3).

Regardless of the adjectival characterization of the seismic hazard at DOE sites as low or moderate, DOE Orders require a systematic quantification of the seismic hazard for its facilities. Quantitative probabilistic estimates of seismic hazards at other DOE sites have been used in the EIS when available. INEL is preparing and the EIS uses a probabilistic seismic hazard assessment for facilities managed by DOE's Idaho Operations Office. This study estimates earthquake ground motions and how often they might occur. This study has been extensively and independently reviewed and will be incorporated into INEL architectural and engineering standards after review by INEL Natural Phenomena Committee per DOE Order 6130.1A, General Design Criteria. A similar process was used in 1992 to incorporate a scientifically reviewed seismic analysis of INEL into INEL architectural and engineering standards. Included in these studies are estimates of accelerations at INEL facilities that would result from a moment magnitude 7.0 earthquake occurring at the southern end of the Lemhi fault zone near the INEL boundary. These accelerations for INEL facilities exceed those that would occur as a result of moment magnitude 7.0 earthquakes at the southern ends of the Lost River and Beaverhead fault zones. The 1983 Borah Peak earthquake had a moment magnitude 6.9.

The Lemhi Fault and other seismic sources are discussed in Volume 1, Appendix B, section 4.6 and in Volume 2, section 4.6 and Appendix F-2. Seismically induced accidents are discussed in Volume 2, section 5.14 and Appendix F-5. These accident analyses indicate that the risks to the public would be small from seismic initiated events.

Existing facilities at INEL have undergone substantial safety analysis and seismic design review. Several of the projects described in Volume 2, Appendix C are proposed by DOE to replace or upgrade facilities at INEL. Likewise, actions such as the transfer of fuels from potentially vulnerable facilities to modern facilities have resulted from the ongoing safety analysis and seismic design reviews.

All other major, moderate- and high-hazard facilities currently in use at INEL were built such that they can withstand accelerations from a moment magnitude 7.0 earthquake at the southern end of the Lemhi fault zone. This level of seismic safety is consistent with requirements contained in DOE Orders.

The accident analyses (including beyond reasonably foreseeable accidents with potential impacts greater than seismically induced accidents) indicate that the risk to the public from alternatives described in this EIS would be small. Therefore, additional information or characterization of reasonably foreseeable seismic events with lesser potential impact would have no effect on the decision-making process. The level of detail and characterization for seismic issues is appropriate for the programmatic decisions that will be made based on this document.

05.05.01 (024) Seismic Characteristics

COMMENT
The commentor questions why the overall level of seismic hazard calculated in the EIS for the Idaho National Engineering Laboratory is lower than the seismic hazard curves for either the Hanford Site or the Savannah River Site, and why U.S. Geological Survey data are not used.

RESPONSE
The differences perceived by the commentor result from the site-specific data and models used to assess seismic hazards. Each site used data and models judged to be appropriate to comply with DOE Orders and standards for that location. Regardless of differences in modeling approaches, steps were taken to ensure the professional and scientific integrity of these discussions and analyses for these sites. These analyses are adequate for evaluation and consideration of alternatives required for the programmatic EIS. See also the response to comment 05.05.01 (003).
DOE Order 5480.28, Natural Phenomena Hazard Mitigation, sets forth DOE procedures to design, assess, and operate DOE facilities so that workers, the general public, and the environment are protected from the impacts of natural phenomena hazards on DOE facilities. INEL uses analyses to support the implementation of DOE Orders and standards.

U.S. Geological Survey (USGS) data are regional in scope and do not provide sufficient information for analysis of the programmatic alternatives discussed in this EIS.

**05.05.01 (025) Seismic Characteristics**

**COMMENT**
The commenter states that a design basis earthquake using a two-segment rupture and moment magnitude 7.0 earthquake on the Lemhi fault is not conservative enough.

**RESPONSE**
The Lemhi fault and other seismic sources are discussed in Volume 1, Appendix B, section 4.6 and Volume 2, section 4.6 and Appendix F-2. Seismically induced accidents are discussed in Volume 2, section 5.14 and Appendix F-5. These accident analyses indicate that risks to the public would be small from seismic-initiated events.

Existing facilities at INEL have undergone substantial safety analysis and seismic design review. Several of the projects described in Volume 2, Appendix C of the EIS are proposed by DOE to replace or upgrade facilities at the site. Likewise, actions such as the transfer of fuels from potentially vulnerable facilities to modern facilities have resulted from the ongoing safety analysis and seismic design reviews.

All other major, moderate- and high-hazard facilities currently in use at INEL were built to withstand accelerations that would result from a moment magnitude 7.0 earthquake at the southern end of the Lemhi fault zone.

The probabilistic seismic hazard assessment is intended to capture the effects of the most likely type of high-intensity seismic events. Seismic events were the only identified common-cause initiators with the potential to initiate radioactive and toxic material releases to the environment. Seismically initiated releases and impacts from individual facilities were considered in the identification of the postulated accident scenarios analyzed in this EIS. These results are conservative and ensure scientific integrity.

The two-segment rupture model is consistent with observations to date on Basin and Range earthquakes in general and paleoseismic indicators near INEL in particular.

See also the response to comment 05.05.01 (001).

**05.05.01 (034) Seismic Characteristics**

**COMMENT**
The commenter states that seismicity at the Idaho National Engineering Laboratory is not mentioned in the EIS analysis.

**RESPONSE**
Volume 1, Appendix B, section 4.6 and Volume 2, section 4.6 discuss seismicity in relation to INEL. Volume 2, section 5.14 discusses how seismic events were used in the accident analyses. Details of the accident analyses, including seismicity assumptions, are found in Accident Assessments for Facilities at the Idaho National Engineering Laboratory.

**05.05.01 (035) Seismic Characteristics**

**COMMENT**
The commenter suggests that the seismic study in Volume 2, section 4.6 is incomplete because the peak ground acceleration curves for facilities other than the Idaho Chemical Processing Plant have not been included.

**RESPONSE**
The data and methods used in the seismic hazard report referenced in Volume 2, section 4.6 as Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National Engineering Laboratory (Draft) includes graphs showing rate of occurrence versus ground motion for seismic events for each major facility at INEL. The seismic hazard curve for the Idaho Chemical Processing Plant was included as an example of the information contained in the INEL seismic hazard analysis [Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National Engineering Laboratory (Draft)]. This report may be incorporated into the INEL architectural and engineering standards after it is finished and reviewed by the INEL Natural Phenomena Committee. The previous INEL seismic analysis (Earthquake Strong Ground Motion Estimates for the Idaho National Engineering Laboratory: Final Report) was also extensively reviewed and incorporated into the INEL architectural and engineering standards after review by the INEL Natural Phenomena Committee in 1992. Earthquake Strong Ground Motion Estimates for the Idaho National Engineering Laboratory: Final Report is referenced in Volume 2, section 4.6 and Appendix F-2 and contains facility- and location-specific seismic hazard information.
05.05.01 (036) Seismic Characteristics

COMMENT
The commentor notes that the Idaho National Engineering Laboratory is in an area of seismic activity and specifically referred to the Beaverhead, Lemhi, and Lost River fault zones.

RESPONSE
Seismic hazards and geologic analyses can be found in Volume 1, section 4.6; Volume 1, Appendix B, section 4.6; and Volume 2, section 4.6 and Appendix F-2. Seismically induced accidents are discussed in Volume 2, section 5.14 and Appendix F-5. DOE takes seismic hazards very seriously, and INEL uses independently reviewed analyses to support the enforcement and implementation of DOE Orders and standards.

DOE Order 5480.28, National Phenomena Hazards Mitigation, sets forth DOE procedures to design, assess, and operate DOE facilities so that workers, the general public, and the environment are protected from the impacts of natural phenomena hazards on DOE facilities. This Order specifically requires facilities to be reevaluated when there is any change in design and construction standards. Existing facilities at INEL have undergone continual safety analysis and seismic design review. Several of the projects described in Volume 2, Appendix C of the EIS are proposed by DOE to replace or upgrade facilities at the site. Likewise, actions such as the transfer of fuels from potentially vulnerable facilities to modern facilities have resulted from the ongoing safety analysis and seismic design reviews.

INEL has prepared a probabilistic seismic hazard assessment for facilities at the site. This study [Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National Engineering Laboratory (Draft)] estimates earthquake accelerations and how often they might occur at facilities at the site. This study has been independently reviewed and will be incorporated into the INEL architectural and engineering standards after it is finalized and reviewed by the site Natural Phenomena Committee for use in conjunction with DOE Orders to design and build new facilities. Included in this study are vibratory ground motions at INEL facilities that would result from a magnitude 7.0 earthquake occurring at the southern end of the Lemhi fault zone near the site boundary. These ground motions would exceed those that would occur as a result of magnitude 7.0 earthquakes at the southern ends of the Lost River and Beaverhead fault zones.

Accident analysis results (including seismically induced accidents) indicate that the risk to the public from INEL operations would be small.

05.05.01 (037) Seismic Characteristics

COMMENT
The commentor notes that the West Valley Demonstration Project facility is only about 30 kilometers from the probable causative structure for the 1929 Attica, New York, magnitude 5.8 earthquake.

RESPONSE
Volume 1, Appendix E, section 3.3.1 of the EIS has been revised to include seismic data that address the significance of seismic activity in the West Valley region.

05.05.01 (039) Seismic Characteristics

COMMENT
The commentor expresses the opinion that the geologic map in Volume 2, section 4.6 is inadequate because it does not define certain major geologic features; specifically, the Arco Volcanic Rift Zone, the Lava Ridge-Hells Half Acre Volcanic Rift Zone, and the Axial Volcanic Zone.

RESPONSE
Rift zones at INEL, as discussed in the EIS, refer to volcanic rift zones in the region. The definition suggested by the commentor concerns continental or oceanic constructive tectonic plate margins, which, while correct, is not appropriate with respect to local conditions.

Important regional geologic features are included in Volume 2, section 4.6. A map showing the most significant volcanic rift zones in and near INEL can be found in the Engineering Design File referenced as Water Resources Supporting Document for the INEL Environmental Restoration and Waste Management EIS (Draft) in Volume 2, Appendix F. Many geologic maps of INEL and adjoining areas are available in the open literature. Some of this literature is cited and referenced in Volumes 1 and 2, including USGS reports and maps.

DOE added a more detailed geologic map of INEL to the EIS.

05.05.01 (040) Seismic Characteristics

COMMENT
The commentor suggests that analysis of seismic and volcanic hazards be fully reviewed by the Idaho Geologic Survey and other qualified experts.
RESPONSE
Consistent with DOE Orders and standards, INEL seismic hazards assessments and methods have been independently reviewed by many expert seismologists and geologists. These include the Senior External Events Review Group, a panel of seismic, geologic and structural engineering experts with expertise in seismic siting and design of high-hazard facilities; the Lawrence Livermore Volcanic Working Group; the Defense Nuclear Facilities Safety Board; Woodward-Clyde, Inc.; Risk Engineering, Inc.; Stanford University; University of Utah; State University of New York at Binghamton; Southern Methodist University; Idaho State University; the U.S. Geological Survey; and Boise State University. Given the extensive nature of this review, DOE believes additional review is not necessary.

See also the response to comment 05.05 (015).

05.05.01 (041) Seismic Characteristics

COMMENT
The commentor points out that the Uniform Building Code contains four Seismic Risk Zones and not three.

RESPONSE
The EIS has been revised to reflect that there are more than three Uniform Building Code zones.

5.6 Land Use

05.06 (001) Land Use

COMMENT
The commentor notes that the list of Federal outdoor recreation facilities in Volume 1, Appendix F, Part Three, section 4.2 should be expanded, and Figure 4.2-2 should be updated.

RESPONSE
The list of Federal outdoor recreation facilities identified in the text and figures of Volume 1, Appendix F, Part Three, section 4.2 is not intended to be all inclusive. However, the list of specific Federal outdoor recreation facilities has been revised to include other major facilities.

05.06 (002) Land Use

COMMENT
The commentor, referring to Volume 1, Appendix F, notes that the acreage needed for proposed facilities, whether 90 or 120 acres, is unclear.

RESPONSE
Construction of SNF management facilities would require 90 acres. Under the Centralization alternative, an Expended Core Facility would also need to be constructed; this would require an additional 30 acres. The data in Volume 1, Appendix F, Parts Two and Three, Table 3.2-1 for the Centralization alternative include the requirements of the Expended Core Facility, which are discussed in Volume 1, Appendix D. To clarify the acreage requirements, a footnote has been added to Volume 1, Appendix F, Parts Two and Three, Table 3.2-1, and the text of Volume 1, Appendix F, section 3.2 has been revised.

05.06 (003) Land Use

COMMENT
The commentor supports the banning of grazing on Idaho National Engineering Laboratory land to allow re-establishment of natural vegetation.

RESPONSE
Grazing policies are not within the scope of this EIS. The U.S. Department of the Interior, Bureau of Land Management is responsible for those policies.

05.06 (004) Land Use

COMMENT
The commentor states that the EIS land-use analysis does not identify policies or the decision-making process, or provide an opportunity for public input on specific projects.

RESPONSE
The EIS identifies DOE land-use plans and policies applicable to INEL in Volume 2, section 4.2. Local land-use policies are also identified in Volume 2, section 4.2. For details of these plans and policies, the commentor is encouraged to consult the specific documents referenced in the EIS, which are available in reading rooms and information locations listed in the EIS. Also, DOE has established a Future Use Project Office, which is identifying stakeholder-preferred future use options at the 25 DOE sites by the end of 1995. Future use options are defined as a select range of preferred uses forged with consideration of stakeholder desires and DOE missions, and tempered by technical, and legal constraints and opportunities.

05.06 (005) Land Use

COMMENT
The commentor requests an explanation of how percentages were calculated for acres disturbed for Idaho National Engineering Laboratory under each alternative.
RESPONSE
Calculations of the acreage that would be disturbed by proposed projects under each alternative were based on figures contained in individual project data sheets found in Volume 2, Appendix C. Volume 2, section 3.3 has been changed to show how the acreages disturbed were calculated.

05.06 (006) Land Use
COMMENT
The commenter states that the EIS fails to consider impacts of the alternatives on the other current uses of Idaho National Engineering Laboratory land such as hunting, grazing, and tribal ceremonial and religious purposes.
RESPONSE
Volume 2, section 4.2 identifies the portions of INEL that are used for hunting and grazing. Volume 2, section 4.4 discusses traditional resources that are of cultural or religious importance to local Native Americans. All of these land uses are outside of the facility areas where the proposed actions of the various EIS alternatives would be implemented. Consequently, no impacts to hunting or grazing activities, nor to tribal ceremonial or religious uses, are expected. The future use of land would be coordinated with local Native Americans to assess any potential impacts of future proposed activities.

05.06 (007) Land Use
COMMENT
The commenter requests that the EIS describe and identify the locations of specific actions, the process for making land-use decisions under the Federal Facilities Agreement and Consent Order, and that the EIS identify the role of regulatory agencies in making future land-use decisions under the Federal Facilities Agreement and Consent Order for Idaho National Engineering Laboratory.
RESPONSE
The specific location of proposed actions at INEL are identified in the project summaries. See Volume 2, Appendix C. The number of acres disturbed for each project is also provided in this portion of the EIS. The locations of projects not covered by this EIS will be identified in subsequent NEPA or Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) documents.

The Federal Facilities Agreement and Consent Order (FFA/CO) process does not entail making land-use "decisions." Rather, assumptions for future land uses at INEL will be made for the purpose of determining the appropriate level of cleanup at each operable unit. In August, 1994, the DOE Idaho Operations Office issued for public comment the Idaho National Engineering Laboratory Long-Term Land Use Future Scenarios. This document set forth various land-use scenarios that could be assumed for near-term and long-term activities at INEL. Public comments on the document were received, and currently are being reviewed and addressed as appropriate.

In accordance with CERCLA and the FFA/CO, the Idaho Department of Health and Welfare and EPA Region X will be part of the decision-making process on the appropriate level of cleanup at INEL. DOE requested comments on the Idaho National Engineering Laboratory Long-Term Land Use Future Scenarios from the State of Idaho and EPA Region X.

05.06 (008) Land Use
COMMENT
The commenter states that the EIS needs to address whether the impacts from land use at the Idaho National Engineering Laboratory are permanent or temporary.
RESPONSE
Volume 2, section 5.18 states that disposal of radioactive or hazardous wastes would cause irreversible and irrevocable (i.e., permanent) commitments of land resources: under the Ten-Year Plan and Maximum Treatment, Storage, and Disposal alternatives. The affected acreage is also identified. Acreage used for waste treatment, storage, and disposal activities would be reserved for those purposes, and other uses of this land would be precluded during the time period addressed by the EIS.

05.06 (009) Land Use
COMMENT
The commenter states that the proposed placement of spent nuclear fuel facilities at the Nevada Test Site would be inconsistent with the DOE 1994 draft future land use plan for the Nevada Test Site, which designates that portion of Area 5 as a "nonnuclear test area."
RESPONSE
The NTS future land use plan has three area designations: underground nuclear weapons test area, proposed high-level radioactive waste repository area, and nonnuclear test area. These designations are broad, providing general guidance for future activities. The underground nuclear weapons test area has the general characteristics suitable for nuclear weapons tests, although some localized areas that are not suitable because of terrain, previous uses, local geologic features, or other reasons, may be used for other purposes. The proposed high-level radioactive waste area has been reserved to support the activities for the site characterization at Yucca Mountain, and is not available for other uses at this time. The nonnuclear test area is an area where weapons testing is not conducted and is available for other uses deemed appropriate by DOE, such as siting SNF management facilities.
05.06 (010) Land Use

COMMENT

The commentor states that DOE has summarily dismissed the alternative of restoring the Idaho National Engineering Laboratory to pristine conditions as unreasonable and that DOE is ignoring the Shoshone-Bannock Tribes' rights to hunt, fish, and gather on unoccupied lands of the U.S. Government.

Additionally, the commentor states that the presence of cultural resources on the Idaho National Engineering Laboratory should qualify the Idaho National Engineering Laboratory as a unique land resource, thereby requiring restoration of the site.

RESPONSE

Environmental restoration activities at INEL are being conducted in accordance with the FEA/CO dated December 4, 1991. Restoration activities will comply with the requirements of CERCLA. These laws do not require restoration to pristine conditions, but are designed to assure protection of human health and the environment in a cost-effective manner.

05.06 (011) Land Use

COMMENT

The commentor states that the analysis of land-use impacts is fundamentally flawed because it assumes that "there are no Native American treaty rights that would affect any future land use on the INEL site."

The commentor states that the Fort Bridger Treaty expressly reserves the rights of the Shoshone-Bannock Tribes to use unoccupied lands of the U.S., and the Tribes will exercise these rights when the Idaho National Engineering Laboratory goes away or releases portions of land.

RESPONSE

The commentor is correct that the Fort Bridger Treaty of 1869 reserves certain future rights for the Shoshone-Bannock Tribes to use lands on the INEL site to the extent that those lands may sometime in the future become unoccupied. The analysis of land-use impacts in the EIS is limited to the time period and scope of the EIS. The time period for Volume 2 analysis is the 10 years from June 1, 1995, to June 1, 2005; the time period for Volume 1 analysis is 40 years, with detailed impact analysis conducted for actions occurring from June 1, 1995 to June 1, 2005. During the time periods covered by the EIS, DOE does not plan to relinquish ownership and control of the INEL site. Discussions of the Fort Bridger Treaty of 1869 in Volume 1, Appendix B and Volume 2 of the EIS have been changed to more clearly address this issue.

05.06 (012) Land Use

COMMENT

The commentor requests information be included in the EIS on the approach related to land ownership that would be used to transfer Idaho National Engineering Laboratory land to other agencies, or the private sector, and DOE's and other agencies' responsibilities in the land transfer process.

RESPONSE

The lands and facilities that are evaluated under the alternatives in this EIS are not scheduled to be turned over to other government agencies or the private sector within the time considered in the EIS. Consequently, the subject of transfer of government lands to other government agencies or to the private sector is outside the scope of this EIS.

05.06 (013) Land Use

COMMENT

The commentor objects to a land-use scenario projected by a draft DOE Idaho Operations Office document and states that Idaho National Engineering Laboratory lands should remain as wildlife habitat and should not be returned to the public for uses such as housing.

RESPONSE

This is in reference to a draft document entitled Long-Term Land Use Future Scenarios for the Idaho National Engineering Laboratory. The purpose of the land use scenarios document is to facilitate decisions regarding environmental restoration activities at INEL by projecting reasonable land use scenarios for the next 100 years. The current land use status, that is, Federal Government management of INEL, would not change under any of the alternatives analyzed in the EIS.

5.7 Utilities and Infrastructure

05.07 (001) Utilities and Infrastructure

COMMENT

The commentor asks whether recycling and the use of lined evaporation ponds have resulted in a relative increase or decrease in net consumptive water use at the Idaho National Engineering Laboratory.

RESPONSE

Currently, there are no major water recycling projects at INEL. Consumptive water use at INEL has probably increased since the use of lined evaporation ponds because water no longer recharges the aquifer. No studies have quantitatively evaluated the magnitude of increase since switching to lined ponds. However, it is likely that the increase is small with respect to total water use at INEL.
05.07 (002) Utilities and Infrastructure
COMMENT
The commentor questions why the electrical usage rate at the Idaho National Engineering Laboratory is expected to decline.
RESPONSE
Volume 1, Appendix B, section 4.13 describes the 1995 baseline electrical usage at INEL. Electrical usage at INEL is expected to decline when Navy prototype training at the Naval Reactors Facility is discontinued.

05.07 (003) Utilities and Infrastructure
COMMENT
The commentor notes that only sanitary waste water discharges are reported in Volume 1, Appendix B, section 4.13.4, and that additional waste water discharges from specific projects will impact the Snake River Plain aquifer. The commentor asserts that the EIS seriously underestimates the average annual waste water discharge from 1989 through 1991, based on a comparison of discharges reported in the Draft EIS (537 million liters per year) with those reported in INEL Nonradiological Waste Management Information System (6.8 billion liters/year). The commentor asks how this difference is accounted for and whether this will impact the analysis of impacts on the aquifer.
RESPONSE
As used in Volume 1, Appendix B, section 4.13.4, the term "waste water" refers primarily to sanitary wastes. DOE has clarified this in the EIS. As noted in Volume 1, Appendix B, section 4.8.3, water withdrawal from the aquifer by INEL is approximately 1.9 x 10^9 gallons per year. Of this amount, a substantial portion is discharged to the surface and is eventually returned to the aquifer. Water use impacts are presented in the EIS. Because of the small percentage of water consumed with respect to INEL water rights, and volume of water in the aquifer under INEL, there would be a small impact to water quantities in the aquifer under all alternatives considered.

05.07 (006) Utilities and Infrastructure
COMMENT
The commentor identifies a discrepancy in terminology between sections regarding the Idaho National Laboratory water rights.
RESPONSE
Volume 2, section 4.13 has been changed to refer to INEL water rights as a Federal Reserve Water Right.

05.07 (007) Utilities and Infrastructure
COMMENT
The commentor would like Volume 2, section 5.13 to clarify whether projected waste water quantities are limited to sewage.
RESPONSE
This discussion in section 5.13 has been modified as requested.

5.8 Water Resources

05.08 (001) Water Resources
COMMENT
The commentor states that the discussion in Volume 2 concentrates on radioactive wastes and omits nonradioactive effluents.
RESPONSE
Contaminants, including nonradioactive contaminants, are discussed in Volume 2, section 5.8. Nonradioactive contaminants at INEL were included in the analysis process performed for the EIS (Predicted Consequences on the Snake River Plain Aquifer of Alternative Actions 1 and 2). The screening identified just three analytes, all radionuclides, with plumes above current EPA MCLs. These contaminants were selected for detailed analysis of potential consequences on the Snake River Plain aquifer and are the main constituents within the contaminant plumes. In addition, other contaminants, including nonradioactive contaminants, are discussed in Volume 2, section 5.8.

05.08 (002) Water Resources
COMMENT
The commentor suggests that there be more information on expected constituents and concentrations in waste streams for proposed actions at the Idaho National Engineering Laboratory in Volume 2, Appendix F of the EIS. The commentor expresses the opinion that a decision of "no impact" cannot be based on inadequately characterized waste streams or source terms.
RESPONSE
Anticipated projects have been included in the EIS to present readers with as comprehensive a range of forthcoming projects as is currently possible. These anticipated projects have been conservatively evaluated to attempt to bound reasonably foreseeable environmental impacts from such projects. NEPA review is performed on such activities when applicable, prior to initiation. At such time, accurate information on secondary waste generation would be available for an assessment of impacts on waste management. NEPA status of environmental restoration and waste management projects contemplated
states that the increased use of an aquifer currently in overdraft should constitute a significant environmental effect, regardless of the user's right to that water.

RESPONSE
As indicated in Volume 1, Appendix F, Part Two, section 5.13, the water wells and pumping system in Area 5 of the NTS have sufficient capacity to meet the requirements for the proposed SNF facility. The proposed facility location is in the vicinity of the Area 5 water lines. Therefore, a tie-in to the existing site infrastructure would be adequate to supply SNF facility water.

The commenter correctly states that water rights should not be a factor in the determination of the significance of groundwater use impacts, and in fact, those water rights given to the Federal Government in the area of NTS were not considered in the impact determination made in the EIS. The information on Federal water rights was included in the EIS for information purposes only.

The discussion of groundwater quantity issues in Volume 1, Appendix F, Part Two, section 5.8 has been revised to include a more comprehensive analysis of potential impacts on groundwater quantity. Because the estimated perennial yield of the Frenchman Flat subbasin has been exceeded for more than 30 years with no decline in static water levels, it is likely that increased water use for SNF management could be sustained. The overall impact of any groundwater withdrawal in Frenchman Flats is a decrease in the discharge in the deserts to the southwest of NTS. SNF operations would decrease this discharge by 0.04 percent of the approximated 1992 discharge; therefore, impacts to groundwater are expected to be small from SNF operations. More detailed analysis, such as that proposed by the commenter, would be done if the NTS were chosen as a site for SNF management activities.

5.8.1 Groundwater

05.08.01 (001) Groundwater
COMMENT
Commentors state that a summary table of water used and water consumed be provided for each alternative, as well as a discussion of impacts in Volume 1, Appendix B, section 5.8.

RESPONSE
Volume 1, Appendix B, section 5.8 discusses the alternative that would represent the largest water use/consumption and provides water consumption in both gallons and cubic meters. If the alternative with the greatest projected water use is shown to have a small impact on the aquifer, then all others would likewise be small. There is additional detail in Volume 2, section 5.8.
05.08.01 (002) Groundwater

COMMENT
The commenter states that reference should be made to the increased consumption of water at Idaho National Engineering Laboratory as a result of the alternatives analyzed.

RESPONSE
The use of groundwater by the alternatives analyzed in the EIS for INEL is discussed in detail in Volume 2, section 5.8 and Appendix C. In general, increased construction activity and new facility operations require a net increase in consumptive water use. The maximum increase in net consumptive water use under any alternative is expected to be less than 5 percent of current water use at INEL. The EIS has been changed to reflect more accurate water use estimates.

05.08.01 (003) Groundwater

COMMENT
The commenter discusses the use of the term "aquitard" in Volume 1, Appendix F, Part Three of the EIS to describe certain geologic units on the Oak Ridge Reservation. The commenter notes that in several earlier published reports by State of Tennessee geologists, all the geologic units underlying the Oak Ridge Reservation were referred to as "aquifers" and it was stated that sufficient water supply for domestic use is usually obtained from wells at depths of 18 meters (60 feet) or less in the Conasauga Group. Some units, notably the Pumpkin Valley shale unit of the Conasauga Group, were noted to be poor aquifers, however.

RESPONSE
An aquifer is a body of rock or sediment in a formation, group of formations, or part of a formation that is saturated and sufficiently permeable to transmit economic quantities of water to wells or springs. An aquitard, on the other hand is a confining bed that will tend to retard, but not prevent, the flow of water to or from an adjacent aquifer. It may serve as a storage unit, but will not readily yield water to wells or springs. The Geology Resources and Water Resources sections of the EIS were prepared by researching recently published material. No site-specific field study was conducted. Recent literature indicates that there are several formations beneath ORR with varying ability to store and transmit water to wells or springs. It is agreed that the Pumpkin Valley Shale could very well be referred to as a poor aquifer because it has been shown to have poor transmissivity capabilities. Recently published reports such as Status Report: A Hydrologic Framework for the Oak Ridge Reservation, and Status Report on the Geology of the Oak Ridge Reservation have all used the term "aquitard" to describe the Pumpkin Valley Shale and a number of the other geologic units beneath the ORR.

Pumpkin Valley Shale is the oldest of six formations within the Conasauga Group and is at the base of the group. No site-specific data are available to determine at what depth Pumpkin Valley Shale is encountered at the West Bear Creek Valley site. It is logical, however, to think that at depths of 18 meters (60 feet) or less on the site, the water-bearing unit most likely to be encountered would be an aquitard of the Conasauga Group. If the ORR is chosen as a site for new SNF management facilities, site-specific surface water and groundwater studies would be performed to identify and characterize the subsurface units.

The level of detail desired by the commenter for the data analysis is not appropriate for the decisions that will be based on this programmatic document, and would not provide any information that would assist decisionmakers. This broad environmental review document has been prepared in accordance with the provisions of NEPA and CEQ implementing regulations, which allow for a broad focus on issues related to the subject of the decision. Additional, more specific data, such as that proposed by the commenter, would be provided, if necessary, in further site-specific environmental documents.

Geology and water resources for ORR are discussed in the EIS in Volume 1, Appendix F, Part Three, sections 4.6 and 4.8.

05.08.01 (004) Groundwater

COMMENT
Commenters state that the EIS treats the complex fracture flow system in the clastic rocks and conduit system of carbonate rocks of the Oak Ridge Reservation simplistically, that the system is too complex to be modeled, and that the system is not well enough understood to support the broad conclusion that groundwater in the "aquitards" is essentially static or that these units are able to contain contaminants.

RESPONSE
DOE agrees that the ORR groundwater system is complex. It is difficult to characterize groundwater in highly fractured and folded complex geologic settings. However, a full and detailed examination of the complex fracture-contaminated flow processes on the ORR is beyond the scope of this EIS.

The EIS description and analysis of hydrologic conditions at ORR was developed from recently published hydrologic literature, including Status Report: A Hydrologic Framework for the Oak Ridge Reservation. Based on these sources, the EIS analysis of potential groundwater impacts of SNF storage at ORR did not assume that the aquitards "contain contaminants," but rather that these units are characterized by shallow, short-flow paths and that solute residence times increase sharply with depth. In the intermediate and deep intervals, estimates of residence times from carbon 14 measurements and...
modeling are hundreds to tens of thousands of years as stated in Status Report: A Hydrologic Framework for the Oak Ridge Reservation. Volume 1, Appendix F, Part Three, section 5.8.4 has been revised to more accurately present the basis for the EIS discussion of potential groundwater quality impacts.

Very little potential exists for contamination of the Knox aquifer from the operation of proposed SNF management facilities. These facilities would be constructed using technologies that include secondary containment, leak detection, and water-balance monitoring equipment. Therefore, no significant environmental consequences related to water resources are anticipated from the operation of SNF management facilities.

A detailed description of groundwater flow would require an in-depth site-specific field geology and hydrogeology study. If ORR is selected as a site for new SNF management facilities, such studies would be performed.

Geology and water resources for ORR are discussed in the EIS in Volume 1, Appendix F, Part Three, sections 4.6 and 4.8.

05.08.01 (005) Groundwater

COMMENT

The commentor states that karst features at the Oak Ridge Reservation (e.g., sinkholes, large springs, caves, etc.), exist in certain geologic units within the Conasauga and Chickamauga Groups, indicating good aquifers within those units.

RESPONSE

This comment is addressed by statements included in the EIS, Volume 1, Appendix F, Part Three, section 4.6. The EIS states that karst development is present to varying degrees in the carbonate rocks of the Conasauga Group, most notably in the Maynardville Limestone, part of the Knox aquifer. However, it also states that "Although no site-specific geologic characterization has been conducted at the West Bear Creek Valley site, it appears the proposed Spent Nuclear Fuel Management Facility is located over the lower Conasauga Group strata not normally characterized by karst development." Site-specific geologic and hydrogeologic investigations would be necessary to verify this if ORR is chosen as a site for new SNF management facilities.

05.08.01 (006) Groundwater

COMMENT

Commentors state they are concerned with the high cost to owners/operators of private and public water systems to conduct water quality testing due to the potential impact of past, present, or future waste management activities on the Snake River Plain aquifer.

RESPONSE

Independent assessments of the Snake River Plain aquifer water quality at INEL confirm DOE environmental monitoring results that indicate that no contaminants in concentrations above EPA MCLs or DOE DCGs exist beyond the INEL boundary. With improved management practices and remediation efforts planned or under way, it is likely that water quality in the Snake River Plain aquifer below the INEL will continue to improve. Therefore, there is no INEL-related cost to local water users for testing groundwater outside the INEL boundary, because independent assessments indicate that INEL-related aquifer contamination outside the INEL boundary is small with respect to EPA MCLs or DOE DCGs.

05.08.01 (008) Groundwater

COMMENT

The commentor states that the potential exists for a deeper, more active flow regime at the Oak Ridge Reservation.

The commentor states that it is erroneous to dismiss the possibility of deep contaminant transfer in groundwater at the Oak Ridge Reservation, suggesting that the reason there is little evidence for deep contaminant transfer is that there is little data on the deep aquifer.

RESPONSE

Information provided in Volume 1, Appendix F, Part Three, section 4.8 was developed primarily from published hydrologic literature on the ORR including Status Report: A Hydrologic Framework for the Oak Ridge Reservation and recent site environmental reports. For the purpose of the EIS, such detailed information was beyond that which would be necessary to understand the effects of the alternatives. If ORR is chosen as a site for new SNF management facilities, site-specific groundwater studies would be performed.

The EIS discussion of groundwater conditions at ORR and the EIS analysis of potential hydrologic impacts, including the statement that there is little deep groundwater flow in the deep portions of the ORR aquitards, were based on information and analysis in published hydrologic literature on the ORR. (See Volume 1, Appendix F, Part Three, section 4.8 and references cited there.) These sources do not
dismiss the possibility of deep flow, but state that water budget analyses and observations of shallow groundwater flow and near-surface conditions indicate that almost all groundwater flux occurs near the ground surface.

Geology and water resources for ORR are discussed in the EIS in Volume 1, Appendix F, Part Three, sections 4.6 and 4.8.

05.08.01 (009) Groundwater
COMMENT
The commentor notes that vadose zone conductivity values derived from slug tests at the Oak Ridge Reservation may be understated in the EIS.

RESPONSE
It is true that smearing of clays by the drill bit during well installations, and other effects during slug testing, could reveal conductivity values less than what actually exist in nature. The conductivity estimates quoted in the Water Resources section of the EIS were obtained from Status Report: A Hydrologic Framework for the Oak Ridge Reservation. This reference cites that saturated hydraulic conductivity measurements were in fact conducted using infiltration tests as well as packer tests in the vadose zone.

Geology and water resources for the Oak Ridge Reservation are discussed in the EIS in Volume 1, Appendix F, Part Three, sections 4.6 and 4.8.

05.08.01 (010) Groundwater
COMMENT
The commentor states that the discussion in Volume 1, Appendix B, section 4.8 on perching layers in the aquifer is incorrect. Perching layers are impermeable, not impervious, and so downward flows may still occur and impact the aquifer.

RESPONSE
Perching layers are relatively impermeable. While some small amount of water may percolate through the impermeable layer, the main flow is lateral until the edges of the impermeable bed are reached. Flow then continues downward. The section of the EIS cited by the commentor accurately describes the movement of water around and through these impermeable layers in the Snake River Plain aquifer.

05.08.01 (012) Groundwater
COMMENT
The commentor notes that the likely source of nitrates detected in springs that flow from the Maynardville limestone is the Conasauga Shales at the Oak Ridge Reservation. This contamination further shows the inability of the shales to keep contaminants from migrating to the Knox aquifer.

RESPONSE
Most of the Y-12 Plant is underlain by units included in the Conasauga aquitard. However, the Maynardville limestone (Knox aquifer) also underlies a portion of the Y-12 Plant. Regardless of the properties of these rock units, proposed SNF management facilities are designed to have no liquid release of waste water with hazardous chemical or radiological characteristics. These facilities would be constructed using technologies that include secondary containment, leak detection, and water-balance monitoring equipment. Therefore, no significant environmental consequences related to water resources are anticipated from the operation of SNF management facilities.

Detailed analyses of existing contaminant sources and transport pathways are beyond the scope of this EIS. If ORR is selected for new SNF management facilities, site-specific groundwater studies would be performed. The level of detail desired by the commentor for the data analysis is not appropriate for the decisions that will be made based on this programmatic document, and would not provide any information that would assist decisionmakers. This broad environmental review document has been prepared in accordance with the provisions of NEPA and CEQ implementing regulations that allow for a broad focus on issues related to the subject of the decision. More specific data, such as that proposed by the commentor, would be provided, if necessary, in further site-specific environmental documents.

Geology and water resources for ORR are discussed in Volume 1, Appendix F, Part Three, sections 4.6 and 4.8.

05.08.01 (014) Groundwater
COMMENT
Commentors discuss the porous nature of the Eastern Snake River Plain and the potential impact of past, present, or future DOE activities related to spent nuclear fuel management at the Idaho National Engineering Laboratory on water quality of the Snake River Plain aquifer.

RESPONSE
Water resources at INEL and impacts resulting from SNF alternatives are described in Volume 1, Appendix B, sections 4.8 and 5.8. There would be no significant impacts to the aquifer under operating conditions. Environmental monitoring shows that INEL operations have not contaminated the Snake River Plain.
River Plain aquifer above EPA limits beyond the INEL boundaries. Liquid effluent monitoring and double containment construction would limit operational releases from a new facility to near zero. Groundwater modeling using assumptions, including scientifically defensible assumptions regarding porosity, designed to increase the potential impacts to the aquifer from past, present, and future activities described in the EIS show that groundwater quality will not be significantly impacted, because radioactive and other contaminant discharges to the soil or aquifer would not occur in concentrations above EPA MCLs or DOE DCGs. Furthermore, it is likely that overall aquifer water quality will continue to improve at INEL, regardless of the EIS alternative chosen for SNF management.

Water resources and impacts from all waste management and environmental restoration, including SNF alternatives, considered for the INEL are described in Volume 2, sections 4.8 and 5.8, respectively. Under all the alternatives considered, the possible future sources of contamination would be small compared with previous practices. This would be a result of waste management practices that include waste water discharge monitoring, as well as natural contaminant attenuation and radioactive decay for historical releases. Computer groundwater modeling using conservative parameters (discussed in Volume 2, Appendix F) indicates that existing contaminant plumes within the INEL boundary would continue to decrease at least through 2035. The modeling further indicates that overall aquifer groundwater quality would actually improve in that period and probably continue to improve after 2035.

A hypothetical accident involving the instantaneous release of the contents of a high-level waste tank due to a once-every-50,000-years seismic event represents the situation with the most potential impact on the Snake River Plain aquifer and is discussed in Volume 2, section 5.14 and Appendix F. Under this scenario, maximum radionuclide concentrations are predicted to reach the INEL boundary in concentrations less than EPA MCLs or DOE DCGs 300 years after the accident.

Independent assessments of the Snake River Plain aquifer water quality at INEL confirm DOE environmental monitoring results that indicate that no contaminants in concentrations above EPA MCLs or DOE DCGs exist beyond the INEL boundary. With improved management practices and remediation efforts planned or under way, it is likely that overall water quality in the Snake River Plain aquifer under the INEL will continue to improve.

As stated in Volume 2 Appendix F-2, the effects of porosity have been accounted for in the modeling described. The analysis shows that for all alternatives considered, impacts would be small.

05.08.01 (015) Groundwater
COMMENT
The commenter states the need for accuracy in modeling impacts of Idaho National Engineering Laboratory waste management activities on the Snake River Plain aquifer.

RESPONSE
A description of water resources and potential environmental consequences to water resources at INEL, including the Snake River Plain aquifer, is discussed in Volumes 1 and 2, sections 4.8 and 5.8. The analysis performed for the EIS integrated available data and technical information with computer modeling to evaluate contaminant transport and predict future trends in aquifer water quality. Computer modeling was completed through 2015 to add assurance to the conclusions reached in the document. Section 5.8 concludes that overall aquifer water quality would actually improve over this period. A discussion of the methodology and assumptions used for the computer modeling effort is in Volume 2, Appendix F.

05.08.01 (016) Groundwater
COMMENT
The commenter suggests that the reburial of plutonium in Pit 9 will pose a threat to the Snake River Plain aquifer.

RESPONSE
According to page 13 of the Pit 9 Demonstration Record of Decision (ROD), plutonium and other man-made radionuclides have been detected in sediments 34 meters (110 feet) below the surface of the Subsurface Disposal Area, but not in interbeds 9 meters (30 feet) or 73 meters (240 feet) beneath the surface. The presence of plutonium in the 34-meter (110-foot) sediment layer has been tentatively attributed to flooding of the Subsurface Disposal Area in 1969 from rapid thawing of local snow. Such flooding is now prevented by a 5-meter (15-foot) dike around the Subsurface Disposal Area.

Transport modeling was conducted for the less than 10 nanocuries per gram transuranic residuals that will be left in or returned to Pit 9 to evaluate potential contaminant migration to the Snake River Plain aquifer. Modeling results indicated that the Safe Drinking Water Act standard of 15 picocuries per liter for gross alpha radioactivity will not be exceeded anywhere in the Snake River Plain aquifer if a 0.6-meter (2-foot) layer of clean soil with a linear absorption coefficient of at least 500 milliliters per gram is added to the bottom of the pit and if the pit is backfilled to grade with clean soil. The Pit Residual Risk Assessment in the Pit 9 Administrative Record evaluated human health risks from 10 nanocuries per gram transuranic residuals left in the pit after cleanup. Modeling of radionuclide transport to the Snake River Plain aquifer indicates that no migration to the aquifer is expected within 1,000 years. Residual
contaminant levels. Where established with existing aquifer conditions with both Environmental Quality in Volume I. Appendix B.

RESPONSE
Table 4.8-1 did not include the detection limits and background values because this would unnecessarily complicate the table. The point being made by the table is that recent conditions at the site boundary are within background levels and detection limits. Detection limits and background levels are available in the references in Volume 1, Appendix B, Table 4.8-1 and references in section 4.8. Groundwater, perched water, and the vadose zone are discussed separately in the EIS.

Volume 1, Appendix B, Table 4.8-1 specifically refers to groundwater quality in the Snake River Plain aquifer. As discussed and defined in the EIS, locally saturated conditions above the water table result in perched water, while groundwater refers to usable quantities of water within an aquifer. Water contained in the vadose zone is referred to as vadose water. Because perched water occurs within the vadose zone, it is vadose water.

05.08.01 (020) Groundwater
COMMENT
The commentor notes that discussions in Volume 1, Appendix B, section 4.8 should compare existing aquifer conditions with both Environmental Protection Agency existing and proposed water quality standards, and that proposed maximum contaminant levels are not appropriate for the discussion of water quality in Volume I, section 4.2 of the EIS.

RESPONSE
A comparison of each contaminant with existing EPA MCLs with proposed MCLs is in Volume 1, Appendix B, Table 4.8-1. The summary material in Volume 1 has been enhanced to compare the contaminant levels, where established, with existing EPA MCLs.

For americium-241, plutonium-238, plutonium-239, and plutonium-240, comparisons have been made for gross alpha particle activity contaminant levels for drinking water.

The EIS includes comparisons with proposed EPA MCLs because the proposed standards provide a more comparative benchmark for comparison of radionuclide concentrations than do the existing standards.

05.08.01 (021) Groundwater
COMMENT
The commentor states he would like to see a single data base for Snake River Plain aquifer information and the development of a new model to analyze groundwater contaminant dispersion at the Idaho National Engineering Laboratory.

RESPONSE
Most of the Snake River Plain aquifer data collected historically at INEL is retained by the USGS. Since INEL became involved in environmental restoration, a significant quantity of additional groundwater data has been collected. Efforts have been made to integrate this data, with maintenance of a single data base within each contractor organization. With the realization that contractors would be consolidated and recognizing the advantage to both the public and INEL, the integration of data bases into a single repository is being evaluated by DOE and the new INEL contractor.

The modeling efforts conducted for the EIS used the latest information and developments available to INEL personnel. Details regarding this modeling effort are discussed in Volume 2, Appendix F-2.2. Additional efforts are under way to model contaminant transport and dispersion in support of environmental restoration activities associated with Waste Area Group 10 for the Comprehensive Snake River Plain Aquifer Remedial Investigation/Feasibility Study. This modeling effort has been and will continue to be reviewed by EPA, the State of Idaho, and DOE in accordance with the INEL FPA/CO.

05.08.01 (022) Groundwater
COMMENT
The commentor recommends further discussion of the extent to which contaminant migration in groundwater at the Idaho National Engineering Laboratory would differ as a result of changes in site remediation under each alternative.

RESPONSE
Remedial Action activities at INEL would not differ between the Ten-Year Plan; Minimum Treatment, Storage, and Disposal; and Maximum Treatment, Storage, and Disposal alternatives, as discussed in Volume 2, section 3.1.2. The only change in remediation activities occurs with the No Action alternative. Only ongoing remediation efforts would be continued under the No Action alternative. Impacts associated with this alternative have been analyzed and are discussed in the EIS.
The differences in groundwater contamination are minimal for each of the alternatives. Groundwater modeling conducted for this EIS indicates that under all alternatives, overall groundwater quality at INEL continues to improve. Volume 2, section 5.8 and Appendix C describe groundwater remediation projects and indicate that groundwater quality is likely to improve under each of the alternatives.

05.08.01 (023) Groundwater

COMMENT
The commentor states that increased water use at the Idaho National Engineering Laboratory will result in surface subsidence and collapse.

RESPONSE
High transmissivity (ability to transmit water) and productivity (ability to produce water with little drawdown or water level decline in or near the well) of the Snake River Plain aquifer at INEL ensure that a collapse of the surface above a producing well will not occur. Historically, ground collapse due to aquifer pumping has not been observed at INEL. Any potential increase to aquifer pumping under any of the alternatives is less than a 5 percent maximum increase in current production at the INEL.

Additional discussion and references on INEL groundwater can be found in Volume 1, Appendix B, section 4.8, and Volume 2, section 4.8 and Appendix F-2.

05.08.01 (024) Groundwater

COMMENT
The commentor asks that DOE specify the degree of certainty and scientific basis for conclusions reached in Idaho National Engineering Laboratory groundwater modeling predictions.

RESPONSE
High confidence in predicting future movement of existing contaminant plumes in the aquifer is based on decades of monitoring by the USGS and others that have provided good estimates of plume scale [1 to 10 kilometers (1 to 6 miles)] contaminant transport parameters and the importance of radioactive decay (a precisely known parameter) in contaminant reduction. For example, the tritium plume as measured from frequent samples in numerous wells has been receding in recent years. The position of the strontium-90 plume relative to the INEL boundary has been relatively stationary from 1980 to 1990 due to sorption on the rock and radioactive decay. The measured iodine-129 plume movement has been slowing and the area of the plume is shrinking. Predictive modeling of future contaminant movement is an extension of these quantitatively and independently measured trends. Parameters used in predictive modeling reproduce past contaminant plume geometries as delineated in past monitoring results. Liquid effluent discharge monitoring and control (as discussed below) ensures that there is a high degree of certainty that these trends will continue.

INEL's decreasing impact on groundwater resources is verified by the results of groundwater monitoring conducted by independent agencies such as the USGS and the State of Idaho INEL Oversight Program. These independent assessments confirm DOE environmental monitoring results that no contaminants in concentrations above EPA MCLs or DOE DCGs exist beyond the INEL boundary. Together, with improved management practices and remediation efforts planned or under way, it is likely that overall water quality in the Snake River Plain aquifer below INEL will continue to improve and that contaminant plumes (areas in the aquifer with contaminant concentrations above EPA MCLs or DOE DCGs) will continue to recede.

05.08.01 (025) Groundwater

COMMENT
Commentors discuss cleanup of the aquifer at the Idaho National Engineering Laboratory. Some commentors state that cleanup of contaminated groundwater is not addressed in the EIS and that no rationale is presented for eliminating this alternative from further consideration, and that adverse impacts will result from failure to conduct complete cleanup. In addition, a commentor states that DOE will do nothing about radioactive contamination of the Snake River Plain aquifer.

RESPONSE
Volume 2, section 3.1.2 of the EIS describes the alternatives for SNF management and waste management and environmental restoration at INEL within the 10 years covered by the EIS. All alternatives (except the No Action alternative) include the completion of all remedial investigations/feasibility studies scheduled under the INEL FFA/CO. The draft ROD for the Waste Area Group 10 Comprehensive/Snake River Aquifer Remedia l Investigation/Feasibility Study, scheduled for May 2001, will make decisions regarding the level of cleanup for the Snake River Plain aquifer.

Volume 2, Appendix C describes subsurface remediation projects at INEL. The evaluation in Volume 2 bounds environmental impacts from environmental restoration (or cleanup) activities at INEL. However, specific decisions related to cleanup at INEL generally are addressed under an enforceable agreement executed by DOE, EPA Region X, and the State of Idaho on December 9, 1991, the FFA/CO. The FFA/CO establishes a comprehensive process integrating the remediation requirements of CERCLA and the corrective action requirements of the Resource Conservation and Recovery Act (RCRA) and the State of Idaho's Hazardous Waste Management Act. Cleanup activities are conducted under the process and
schedule established in the FFA/CO. RODs under the FFA/CO process are signed by all three agencies and represent a joint determination that protectiveness will be achieved through implementation of the selected remedy.

DOE is committed to implementing RODs that result from this process. The EIS does not address alternatives for specific remedial projects because these are inherently project-specific decisions, and because it is DOE policy to use the CERCLA process to consider the environmental impacts of CERCLA actions.

05.08.01 (027) Groundwater

COMMENT

Commentors state that measurable effects on the Snake River Plain aquifer have occurred as a result of Idaho National Engineering Laboratory activities and these effects should be discussed even if they are not in excess of any water quality standard. Additionally, one commentor notes that water quality should be compared with existing, rather than proposed, standards.

RESPONSE

Volume 1, Appendix B and Volume 2 of the EIS discuss natural water chemistry, past and current disposal practices, resulting contamination levels in groundwater on the INEL site, at the site boundary, and beyond the boundary. Contamination levels are presented even when they are below existing drinking water standards. Because contamination levels are shown to be declining, and concentrations off site have never been above levels that would prohibit any water uses, the subject was given appropriate attention. In Volume 1, Appendix B, DOE compares the water quality with both the current and the proposed standards.

05.08.01 (029) Groundwater

COMMENT

The commentor states that an explanation of the reasons that increasing subsurface moisture enhances both attenuation and migration of localized contaminants is needed.

RESPONSE

The commentor is correct, and the text has been changed to address the comment. The reference to subsurface attenuation has been deleted from the text of Volume 2, section 4.8.

05.08.01 (030) Groundwater

COMMENT

Commentors state they are concerned that geologic conditions and past practices at the Idaho National Engineering Laboratory could contaminate the Snake River Plain aquifer.

RESPONSE

An accident scenario resulting in maximum groundwater contamination at INEL was analyzed and the results are presented in Volume 2, section 5.14 and Appendix F. The analysis was performed to determine the effects of such an accident on the Snake River Plain aquifer. The hypothetical accident involves the instant failure of a high-level waste tank due to an earthquake with a probability of occurring on the order of once every 50,000 years. For comparison, DOE and commercial reactors are designed to withstand seismic events that might occur once every 5,000 to 10,000 years.

The groundwater analysis assumed total failure of the containment and no mitigating measures to minimize flow from the waste tank into the soil immediately following the failure. This hypothetical scenario represents the situation with the most potential impact on the aquifer. Maximum radionuclide concentrations would be predicted to reach the INEL boundary 300 years after the hypothetical accident in concentrations less than EPA MCLs or DOE DCGs.

DOE is committed to operating INEL in compliance with all applicable Federal, state, and local regulations and standards pertaining to protecting surface and groundwater resources. DOE acknowledges that previous waste discharges to unlined ponds and deep wells have resulted in the introduction of contaminants to the subsurface at INEL; however, because of improved waste management practices, these discharges have been reduced or eliminated and regional groundwater quality continues to improve. In Volume 2, section 5.8.6, the water resource impacts associated with the alternative actions are summarized. The conclusions are that implementation of any of the alternatives would result in small impacts to the quality of water leaving INEL.

The protection of water resources is verified by the results of groundwater monitoring conducted by independent agencies such as the USGS and State of Idaho INEL Oversight Program. These independent assessments confirm DOE environmental monitoring results, which indicate that no contaminants in concentrations above EPA MCLs or DOE DCGs exist beyond the INEL boundary and that there are no concentrations of contaminants that would cause impacts exceeding those impacts associated with accidents analyzed in Volume 2, section 5.14. With improved management practices and remediation efforts planned or under way, it is likely that water quality in the Snake River Plain aquifer below INEL will continue to improve.
05.08.01 (031) Groundwater

COMMENT
The commentor asks what value defined the plume boundary in Volume 1, Appendix B, section 4.8.

RESPONSE
The plume boundary is defined by concentrations greater than or equal to 0.5 picocuries per milliliter. The discussion in this section has been changed to incorporate this information.

05.08.01 (032) Groundwater

COMMENT
The commentor states that the EIS does not address perched water associated with injection wells at the Idaho National Engineering Laboratory.

RESPONSE
The EIS in Volume 2, section 4.8, states that the occurrence of perched water bodies at INEL is generally related to the presence of disposal ponds and other man-made surface-water features. These are the largest perched water bodies and are the ones of most concern. However, the EIS was modified to add vadose zone disposal wells to the discussion.

05.08.01 (033) Groundwater

COMMENT
The commentor suggests that the EIS incorrectly states that only tritium and nitrate in groundwater exceed Environmental Protection Agency drinking water standards at the Hanford Site. There are other contaminants that exceed EPA numeric standards or risk-based thresholds used when establishing standards.

RESPONSE
The commentor is correct. The discussion in the document has been modified to address the comment.

05.08.01 (035) Groundwater

COMMENT
The commentor suggests evidence of long subsurface flow paths beneath the Oak Ridge Reservation can be found by reviewing data from Martin Marietta Energy System's Offsite Well Monitoring Program, which has reported tritium levels in excess of background in wells south of the Oak Ridge Reservation.

RESPONSE
Adequate information is provided in Volume 1, Appendix F, Part Three, section 4.8, which was developed primarily from published hydrologic literature on the ORR, including Status Report: A Hydrologic Framework for the Oak Ridge Reservation, and other recent site environmental reports. The

status report states that no evidence of contaminant migration along deep, long subsurface flow paths exists at ORR. Interpretation of ORR off-site groundwater monitoring results is beyond the scope of this EIS.

The commentor also suggests that elevated concentrations of tritium would not necessarily indicate subsurface transport, but might be due to atmospheric or surface water transport of tritium released from past ORR operations. Additional information on the off-site monitoring program has been added to the groundwater discussion in Volume 1, Appendix F, Part Three, section 4.8.2. However, the extent and schedule of environmental monitoring at ORR and the amount of data produced by the program is outside the scope of this EIS. See also the response to comment 05.08.01 (003).

05.08.01 (037) Groundwater

COMMENT
The commentor notes that the EIS states the existence of one instance of a groundwater contaminant crossing the Oak Ridge Reservation boundary and then cites two. The commentor also seeks to clarify the references in the paragraph.

RESPONSE
Discussion of the solvent plume east of the Y-12 Plant is included in Volume 1, Appendix F, Part Two, section 4.8.2 as additional supporting evidence of the one strongly suspected instance of groundwater flow across the ORR boundary. This reference is not intended as a second instance of groundwater flow across the ORR boundary. The discussion in the document has been modified to clarify the intended meaning.

Geology and water resources for the ORR are discussed in the EIS in Volume 1, Appendix F, Part Three, sections 4.6, 4.8, and 5.8.

05.08.01 (039) Groundwater

COMMENT
Comments were received concerning DOE making a decision on the proposed alternatives when information on the effect of aquifer heterogeneities on modeling to assess the extent of impacts to the Snake River Plain aquifer is not complete.

RESPONSE
The heterogeneities referred to in the comment are important locally, on the scale of 10 to 100 meters (33 to 330 feet) with respect to calculating the distribution of contaminants from a point source of contamination. Local heterogeneities in contaminant distribution are averaged out at intermediate, 100
to 1,000 meters (330 to 3,300 feet) and regional, 100 to 1,000 meters (330 to 3,300 feet) distances from the point source. Intermediate and regional scale parameters were used to calibrate flow and contaminant transport models. The model parameter values chosen were calibrated with contaminant plume distribution time and space and data from INEL. This data is equivalent to long-term tracer test data and serves as the best empirical data for intermediate and regional parameter estimation and model calibration.

INEL water resources and potential impacts resulting from the alternatives considered by the EIS are described in Volume 2, sections 4.8 and 5.8 and Appendix F. In accordance with the provisions of NEPA at 40 CFR 1502.22, the EIS summarizes all known existing credible scientific evidence relevant to understanding the existing environment, identifies reasonably foreseeable impacts, and evaluates potential consequences. Assumptions and limitations in the groundwater analysis are identified in Volume 2, Appendix F. As stated in the analyses, DOE used conservative assumptions to account for the uncertainty in modeling the effects of proposed actions on groundwater quality. Results indicate that there will be no contaminants above EPA MCLs at the INEL site boundary as a result of operations under any of the proposed alternatives.

05.08.01 (040) Groundwater

COMMENT

The commenter states that groundwater contamination should be stated in absolute terms (metric tons per year) and concentration differences from background for activities at Idaho National Engineering Laboratory, and that perched water quality data should be included in the EIS.

RESPONSE

The effects of INEL operations on the Snake River Plain aquifer within the INEL boundary are shown in terms of concentration, picocuries per liter for radionuclides, and milligrams per liter for nonradioactive contaminants. Absolute values of contaminant mass (metric tons per year, for example) are not useful for comparison with regulatory guidelines, such as the Safe Drinking Water Act, which contain water quality standards in terms of concentration. Because the concentrations of contaminants resulting from INEL operations detected in the Snake River Plain aquifer outside the INEL boundary are below EPA MCLs or DOE DGs, regional groundwater quality is compared with background levels for those contaminants that occur naturally and detection limits for those that do not.

In accordance with the provisions of NEPA and CEQ implementing regulations at 40 CFR 1502.22, the EIS summarizes existing credible scientific evidence relevant to understanding the existing environment, identifies reasonably foreseeable impacts, and evaluates potential consequences.
05.08.01 (041) Groundwater

**COMMENT**

The commenter suggests that certain perched aquifer groundwater monitoring data be included in the EIS and that groundwater quality comparisons with proposed maximum concentration levels are misleading.

**RESPONSE**

The data on water quality are provided in Volume 2, section 4.8. Data presented in the EIS are compared with EPA MCLs, although MCLs are drinking water standards, not groundwater standards. There is no requirement to report contaminants in the Snake River Plain aquifer relative to MCLs for drinking water, although this is usually done. The EIS used proposed MCLs because, for comparison purposes, this is the best available tool for individual radionuclides not having current MCLs. Other MCLs for radionuclides are either adjusted gross alpha, or a calculated 4 millirem-per-year dose, with the exception of tritium, strontium-90, and radium-226/228, which have specific MCLs. Volume 2, section 4.8 has been revised to clarify that while the proposed MCLs may change, they are used for groundwater quality comparison purposes.

The net effects of INEL operations on groundwater resources are reflected in groundwater monitoring results presented in the EIS. Monitoring well data were included in the analysis that resulted in Table 4.8.1. These data indicate that to date no significant impacts at the INEL boundary have resulted from INEL contaminant releases to the Snake River Plain aquifer. Independent groundwater monitoring results suggest that contaminants in the Snake River Plain aquifer are likely to decrease with time. These results are discussed in Volume 1, Appendix B, section 4.8 and are shown in Table 4.8.1.

A description of water resources and potential environmental consequences to water resources at INEL, including the Snake River Plain aquifer, are discussed in Volumes 1 and 2, sections 4.8 and 5.8. The analysis performed for the EIS integrated available data and technical information with computer modeling to evaluate contaminant transport and predict future trends in aquifer water quality. Computer modeling using conservative assumptions was completed through 2035 to add assurance to the conclusions reached in the document. Section 5.8 concludes that overall aquifer water quality would actually improve during this period. A discussion of the methodology and assumptions used for the computer modeling effort is in Volume 2, Appendix F.

Key contaminants were selected by comparing the contaminant data with the current 40 CFR 141 and proposed EPA 1991 MCLs and contamination guidelines found in DOE Order 5400.5, *Radiation Protection of the Public and the Environment*, derived concentration guides, radionuclides only.

Contaminants with concentrations 50 percent of either of the regulatory limits were considered to be key contaminants. More detailed data on the results of groundwater monitoring at INEL are available in public reading rooms and the INEL Technical Library.

The data indicate that no significant impacts at the INEL boundary have resulted from INEL contaminant releases to the Snake River Plain aquifer. Current independent groundwater monitoring results show that contaminants in the Snake River Plain aquifer are generally decreasing with time. The large concentrations cited by the commenter, which are reported to be thousands of times above the MCLs, either cannot be found in any reference such as gross alpha at Test Area North, or apply only to perched water at Test Reactor Area. The EIS did not attempt to assess perched water, but rather concentrated on the Snake River Plain aquifer. The CERCLA ROD for Test Reactor Area indicates that no remedial action will be required, because the perched water contaminants will not result in unacceptable risks or consequences to the aquifer.

Other perched water is not independently evaluated, because Snake River Plain aquifer water quality impacts from INEL discharges are adequately evaluated in Snake River Plain aquifer monitoring conducted by DOE and independent agencies. Evaluation of additional perched water information would not be relevant to evaluating reasonably foreseeable adverse impacts. This conclusion is further supported by the results of modeling conducted for this EIS that included analyses for the most likely initial sources for contaminated water in perched water zones (percolation ponds and injection wells) on the Snake River Plain aquifer.

05.08.01 (042) Groundwater

**COMMENT**

The commenter states that the discussion in Volume 1, Appendix B, section 4.8 on exceeding maximum contaminant levels in groundwater at Test Area North is misleading because the EIS infers that contaminants first exceeded standards at a time when the commenter says they should have been declining.

**RESPONSE**

The discussion in Volume 1, Appendix B, section 4.8 has been changed for clarification. The EIS focused on showing recent trends in groundwater quality at INEL. Any long-term accumulation would be apparent from these trends. Contaminant concentration data were reviewed for the period 1987 to 1992. Both modeling and sampling data have indicated that Snake River Plain aquifer contamination attributable to INEL is decreasing with time.
COMMENT
Comments were received asking if any radioactively contaminated water has been found outside the Idaho National Engineering Laboratory boundaries.

RESPONSE
Extremely low concentrations of iodine-129 and tritium have migrated outside the INEL site boundaries. In 1992, iodine-129 concentrations were measured in two wells south of the INEL site boundary below EPA MCLs, as follows: (a) 1.0 x 1E-5 picocuries per liter in Well No. 11, located approximately 6 kilometers (4 miles) beyond the boundary, and (b) 3.0 x 1E-5 picocuries per liter in Well No. 14, 13 kilometers (8 miles) beyond the boundary. By 1988, the tritium plume had receded to within the INEL site boundary, and its size has continued to decrease (Hydrologic Conditions and Distribution of Selected Chemical Constituents in Water, Snake River Plain Aquifer, Idaho National Engineering Laboratory). Cobalt-60, strontium-90, cesium-137, plutonium-238, plutonium-239/240, and americium-241 have not been detected outside the INEL site boundaries.

COMMENT
The commentor notes that the geology of the Oak Ridge Reservation would result in severe health effects if a leak were to occur.

RESPONSE
A conservative analysis of the potential effects of a leak from an SNF storage facility at ORR is described in Volume 1, Appendix F, section 5.8.2. The analysis found that exposures would be small.

There is very little potential for contamination of the Knox aquifer from the operation of SNF management facilities. The proposed SNF facilities are designed to have no liquid release of waste water with hazardous chemical or radiological characteristics through the use of modern technologies, including secondary containment, leak detection, and water-balance monitoring equipment.

COMMENT
The commentor states concern that vadose zone contaminants and other buried waste constituents at the Idaho National Engineering Laboratory Radioactive Waste Management Complex were not included in the EIS groundwater model and may constitute a significant source of future contamination to the Snake River Plain aquifer.

RESPONSE
Vadose zone contaminants at the INEL RWMC were not included in the groundwater model. Vadose zone contaminants and other buried waste constituents at the INEL RWMC were included in the INEL FFA/CO. Characterization of these constituents is in progress as part of ongoing or planned remedial investigations.

The net effects of INEL operations on groundwater resources are reflected in groundwater monitoring results. Snake River Plain aquifer monitoring well data from wells in the vicinity of the RWMC were included in the analysis that resulted in Table 4-8-1. These data indicate that, to date, no significant impacts to the Snake River Plain aquifer at the INEL boundary have resulted from RWMC contaminant releases to the Snake River Plain aquifer. Independent groundwater monitoring results indicate that contaminants in the Snake River Plain aquifer are likely to decrease with time. These results are discussed in Volume 1, Appendix B, section 4.8 and shown in Table 4.8-1.

Recently completed flood and erosion control construction at the RWMC will reduce the rate of transport through the unsaturated zone by minimizing surface flooding at the RWMC. This reduced rate of transport effectively increases natural contaminant attenuation processes that occur in the subsurface and decreases impacts on aquifer water quality.

It is likely that the effects of RWMC contaminants on the Snake River Plain aquifer are bounded by the hypothetical accident scenario referenced in the EIS in Volume 1, Appendix B, section 5.8. The hypothetical accident, representing a reasonably foreseeable accident, includes groundwater modeling of a major contaminant release to the subsurface. The analysis indicates that the hypothetical accident would cause small impacts to the aquifer, with no contaminants above MCLs at the INEL boundary.

COMMENT
The commentor requests additional information on impacts from groundwater contamination.

RESPONSE
The purpose of this EIS is to evaluate the potential environmental impacts from proposed activities. For this reason, assumptions were made to ensure that estimated doses are conservatively high and represent an upper bound of potential impacts. The EIS is not intended to substitute for the assessments required by regulations. Any facilities constructed or operated under the chosen alternative will comply with
applicable regulatory requirements. In the example cited by the commentor, further discussion of chromium concentrations in groundwater at INEL is in Volume 1, Appendix B and in the Water Quality sections of Volume 2.

Volume 2, section 5.12 discusses the potential health effects for on-site workers and the public. The analyses show that impacts would be small. The major impacts have been from past practices. The impacts are projected to decrease because of changes in facility procedures. Subsurface water quality and contaminant distribution are discussed in Volume 2, Appendix F-2.

**05.08.01 (050) Groundwater**

**COMMENT**

The commentor states the Brookhaven National Laboratory is in the Long Island Nassau-Suffolk Aquifer System, and the West Valley Demonstration Project is in the Cattaraugus Creek Aquifer System. The commentor also states that these have been designated as sole-source aquifers pursuant to the Safe Drinking Water Act and asks that the sensitivity and importance of these sole-source aquifers should be considered in the selection of the interim alternative. Specifically, that National Environmental Policy Act documentation should include a detailed analysis of the potential groundwater impacts.

**RESPONSE**

Volume 1, Appendix E, sections 3.1.1 and 3.3.1 have been revised to acknowledge sole-source aquifer designations for aquifers underlying these sites. More detailed aquifer characterization data for these sites will be incorporated by reference. Detailed sole-source aquifer characterization data is not required because this is a programmatic EIS. Potential impacts from alternatives considered in this EIS on water quality are expected to be small. Subsequent actions that may result from this EIS will require site- and project-specific NEPA reviews and compliance, but impacts from previous activities are not within the scope of this EIS.

**05.08.01 (051) Groundwater**

**COMMENT**

The commentor states that the discussions of groundwater occurrence, movement, use, and contamination are not consistent between all sites. Without consistent information, there is little basis for comparison. The commentor also states that consistent data probably does exist through investigations required for CERCLA and RCRA, state and Federal permitting, and engineering design studies for buildings at all sites.

**05.08.01 (052) Groundwater**

**COMMENT**

The commentor suggests that the elevated nitrate, chloride, and sulfate levels found in groundwater in the vicinity of the Idaho Chemical Processing Plant are not the result of agricultural activities, as discussed, but might be attributable to the Naval Reactors Facility.

**RESPONSE**

The discussion in Volume 1, Appendix B, section 4.8 has been revised to state that the elevated levels of nitrates, chlorides, and sulfates are the result of the disposal well and infiltration ponds at the Idaho Chemical Processing Plant. The related sections of Volume 2 of the EIS have also been revised. There is no evidence to substantiate the suggestion that the contaminant levels at the Idaho Chemical Processing Plant are caused by the Naval Reactors Facility.

**05.08.01 (053) Groundwater**

**COMMENT**

The commentor states that in Volume 2, Appendix F-2.2.2 of the EIS, source terms for discharge of liquids from SNF storage uses Idaho Chemical Processing Plant Building 666 as the generic example. The commentor states that the facility is not generic or typical for the Idaho National Engineering Laboratory. Rather, the Idaho Chemical Processing Plant is atypical because it is the only facility that meets current standards. The commentor also states that because the other storage facilities will remain in service for the near future and pose the greatest risk of discharge, the EIS must use one of these for the source term generic case.

**RESPONSE**

Volume 2, Appendix F-2.2.2 referenced by the commentor states that Idaho Chemical Processing Plant discharge and a hypothetical discharge from a generic facility were used to generate discharge data. This
bounding postulated leak scenario is greater than releases from any facilities at INEL, including the 
Expended Core Facility. Results indicate that there will be no contaminants above MCLs at the site 
boundary resulting from a postulated operational leak.

05.08.01 (054) Groundwater
COMMENT
The commentor points out that contamination of the Dublin-Midville aquifer (a regional source of 
drinking water) underlying the Savannah River Site is more widespread than the text of the Draft EIS 
indicates. As is, the text notes that evidence of contamination has been found in only one production 
well. The commentor also notes that there may be an inconsistency in the discussion of contamination of 
the Gordon aquifer.
RESPONSE
The text in Volume 1, Appendix C, section 4.8 has been revised to indicate that contaminants (i.e., 
trichloroethylene and tetrachloroethylene) have been detected above Primary Drinking Water Standards 
at another well completed in the Dublin-Midville aquifer system.

Regarding contamination of the Gordon aquifer, there are several plumes of contamination on SRS, but 
none has moved offsite and none is available to off-site users of this aquifer. Current SRS remediation 
efforts are intended to prevent off-site movement of this contaminated groundwater.

05.08.01 (055) Groundwater
COMMENT
The commentor suggests DOE sum the pumping rates for all production/potable wells on the Idaho 
National Engineering Laboratory to produce an estimate of maximum pumping capacity.
RESPONSE
While it is true that the capacities of all pumps could be summed to produce a maximum possible 
pumping rate, the likelihood of all pumps operating at one time is very small. Even during recovery 
from an extended power outage, it is unlikely that all pumps would be operating simultaneously; hence, 
the maximum pumping capacity would not be reached. Maximum pumping capacities are therefore not 
relevant to assessing potential impacts from pumping.

05.08.01 (056) Groundwater
COMMENT
The commentor states that contaminants released to the subsurface from the West Bear Creek Valley 
location at the Oak Ridge Reservation could reach the Knox aquifer, either directly, through macropores 
that could rapidly transmit contaminants to areas underlain by carbonates, or indirectly, following 
macropores to Grass Creek and entering the aquifer through losing reaches of the creek.
RESPONSE
Full resolution of these concerns would require detailed investigation of site conditions and groundwater 
pathways. If ORR were chosen as a site for new SNF management facilities, site-specific geologic and 
hydrologic studies would be performed. Available information provides a sufficient basis, however, for 
an assessment that no significant environmental consequences related to water resources would be 
anticipated from the operation of SNF management facilities.

As discussed in the EIS, proposed SNF management facilities are designed to have no liquid release of 
waste water with hazardous chemical or radiological characteristics. Facilities would also be constructed 
to prevent and minimize the impacts of leaks, including secondary containment, leak detection, and 
water-balance monitoring equipment. The potential impacts on Grass Creek and the Clench River of an 
undetected subsurface release are, however, analyzed in the EIS (see Volume 1, Appendix F, Part Three, 
section 5.8.2). The analysis indicates that most radiological constituents would be below drinking water 
standards at the point of release, and that additional substantial reductions in the concentrations of 
constituents would occur as a result of dilution with groundwater and the receiving body of surface 
water. The worst-case undetected release is estimated to constitute less than 0.0003 percent of the 
estimated average discharge of Grass Creek at its confluence with the Clench River. Any contaminants 
reaching the Knox aquifer via the losing reaches of Grass Creek would undergo a similar degree of 
dilution, such that there would be little, if any, impact on water quality in the aquifer.

It is not likely that macropores would provide a direct connection to the Knox aquifer at the site of the 
proposed SNF management facility, because available information indicates that the site is over lower 
Conasauga Group strata that are normally characterized by karst development or not hydraulically 
well-connected to the Knox aquifer. (The only Conasauga Group information included in the Knox 
aquifer is the uppermost formation in the group, the Maynardville Limestone). If a direct macropore 
connection did exist and allowed an undetected release to reach the aquifer, dilution in the stormflow 
zone and in the aquifer would significantly reduce the potential for impacts on water quality. See 
Volume 1, Appendix F, Part Three, sections 4.6 and 4.8 for further discussion of site geology and 
hydrology.
5.8.2 Surface Water

05.08.02 (001) Surface Water

COMMENT
The commentor states that past waste management activities have resulted in contamination of water in the Clinch River and lakes near the Oak Ridge Reservation.

RESPONSE
Natural resources and impacts associated with the SNF management alternatives at ORR are specifically discussed in Volume 1, Appendix F, Part Three. Current waste management problems, past contaminant releases, and environmental restoration activities for cleanup of contaminated sites at ORR are not within the scope of this EIS. Contact public affairs personnel at ORR for information on these topics or for upcoming opportunities for public comment.

05.08.02 (002) Surface Water

COMMENT
The commentor states that the EIS did not mention storm water runoff and storm water injection at Idaho National Engineering Laboratory wells as a source of waste water.

RESPONSE
The EIS does address the use of storm water injection wells used at INEL. This discussion can be found in Volume 1, Appendix B, section 4.8; Volume 2, section 4.8; and Volume 2, Appendix F-2.2. Further discussion of this subject also can be found in the Water Resources Supporting Document for the INEL Environmental Restoration and Waste Management EIS, a reference used for the EIS, available in reading rooms and information locations listed in the EIS.

05.08.02 (003) Surface Water

COMMENT
The commentor discusses the production of toxic materials upstream from the town of Hilton Head, and the South Carolina coast, particularly impacts to watersheds, such as the Savannah River watershed, and local and regional aquifers.

RESPONSE
Potential impacts to surface water and groundwater of the various SNF management alternatives proposed for SRS are evaluated in Volume 1, Appendix C, section 5.8. Cumulative impacts to water resources are presented in Volume 1, Appendix C, section 5.16.4. DOE expects the impact on water quality from implementation of any of the alternatives under consideration to be small. Each of the alternatives would contribute to the very small releases of radionuclides that normal SRS operations discharge to the surface water through Federally permitted waste-water outfalls. In the unlikely event of an accidental release of contaminants to either the ground or directly into the subsurface, DOE does not expect any adverse impacts to surface water or drinking water aquifers under SRS.

Cleanup of groundwater resources from past waste management practices at SRS are not within the scope of this EIS. However, environmental restoration activities at DOE sites are performed in accordance with agreements negotiated with the appropriate regulatory agencies and in compliance with applicable DOE guidance and environmental regulations.

05.08.02 (004) Surface Water

COMMENT
The commentor states that Volume 1, Appendix B of the EIS erroneously assumes that surface water flow at the Idaho National Engineering Laboratory over the last 8 years is indicative of what can be expected in the future.

RESPONSE
Volume 1, Appendix B, section 4.8.1 has been changed to address this concern. The last 8 years include very dry years at INEL, which may not be indicative of the future. The new discussion addresses that in dry years, surface water in the Big Lost River does not usually reach the western boundary of INEL. Also, because INEL is in a closed drainage basin, surface water never flows offsite.

05.08.02 (005) Surface Water

COMMENT
The commentor expresses concern that, following the December 1991 tritium leak into the Savannah River, individuals in Savannah received a high dose of radiation from drinking the water.

RESPONSE
The maximum dose to the public resulted from individuals who drink Savannah River water. The nearest public drinking water supplies that use Savannah River water are at Port Wentworth, Georgia, and Beaufort-Jasper, South Carolina, both near Savannah, Georgia, the residence of the commentor. The maximum dose to an individual consuming 2 liters of water per day from the Port Wentworth system was 0.030 millirem. The maximum dose from the Beaufort-Jasper system was 0.0096 millirem. These values are 0.8 percent and 0.2 percent, respectively, of the EPA drinking water standard for radioactivity (4 millirem per year). The maximum dose from this release to a hypothetical individual at the U.S. Highway 301 bridge just downstream of SRS was 0.035 millirem. There are no known consumers of

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Savannah River water at that location. The City of Savannah does not use the Savannah River as a source of drinking water.

The low dose received by individuals consuming water from the two public systems mentioned would not result in adverse health effects. The values are very much less than the variations in background radiation that normally results from day to day and from place to place within any city. Radioactive liquid releases from both normal and off-normal occurrences from storage of SNF at SRS are projected to be lower than that from the December 1991 tritium release.

05.08.02 (006) Surface Water

COMMENT

The commentor notes that Volume 1, Appendix B of the Draft EIS does not address local basin flooding at the Idaho National Engineering Laboratory.

RESPONSE

Local basin flooding at INEL is discussed in Volume 2, section 4.8.1 and Appendix F. Volume 1, Appendix B has been changed to discuss local basin flooding at INEL.

The DOE Idaho Operations Office recently completed constructing new flood and erosion control features at the RWMC, which will reduce the potential of localized flooding at the complex.

The INEL accident assessment summarized in Volume 2, section 5.14 considers flooding and other natural phenomena as potential initiators of facility accidents. Some potential accident initiators were selected for detailed analysis because they were considered reasonably foreseeable, and some initiators were selected for detailed analysis because of their large potential consequences. The consequences of a seismic failure of the high-level waste tanks were selected for detailed analysis over a flooding scenario because the large radioactive inventory in the high-level waste tanks could have a larger potential for consequences to water resources than a flood. The impact evaluations show that the risk to workers and the public from DOE operations would be small for all alternatives.

05.08.02 (007) Surface Water

COMMENT

The commentor notes that past waste management activities have resulted in contamination of the Snake and Columbia Rivers.

RESPONSE

No significant impacts to the Snake River and the Columbia River have resulted from INEL activities. Surface water drains internally into natural sinks at or near INEL. No surface water drains directly from INEL into the Snake River. The protection of water resources is verified by the results of groundwater monitoring conducted by independent agencies such as the USGS and State of Idaho INEL Oversight Program. These independent assessments confirm DOE environmental monitoring results, which indicate that no contaminants in concentrations above EPA MCLs or DOE DCGs exist beyond the INEL boundary. With improved management practices and remediation efforts planned or under way, it is likely that overall water quality in the Snake River Plain aquifer under the INEL will continue to improve. Therefore, no future impacts to the Snake and Columbia Rivers resulting from INEL past, present, or future operations are likely to occur.

As discussed in Volume 1, Appendix A, section 4.8, tritium, iodine-129, and uranium are found in slightly higher concentrations downstream of the Hanford Site than upstream, but well below concentration guidelines established by DOE and EPA drinking water standards. Cobalt-60 and iodine-131 were not consistently found in measurable quantities during 1989 in samples of Columbia River water from Priest Rapids Dam, the 300-Area water intake, or the Richland city pumphouse. In 1989, the average annual strontium-90 concentrations were essentially the same at Priest Rapids Dam (upstream of the Hanford Site) and the Richland pumphouse.

05.08.02 (009) Surface Water

COMMENT

Commentors express concern about existing contamination of the Clinch River and management of flow in East Fork Poplar Creek.

RESPONSE

Existing contamination of the local surface-water bodies is acknowledged in the EIS. The Clinch River and other surface waters have been affected by activities at ORR as well as by other activities upstream from ORR. Water quality in the Clinch River is routinely monitored by the Tennessee Valley Authority, the USGS, and the Tennessee Department of Environment and Conservation.

The Oak Ridge Reservation Environmental Report for 1992 summarizes 1992 Clinch River monitoring results at the Gallaher and Kingston water treatment plants. While radionuclides exist in concentrations significantly greater than zero in the treated water for a number of radioactive analyses, maximum concentrations are not greater than the EPA primary drinking water standards for any analysis at either...
plant. The environment affected by water resources at ORR is discussed in Volume 1, Appendix F, Part Three, section 4.8.

The addition of Clinch River water to East Fork Poplar Creek is required by the Tennessee Department of Environment and Conservation in order to guarantee a minimum base flow as the limitations in the Y-12 Plant discharge permit are based on flow management in the creek. The purpose of the Flow Management Project is to maintain a consistent flow in the creek of 7 million gallons per day to protect the stream for its intended uses.

It is DOE policy to consider the protection of water resources in the design, construction, and operation of its facilities, and to comply with Federal, state, and local regulations and standards pertaining to protection of water resources. The proposed SNF management facilities are designed to have no liquid release of waste water with hazardous chemical technologies, which include secondary containment, and leak detection and water-balance monitoring equipment. Therefore, no significant environmental consequences related to water resources are anticipated from the operation of SNF management facilities. Impacts to water resources at ORR are discussed in Volume 1, Appendix F, Part Three, section 5.8.

05.08.02 (012) Surface Water
COMMENT
The commentor notes that the EIS should include a discussion of the impacts to the ports and Puget Sound.

RESPONSE
The environmental consequences associated with storage of Naval SNF at Puget Sound Naval Shipyard are discussed in Volume 1, Appendix D, section 5.1.1. The environmental consequences for the alternatives analyzed are based on estimates of the amount of SNF that would be stored at the shipyard through 2035 and current knowledge of the design features associated with SNF storage systems. The environmental consequences for foreign fuel shipments are bounded by the analyses included in this EIS. The impacts at ports for shipment of Hanford N-Reactor fuel for overseas processing are discussed in this EIS as an example for evaluation of reasonably foreseeable impacts. The review of the environmental consequences associated with the alternatives shows that impacts on the environment from these activities would be very small. Foreign research reactor (FRR) fuel shipments and their impacts to the Ports in Puget Sound are covered in the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft).

05.08.02 (001) General
COMMENT
The commentor notes that DOE is required to apply for water rights to withdraw Columbia River water for new spent nuclear fuel storage and management activities at the Hanford Site.

RESPONSE
As discussed in Volume 1, Appendix A, section 4.8.2, DOE withdraws water from the Columbia River under DOE's Federally reserved water rights. From a programmatic impact standpoint, the maximum SNF alternative would use approximately 1 percent of the baseline of total Hanford usage (Volume 1, Appendix K). In general, new SNF facilities, if any, would use less water than existing facilities. Site-specific NEPA analysis for any new SNF storage or treatment facilities would address water usage in detail.

5.8.3 General
05.08.03 (001) General
COMMENT
The commentor asserts that the EIS assumes no surface water flow onsite and that this assumption greatly affects the evaluation of Snake River Plain aquifer recharge at Idaho National Engineering Laboratory.

RESPONSE
The EIS does not make this assumption. Volume 1, Appendix B, section 4.8.2 discusses regional and local hydrogeology, which includes summary text regarding recharge of the Snake River Plain aquifer. Infiltration along stretches of the Big Lost River, Little Lost River, and Birch Creek on the INEL site are discussed in greater detail in Volume 2, section 4.8.1 and Volume 2, Appendix F-2.2.1. The EIS cites the reference (Streamflow Losses and Groundwater Level Changes Along the Big Lost River at the Idaho National Engineering Laboratory) referred to by the commentor.

05.08.03 (003) General
COMMENT
The commentor states that water tables at the Idaho National Engineering Laboratory, the Hanford Site, and Nevada Test Site are contaminated with radioactive waste and that the Columbia River has been contaminated by Idaho National Engineering Laboratory and Hanford Site waste.
RESPONSE
DOE evaluated the impacts to groundwater quality of proposed actions, where appropriate. The effects of past practices have been analyzed to determine cumulative impacts. These analyses are included in Volume 2, Appendix K and Volume 1, Chapter 5, Appendices A, B, and F.

05.08.03 (004) General
COMMENT
The commenter suggests clarification of the discussion of the depth of excavation in the vadose zone at the Nevada Test Site.

RESPONSE
As indicated in the preliminary design (Description of a Generic Spent Nuclear Fuel Infrastructure for the Programmatic Environmental Impact Statement), the cask loading and unloading pools in the SNF receiving and canning building are the deepest structures in the facility and are 13 meters (44 feet) deep. Allowing another 2 meters (6 feet) for secondary containment, leak detection system, and construction needs results in an estimated excavation depth of 15 meters (50 feet). As indicated in Volume 1, Appendix F, Part Two, section 4.8.2, the depth to the water table in Area 5 is 244 meters (800 feet), although perched water tables have been reported at 21 meters (70 feet) in some locations of Area 5. Given the programmatic nature of the EIS and the preliminary status of the facility design, this analysis is sufficient to demonstrate that the excavation is expected to occur within the vadose zone at NTS.

05.08.03 (005) General
COMMENT
The commenter has concerns about seismic safety and the contamination of water resources at the Hanford Site.

RESPONSE
Volume 1, Appendix A, sections 4.8 and 5.8 discuss water resources at the Hanford Site. Geology of the site, including seismic hazards, is discussed in Volume 1, Appendix A, section 4.6. As summarized in Volume 1, section 5.2.6, the proposed alternatives for SNF management would have small impacts on water resources. Impacts of management SNF at K-basin at the Hanford Site will be analyzed in a separate EIS.

05.08.03 (006) General
COMMENT
The commenter suggests that tougher water quality standards from the Clean Water Act should be applied in the EIS, rather than limits based on the Safe Drinking Water Act.

RESPONSE
The Clean Water Act (CWA), 33 USC Section 1251 et seq., protects surface waters by requiring that any discharge of pollutants to surface waters of the United States be controlled or prevented. Under the CWA, EPA sets nationwide, industry-by-industry effluent standards. The CWA standards are set in industry-by-industry permits that are based on technology development. In contrast, the Safe Drinking Water Act (SDWA), 43 USC Section 308(f) et seq., ensures that water out of the tap is fit to drink. Under the SDWA, EPA is responsible for setting national standards that must be met by the persons who deliver water to the tap. The drinking water standards under the SDWA are specifically set to protect against adverse health effects to persons from the consumption of drinking water. Drinking water standards have become the key Federal reference point for prevention and cleanup decisions under both RCRA and CERCLA.

For a number of reasons, it is difficult to conduct a simple comparison of SDWA standards and CWA standards. First, for any one contaminant, CWA standards vary greatly from state to state, industry by industry. The quality of the "receiving waters" for any given facility also affects the standards that will be imposed under a CWA permit. Whether the facility analyzed in the EIS is a new facility or an existing facility also impacts the CWA permit standards. For some constituents, from some industries, in some states, with a new facility, the CWA permit standards might be more stringent than for the same constituent under the SDWA. But it is definitely not a correct generalization that CWA standards are more stringent than SDWA standards, and in fact in many instances, the opposite is true.

Because the national standards set under the SDWA are more uniformly applicable to all the DOE sites analyzed in this EIS, and more important, because the SDWA standards are consistent in that they are human-health based, rather than technology based, they were used in this EIS as a comparative reference point.

05.08.03 (007) General
COMMENT
The commenter states that DOE's activities at Idaho National Engineering Laboratory will irreversibly and irretrievably impact water resources.

RESPONSE
Irreversible and irretrievable effects on resources are discussed in Volume 2, section 5.18. Activities at INEL have resulted in chemical and radioactive contaminant plumes in the Snake River Plain aquifer as discussed in Volume 2, section 5.8.6. Water use and liquid effluent discharges at INEL would have a minimal effect on Snake River Plain aquifer water quality and quantity.
Water resources and impacts resulting from all waste management and environmental restoration (including SNF) alternatives considered for INEL are described in Volume 2, sections 4.8 and 5.8. Under all the alternatives considered, the possible future sources of contamination would be small compared with previous practices. This would be a result of waste management practices, including waste-water discharge monitoring, as well as natural contaminant attenuation and radioactive decay for historical releases. Computer groundwater modeling using conservative parameters (discussed in Volume 2, Appendix F) indicates that existing contaminant plumes within the INEL boundary would continue to decrease at least through 2035. The modeling further indicates that overall aquifer groundwater quality would actually improve in that period and probably continue to improve after 2035.

INEL’s commitment to DOE policy regarding the protection of water resources is verified by the results of groundwater monitoring conducted by independent agencies such as the USGS and State of Idaho INEL Oversight Program. These independent assessments confirm DOE environmental monitoring results that indicate that no contaminants in concentrations above EPA MCLs or DOE DCGs exist beyond the INEL boundary. With improved management practices and remediation efforts planned or under way, it is likely that overall water quality in the Snake River Plain aquifer below the INEL will continue to improve.

Recent improvement in groundwater quality at INEL is documented in report (e.g., Hydrologic Conditions and Distribution of Selected Chemical Constituents in Water of the U.S. Geological Survey and A Review of the Production, Use, and Disposal of Groundwater and the Generation, Storage, and Processing of Radioactive Liquid Waste at the Idaho Chemical Processing Plant of the INEL Oversight Program) as referenced in the EIS. Although small irretrievable impacts to groundwater quality are possible, recent sampling results, computer modeling using mildly conservative assumptions, and improving liquid effluent discharge management ensure that impacts from current and future activities will be small and future effects of past practices have a decreasing effect on aquifer water quality.

**05.08.03 (009) General**

**COMMENT**
The commenter states that a full mass balance of water pumped from the aquifer and waste discharge volume analysis must be conducted for the entire history of the Idaho National Engineering Laboratory.

**RESPONSE**
The net effects of INEL operations on groundwater resources are reflected in groundwater monitoring results. Monitoring-well data were included in the analysis that resulted in Volume 1, Appendix B, section 4.8, Table 4.8-1. This data indicates that to date no significant impacts at the INEL boundary have resulted from INEL contaminant releases to the Snake River Plain aquifer. Independent groundwater monitoring results and groundwater modeling conducted for this EIS indicate that contaminants in the Snake River Plain aquifer are likely to decrease with time. These results are discussed in Volume 1, Appendix B, section 4.8 and shown in Table 4.8-1. Additional evaluation would not be useful in evaluating reasonably foreseeable adverse impacts. Water usage is described in Volume 2, section 4.13.1.

A description of water resources and potential environmental consequences to water resources at INEL, including the Snake River Plain aquifer, are discussed in Volumes 1 and 2, sections 4.8 and 5.8. The analysis performed for the EIS integrated available data and technical information with computer modeling to evaluate contaminant transport and predict future trends in aquifer water quality. Computer modeling was completed through 2035 to add assurance to the conclusions reached in the document. Volume 2, section 5.8 concludes that overall aquifer water quality would actually improve over this period. A discussion of the methodology and assumptions used for the computer modeling effort is in Volume 2, Appendix F of the EIS.

In accordance with NEPA regulations at 40 CFR 1502.22, the EIS summarizes all known existing credible scientific evidence relevant to understanding the existing environment, identifies reasonably foreseeable impacts, and evaluates potential consequences.

A full mass balance and waste discharge volume analysis conducted for the entire history of INEL would not change the conclusions reached in the EIS.

**05.08.03 (013) General**

**COMMENT**
The commenter states that the EIS de-emphasizes impacts on water resources by categorizing water resources as an "Issue Not Discussed in Detail" and ignoring water resources in the cumulative impacts analysis. The commenter further states there is an overemphasis on water usage, rather than radiological groundwater contamination, in addressing water resources in Volume 1.

**RESPONSE**
In response to public comments, section 5.3.2.6 has been added to Volume 1 to address the cumulative impacts on water resources. Based on the site-specific analysis in appendices to Volume 1, section 5.2.6, addressing water resources under "Issues Not Discussed in Detail" has been enhanced to state that the radiological impact to water resources at each candidate site is small.
05.08.03 (014) General
COMMENT
The commentor states that site-specific discussions on water resources and hydrological complexities should be compared, rather than just scattered throughout six appendices.
RESPONSE
Volume 1, Chapter 4 summarizes the pertinent characteristics of the affected environment at the alternative sites under consideration in the EIS. Detailed water resource and hydrological characteristics of the 10 alternative sites under consideration are in Volume 1, Appendices A, B, C, D and F, and Chapter 4. Although not specifically provided in discussion or tabular form, a side-by-side comparison can be made between the information in the site-specific appendices. Due to the complexity and dissimilarity of the hydrogeologic characteristics between sites, such comparisons are subjective and depend on the specific interests of the reviewer, as well as decisionmakers.

05.08.03 (015) General
COMMENT
The commentor states that water resources, and in the context of the comment perhaps other natural resources, would be unavoidably adversely impacted because only limited remediation is proposed.
RESPONSE
The environmental restoration actions under the alternatives considered in this EIS would occur under the provisions of the CERCLA. CERCLA procedures provide for ecological risk assessment and identification of injury or potential injury to natural resources resulting from past releases of hazardous substances. The alternatives include projects for protecting the vadose zone and cleaning groundwater, and cleaning up and/or retrieving buried wastes. In keeping with DOE's Native American Policy (Memorandum EH-231: Management of Cultural Resources at Department of Energy Facilities, U.S. DOE, Washington, DC, February 23, 1990), DOE will consult with the Tribes during the planning and implementation of all proposed alternatives. Additionally, DOE has implemented the Working Agreement, Policy on Native American Consultation to ensure communication with the Shoshone-Bannock Tribes concerning the treatment of archaeological sites as mandated by the National Historic Preservation Act, Archaeological Resources Protection Act, and the protection of human remains under the Native American Graves Protection and Repatriation Act.

The prediction of unavoidable adverse impacts to groundwater was based on analyses that considered the extent of known contamination and potential effectiveness of existing and reasonably foreseeable treatment technologies. Note that the impacts will not be caused in the future but will be residual impacts from past actions and operations. CERCLA and the National Contingency Plan contain provisions for addressing residual injury to natural resources and natural resource damage assessment. In a letter dated July 7, 1992, the DOE Idaho Operations Office notified the State of Idaho, the Shoshone-Bannock Tribes, and the U.S. Department of the Interior of potential injury to trust resources caused by past releases.

05.08.03 (016) General
COMMENT
The commentor states that the spent nuclear fuel portion of the EIS does not discuss environmental restoration at Oak Ridge Reservation, and the adverse impacts for the Y-12 Plant have not been assessed.
RESPONSE
Detailed analysis of existing contaminant sources and transport pathways are beyond the scope of this EIS. If ORR is selected for new SNF management facilities, site-specific groundwater studies would be performed.

Geology and water resources for ORR are discussed in Volume 1, Appendix F, Part Three, sections 4.6, 4.8, and 5.8.

5.9 Cumulative Impacts

05.09 (001) Cumulative Impacts
COMMENT
The commentor states the EIS does not adequately discuss the direct, indirect, or cumulative impacts of transporting spent nuclear fuel and other radioactive and hazardous materials.
RESPONSE
DOE believes the EIS and reference documents contain an adequate discussion of direct, indirect, and cumulative impacts of transporting SNF and other radioactive materials. Incident-free transportation of hazardous materials results in essentially no impacts, as discussed in Volume 1, section 5.1. A discussion of highway, railway, and barge transportation impacts and potential accident impacts is in Volume 1, section 5.1.

The cumulative impacts analyses are discussed in Volume 1, section 5.3 and Volume 2, section 5.15. Cumulative impacts of radioactive and hazardous materials transportation have been enhanced in Volume 1, section 5.3.2.
The analyses described in Volume 1, section 5.3 and Volume 2, section 5.15 show that the potential for exposing the public to radiation hazards is low, and the overall impacts under all of the alternatives analyzed in this EIS would be small.

05.09 (002) Cumulative Impacts

COMMENT
The commenter expresses an opinion that DOE hides behind a claim of national security and is keeping information from the public, and thus prevents an accurate assessment of impacts.

RESPONSE
In recent years, DOE has released a significant amount of previously classified data and will continue to release additional information as it is declassified. Most environmental monitoring data are not classified, and significant amounts of information are available to the public, such as the annual environmental reports published for each site. Some data on DOE activities remains classified until released by the Secretary of Energy. Volumes of publicly available data were used in the preparation of this EIS, as evidenced by the list of references for each volume and the associated appendices. This EIS contains sufficient information for members of the public to interpret and evaluate impacts.

05.09 (003) Cumulative Impacts

COMMENT
The commenter is of the opinion that the EIS should evaluate the impacts and conditions anticipated many generations from now.

RESPONSE
The time periods being considered in this EIS are 40 years for the programmatic management of SNF until ultimate disposition, and 10 years for environmental management and waste management activities at INEL. The EIS evaluates reasonably foreseeable impacts associated with the proposed actions and alternatives analyzed in the EIS. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small. Because of the speculative nature of and uncertainties associated with projecting actions and impacts many years in the future, meaningful analysis beyond this horizon is not possible. Whereas this EIS addresses interim actions until ultimate disposition of DOE SNF, analysis of disposition options such as a geologic disposal will entail analysis of potential impacts centuries into the future. Such analysis will likely be part of a future EIS.

05.09 (004) Cumulative Impacts

COMMENT
The commenter states that the EIS does not address the environmental impacts of bringing spent nuclear fuel into Idaho.

RESPONSE
The environmental consequences of all SNF alternatives, including those that involve bringing additional SNF to INEL, are extensively discussed in Volume 1, Chapter 5. This discussion is supported by Volume 1, Appendices B and D. Volume 2, Chapters 4 and 5 further discuss environmental impacts at INEL relative to waste management and environmental restoration projects.

05.09 (005) Cumulative Impacts

COMMENT
The commenter states that specified matters are not adequately addressed as required by the National Environmental Policy Act and pursuant to Council on Environmental Quality regulations implementing the Act. The matters specified by the commenter are the different types of SNF storage, whether wet or dry; the need for potential SNF processing; cumulative impacts, similar impacts, and residual impacts, including future permanent disposal; a monitoring and safety program that provides independent oversight of storage conditions; and activities and past problems associated with SNF management.

RESPONSE
Decisions regarding wet or dry storage and processing will be based on future NEPA documentation. Cumulative impacts, including impacts from connected or similar actions are addressed in Volume 1, section 5.3 and Volume 2, section 5.15; residual impacts, assuming this term applies to adverse effects that cannot be avoided, are addressed in Volume 1, section 5.4 and Volume 2, section 5.16. DOE does provide monitoring and safety programs that are open to public review. Activities including past problems associated with SNF management are discussed throughout Volume 1 and its appendices when relevant to issues being considered.
05.09 (006) Cumulative Impacts

COMMENT
The commentor objects to DOE making a decision on the proposed alternatives when information on the extent of impacts to the Snake River Plain aquifer is not complete.

RESPONSE
The commentor refers to Volume 2, section 5.8.1. A sentence specifically refers to the status of the analysis for the impacts of a hypothetical leak to the soil from an SNF storage facility. Another sentence in Volume 2, section 5.8.1 states that based on the bounding accident scenario for impacts to the Snake River Plain aquifer discussed in Volume 2, section 5.14, the impacts to the Snake River Plain aquifer are expected to be small. These hypothetical impacts are assessed with respect to EPA MCLs and DOE DCGs. Subsequent analysis of the hypothetical SNF storage facility leak and documentation supporting groundwater modeling for the EIS have been referenced in and are available with the EIS. These analyses are consistent with conclusions stated in the EIS regarding the impacts of alternatives on water quality.

Water resources at INEL and potential impacts from the alternatives considered in the EIS are described in Volume 2, sections 4.8, 5.8, and Appendix F. In accordance with NEPA regulations at 40 CFR 1502.22, the EIS summarizes all known existing credible scientific evidence relevant to understanding the existing environment, identifies reasonably foreseeable impacts, and evaluates potential consequences. Assumptions and limitations in the groundwater analysis are identified in Volume 2, Appendix F. DOE used conservative assumptions to account for the uncertainty in modeling the effects of proposed actions on groundwater quality. Results indicate that under all the alternatives considered, there would be no contaminants above EPA MCLs at the INEL site boundary as a result of operations under any of the proposed alternatives. This would be a result of waste management practices, including waste water discharge monitoring, as well as natural contaminant attenuation and radioactive decay for historical releases.

Independent assessments of the Snake River Plain aquifer water quality at INEL confirm DOE environmental monitoring results that no contaminants in concentrations above EPA MCLs or DOE DCGs exist beyond the INEL boundary. With improved management practices and remediation efforts planned or under way, it is likely that overall water quality in the Snake River Plain aquifer below the INEL will continue to improve.

05.09 (007) Cumulative Impacts

COMMENT
The commentor asserts that the conclusions on potential impacts are flawed and that the EIS, being based on these conclusions, fails to pick the best solution.

RESPONSE
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small. While there are differences in the impacts among the alternatives, these differences by themselves are not sufficient to distinguish between alternatives.

Volume 1, section 3.1 and Volume 2, section 3.4 describe DOE’s preferred alternatives for programmatic SNF management, and SNF management, environmental restoration, and waste management at INEL.

05.09 (008) Cumulative Impacts

COMMENT
Many commentors state that the EIS needs to provide cumulative impact assessments for past and future activities at the Idaho National Engineering Laboratory.

RESPONSE
Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts, including cumulative impacts, of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small. Each alternative includes the appropriate projects listed in Volume 2, including decontamination and decommissioning.

Volume 2, Chapter 4 discusses the current environment at INEL, including impacts from past activities. Waste streams and emissions from INEL facilities, including characterization data and radionuclide inventories, are referenced in Volume 2, Appendix F.

Volume 2, Appendix C discusses 49 proposed projects and ongoing activities at INEL. These projects are analyzed under each of the alternatives discussed in Volume 2, section 3.1 and include reasonably foreseeable actions. These actions are subject to the outcome of negotiations with the State of Idaho under the FFA/CO.

Mitigation measures are discussed in Volume 1, section 5.7 and in Volume 2, section 5.19.

See also the response to comment 04.01 (001).
05.09 (009) Cumulative Impacts
COMMENT
The commenter states that while measuring small quantities, DOE loses sight of overall impacts to people, geology, and the national budget.
RESPONSE
DOE used the process described in regulations to ensure that the procedural requirements of NEPA were satisfied. The scope of Volume 1 of this EIS is to evaluate impacts directly related to SNF management activities across the United States. The scope of Volume 2 is to evaluate impacts directly related to SNF management, environmental restoration, and waste management activities at INEL. Larger-scale impacts from the activities associated with the proposed action, plus past, current, and other reasonably foreseeable activities are evaluated in Volumes 1, section 5.3 and Volume 2, section 5.15. The EIS includes an evaluation of the overall impacts to the human and natural environment, including people and geological resources. Costs of the alternatives are summarized in Volume 1, section 3.3.6.

05.09 (010) Cumulative Impacts
COMMENT
The commenter states that the EIS violates the National Environmental Policy Act because cumulative impacts do not include an evaluation of supply and demand; for example, the demand to store additional waste will increase.
RESPONSE
Volume 2 considers the potential consequences of a range of levels of waste and SNF management activity. Under the Maximum Treatment, Storage, and Disposal alternative, INEL would respond to this with increased demand for management of waste and SNF. The assessment found that the impacts of this and other alternatives would be small. Cumulative impacts are included in the assessment. The EIS addresses these impacts in Volume 2, section 5.1.5.

05.09 (011) Cumulative Impacts
COMMENT
The commenter states that the EIS does not provide historical data on radioactive releases and states that National Environmental Policy Act requirements must be met in the EIS by providing a comprehensive evaluation of cumulative impacts for past and proposed activities at the Idaho National Engineering Laboratory.

RESPONSE
Waste streams and emissions from INEL facilities, including characterization data and radionuclide inventories, are included as references in Volume 2, Appendix F. Volume 2, Chapter 4 discusses the current environment at INEL, including impacts from past activities. The effects of all current operations at INEL, as discussed in Volume 2, Chapters 2 and 4, and potential effects of the proposed action and reasonably foreseeable actions not associated with the proposed action, have been evaluated in Volume 2, Chapter 5.

05.09 (012) Cumulative Impacts
COMMENT
The commenter takes the position that all projects included in the Nevada Test Site's master plan must be considered in the cumulative impact analysis for that site.
RESPONSE
A site's master plan identifies all the projects desired to fulfill the current site mission at the maximum level without regard to budgetary constraints, priorities, or current direction. It represents the first stage of the planning process, and remains relatively static. Projects are not well defined in the master plan. In contrast, the site 5-year plan presents more thorough development and definition of those projects in the master plan that might be initiated or implemented over a 5-year period. In the 5-year plan, which is updated annually, projects are prioritized in light of the current site needs, budgetary constraints, and current policy and direction. Because the 5-year plan identifies the mission-critical projects, which are most likely to be funded and completed, it is a better indicator of planned activities at the site than the master plan. Due to the nature of the planning and budget cycle, the 5-year plan is not limited to projects that are likely to be implemented in a 5-year period, but provides a longer perspective. For these reasons the 5-year plan is considered to be an appropriate basis for identifying projects for analysis of cumulative impacts. Additional discussion of the site master plan and relation to the 5-year plan and cumulative impacts were added to Volume 1, Appendix F, Part Two.

Due to the nature of the planning and budget cycle, the 5-year plan is not limited to projects that are likely to be implemented in a 5-year period, but provides a longer perspective. For these reasons, the 5-year plan is considered to be an appropriate basis for identifying projects for analysis of cumulative impacts.

Appropriate sections of the Nevada Test Site's Master Plan Projects are summarized in Volume 1, Appendix F, Part Two.
05.09 (013) Cumulative Impacts

COMMENT
The commentor asks that the EIS address the cumulative impacts from existing waste and waste proposed over the next 40 years at the Idaho National Engineering Laboratory. In addition, the commentor asks that the EIS address the cumulative impacts from the waste at the Hanford Site and the past, present, and future waste from the Trojan Nuclear Power Plant in the Columbia River basin.

RESPONSE
Volume 1, Chapter 5 Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show the impacts of all alternatives would be small. The EIS addresses the cumulative impacts from current and future waste at INEL in Volume 2, section 5.15.

The EIS addresses the cumulative impacts from waste at the Hanford Site on the Columbia River in Volume 1, Appendix A, section 5.8. The Trojan Nuclear Power Plant has operated with an NRC license in accordance with 10 CFR 20. Operation ceased on November 9, 1992. On January 4, 1993, Portland General Electric Company announced that the plant would not restart, and the plant was defueled by January 27, 1993. The decommissioning plan was submitted to NRC on January 26, 1995, and includes spent fuel management for the Trojan plant. This is outside the scope of this EIS.

05.09 (014) Cumulative Impacts

COMMENT
In supporting the preference for the Planning Basis alternative, the commentor states that the EIS does not fully address the cumulative impacts (specifically to public health and safety) of adding new missions at many different proposed sites under the various alternatives, and states that adding new functions and duplicating them at several sites may negatively impact safety.

RESPONSE
This EIS evaluates 10 sites as reasonable siting alternatives for some level of SNF management activity. The analysis in the EIS includes environmental considerations, socioeconomic impacts, potential risks to the public from operations and reasonably foreseeable accident conditions, site-specific cumulative effects, and other environmental factors for a number of options for managing SNF. Cumulative effects, involving site-specific projects or missions that are planned to occur simultaneously with SNF management activities are discussed in Volume 1, Appendices A through F. The EIS concludes that the alternative sites are environmentally suitable for management of SNF, and that risks to the public or the environment due to managing SNF at any of the 10 sites under consideration would be small even when new missions are involved.

05.09 (015) Cumulative Impacts

COMMENT
The commentor states that socioeconomic impacts are not fully addressed from a cumulative perspective; therefore, socioeconomic impacts are underestimated. The commentor suggests that, at a minimum, the point be included under "cumulative effects" that there are large socioeconomic impacts, rarely mitigated, before the project starts. Further, the commentor suggests that the EIS not assume that there will be a mitigation measure of payments in lieu of property taxes unless a specific plan is proposed. The commentor states that DOE does not pay property taxes and rarely makes payments in lieu of property taxes.

RESPONSE
The commentor is correct that DOE facilities generally do not pay local or state property taxes. However, various mechanisms exist for DOE to compensate state or local governments in the form of payments in lieu of taxes or "special burden" payments. Special burden payments help offset increases in employment and population caused by DOE facility construction and/or operation (which may put additional burdens on local services, utilities, and infrastructures). Each situation requires an independent evaluation to determine whether such payments would be authorized to the appropriate state or local jurisdiction. When assessing socioeconomic impacts, the EIS does not assume that payments in lieu of taxes would be paid to states or local communities, but only discusses the possibility of such payments as a measure to mitigate adverse impacts.

Volume 1, Appendix F, Parts Two and Three, section 5.16 discuss potential socioeconomic impacts from a cumulative perspective. These sections do not explicitly "identify large socioeconomic impacts that have occurred before the start of the proposed project." Rather, potential cumulative socioeconomic impacts are discussed in terms of "the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions." In this context, socioeconomic impacts from the SNF management alternatives are compared with baseline economic and demographic forecasts. The effects on these regional economic growth rates from programmatic SNF management are relatively insignificant. DOE would evaluate the need to implement measures to mitigate adverse socioeconomic impacts on a site-specific basis.

Impact avoidance measures discussed in Volume 1, section 5.7.2 of the EIS could be further evaluated on a site-specific basis when more detailed socioeconomic analyses are conducted. Although DOE does
the cumulative impact analysis. Volume 2, presents nonhealth-related transportation and health-related cumulative impacts from the proposed, connected, and similar actions. See also the response to comment 05.09 (011).

See also the response to comment 05.09 (006) regarding impacts to the Snake River Plain aquifer.

05.09 (017) Cumulative Impacts

COMMENT

The commenter states that the EIS is inadequate because it fails to address the cumulative impacts of spent fuel shipments as they pertain to Idaho National Engineering Laboratory-specific proposals.

RESPONSE

The impacts due to SNF shipments are described in Volume 1, Appendices D and I. Cumulative impacts from SNF shipments are described in Appendices D and I for both radiological impacts and vehicular accident impacts. Cumulative impacts due to past activities are presented for each site for the period from the start of operations at a site to 1993. Impacts through 2035 are in a range for the Centralization alternative as an upper bound, which lends conservatism to the evaluation for alternatives with less transportation. No other cumulative impacts are related to transportation; thus, this analysis is adequate.

05.09 (018) Cumulative Impacts

COMMENT

The commenter states that longshoremen, sailors, and the general public will receive significant exposure if commercial shipping lanes are used and waste casks are off loaded in Portland, Oregon, or Seattle, Washington, and trucked to the Hanford Site or Idaho National Engineering Laboratory. Children stuck in traffic in cars alongside or behind these waste shipments could receive a significant dose.

RESPONSE

DOE believes the EIS and reference documents contain an adequate discussion of direct, indirect, and cumulative impacts of transporting SNF and other radioactive materials. Incident-free transportation of hazardous materials results in essentially no impacts as discussed in Volume 1, section 5.11. A discussion of highway, railway, and barge transportation impacts and potential accident impacts is in the Environmental Consequences of Key Disciplines and Offsite Transportation of SNF sections of the EIS.

The cumulative impacts analyses are discussed in Volume 1, section 5.3 and Volume 2, section 5.15.
DOE conducted a comprehensive transportation cumulative impacts analysis, evaluating past, present, and future shipments of radioactive material, which include radioactive waste and SNF. The transportation cumulative impacts analysis includes past transportation activities, transportation activities related to actions in this EIS, reasonably foreseeable future transportation activities, and general transportation activities.

The analyses described in Volume 1, section 5.3 and Volume 2, section 5.15.7 show that the potential for exposing the public to radiation hazards is extremely low and the overall impacts under all of the alternatives analyzed in this EIS would be small.

**05.09 (019) Cumulative Impacts**

**COMMENT**

The commentor notes that the second sentence in Volume 2, section 5.7.4.3.2 incorrectly states that cumulative impacts from all major sources after the baseline date must be below Prevention of Significant Deterioration increment limits. Increases from minor sources also consume increment.

**RESPONSE**

The commentor is correct in that it should be clarified that increases from both major and minor sources after the baseline date consume increment. In fact, the increment consumption analyses that have been performed considered all applicable sources that became operational (or will become operational) after the baseline dates. The sentence has been revised to clarify that the PSD analysis considers increases from all applicable major and minor source emissions that occur after the baseline dates.

**05.09 (020) Cumulative Impacts**

**COMMENT**

The commentor states that all alternatives except the No Action alternative have a potential for further releases to the environment, which will exacerbate existing contamination by both chemical and radiological materials.

**RESPONSE**

The proposed SNF facilities are designed to have no liquid release of waste water with hazardous chemical or radiological characteristics through the use of modern technologies, including secondary containment, leak detection, and water-balance monitoring equipment. The analysis in the EIS includes environmental considerations, potential risks to the public from operations and reasonably foreseeable accident conditions, site-specific cumulative effects, and other environmental factors for a number of options for managing SNF. Cumulative effect, involving existing site problems and site-specific projects or missions that are planned to occur simultaneously with SNF management activities are discussed in Volume 1, Appendix F. The EIS concludes that the alternative sites are environmentally suitable for management of SNF, and that risks to the public or the environment due to SNF management would be small, even when new missions are involved.

Discussions on public health and safety are in Volume 1, sections 5.1 and 5.3 and site-specific Appendix F.

### 5.10 Safety and Health Effects

**05.10 (001) Safety and Health Effects**

**COMMENT**

One commentor raises questions regarding the use of legal limit radiation levels for DOE spent nuclear fuel shipping casks and measured radiation levels for U.S. Navy spent nuclear fuel shipping casks.

**RESPONSE**

Using legal limit radiation levels will overestimate potential impacts from DOE SNF shipments; this assumption was necessary to maintain flexibility in the specific choice of shipping casks that have been approved by DOE. Even with this assumption, the risks are still small. The Navy intends to use existing shipping casks, which have been in use and for which there are measured radiation levels, if transport is required; therefore, these realistic measured data were used, and it was not necessary to make similar assumptions to bound potential impacts.

**05.10 (002) Safety and Health Effects**

**COMMENT**

The commentor states that transportation of radioactive materials involves minimal risks.

**RESPONSE**

The comment accurately reflects the analyses of impacts provided in Volumes 1 and 2. Chapter 5 and Volume 1, Appendices D and I. Volume 1, Appendix I summarizes the methodologies, key data, assumptions, and results of calculations for the transportation analyses. These analyses show that the risks associated with the transportation of radioactive material would be small for all alternatives considered. The conclusion that such risks would be small is borne out by past experience with such shipments.
05.10 (003) Safety and Health Effects
COMMENT
The commenter states that traffic fatality risks are somewhat higher for Naval than non-Naval shipments. The commenter states that the analysis uses the same documents for both Naval and non-Naval risk estimates and does not consider the increased non-Naval shipments.

RESPONSE
Off-site shipments of non-Naval fuel are discussed in Volume 1, Appendix 1, while on-site shipments of non-Naval fuel are discussed in Volume 1, Appendices A, B, C, and F, for Hanford, INEL, SRS, and NTS/OGR, respectively. Off-site and on-site shipments of Naval fuel are discussed in Volume 1, Appendix D.

DOE and the Navy reviewed their analyses of traffic fatality risks and did not identify any errors. All of the impacts would be small for both radiological and nonradiological risks. The different number of shipments between Naval and non-Naval SNF was considered in the analyses.

When comparing Naval and non-Naval transportation impacts, some differences other than the number of shipments are important. For example, all off-site Naval SNF shipments from shipyards are by rail, whereas all off-site test specimen shipments are by truck. The results are presented for the expected number of each of these types of shipments. DOE shipments assume that all off-site shipments are either by rail or by truck, and results are presented for both cases. Another example is that the Naval SNF shipments from Pearl Harbor have a portion of the trip on ocean transport vessels. The reference document for accident rates (Longitudinal Review of State-Level Accident Statistics for Carriers of Interstate Freight) lists a significantly higher nonradiological casualty rate for ocean transport than the nonradiological fatality rate listed for rail or truck transport.

05.10 (004) Safety and Health Effects
COMMENT
When comparing Naval and non-Naval transportation impacts, some differences other than the number of shipments are important. For example, all off-site Naval SNF shipments from shipyards are by rail, whereas all off-site test specimen shipments are by truck. The results are presented for the expected number of each of these types of shipments. DOE shipments assume that all off-site shipments are either by rail or by truck, and results are presented for both cases. Another example is that the Naval SNF shipments from Pearl Harbor have a portion of the trip on ocean transport vessels. The reference document for accident rates (Longitudinal Review of State-Level Accident Statistics for Carriers of Interstate Freight) lists a significantly higher nonradiological casualty rate for ocean transport than the nonradiological fatality rate listed for rail or truck transport.

05.10 (006) Safety and Health Effects
COMMENT
Commentors identify issues regarding public and worker safety and risks, and the effect on the environment due to accidents caused by extreme weather and natural disasters at the facilities.

RESPONSE
Volume 1, Chapters 3 and 5 and Appendices A through F, and Volume 2, Chapters 3 and 5 and Appendix F discuss risks to the public, workers, and the environment due to facility accidents, including those caused by extreme weather and natural disasters, such as high winds, floods, earthquakes, and tornados. The discussions include extensive evaluations and analyses of accidents. Protecting members of the general public and workers from accidents is considered by DOE in the design, location, construction, and operation of facilities. The analyses and other information in the EIS demonstrate that the risk to workers and the public from all accidents, including those caused by extreme weather or natural disasters, would be small for all of the alternatives considered.

05.10 (008) Safety and Health Effects
COMMENT
The commenter suggests that the EIS fails account for the long-term risks to the public and potential liability costs from damage scenarios under various options.

RESPONSE
Even for INEL accidents with the maximum reasonably foreseeable consequences, and with the most unfavorable meteorological conditions, no long-term risks to the public are expected. As noted in Volume 2, section 5.14, there is a potential for limited economic impacts associated with 1-year access restrictions to public lands or up to a 1-year agricultural land withdrawal for land on and immediately adjacent to INEL. Relative to potential liability costs, DOE will use the statutory indemnity contemplated by the Price-Anderson Act (42 USC 2210) to ensure ready and prompt availability of funds to compensate the public for injuries and damages resulting from a nuclear incident arising from activities conducted by indemnified DOE contractors. Compensation provided under the Act would cover nuclear incidents arising at INEL, as well as nuclear incidents arising during the transportation of material to and from the site.

Although the Price-Anderson Act is the primary means for compensating the public for damages from nuclear incidents, other remedies exist for claims not falling within the purview of the Act. For example, claims against DOE or its employees may be cognizable under the Federal Tort Claims Act, and claims
for environmental damage may fall within CERCLA. These and other laws afford any injured party mechanisms for seeking recovery for damages relating to operation of DOE facilities.

05.10 (009) Safety and Health Effects

COMMENT
The commenter suggests that DOE is not going to study ingestion of radioactive materials at the Idaho National Engineering Laboratory because contaminated food and water would be impounded. The commenter also states that DOE's assumed cleanup of accidents does not account for redistribution of particles by wind.

RESPONSE
For INEL facility accidents with the maximum reasonably foreseeable consequences and the most unfavorable meteorological conditions, some restrictions on uses of agricultural products might be implemented in accordance with established Protective Action Guides. However, this does not mean that ingestion of radioactive material has not been analyzed in the EIS. There has been much research on the potential for health effects through ingestion, as well as other pathways, and is discussed in Volume 2, Appendices A and F-4. The accidents assessments summarized in Volume 2, section 5.14 account for ingestion of radioactive materials. Resuspension of radioactive materials from the ground is included as a potential dispersion path. Wind-borne resuspension generally reduces the amount of exposure at any given distance from the point of release, but increases the area in which exposure might occur. The accident analyses generally did not take credit for mitigative measures. Nevertheless, the risks to the public and workers from all accidents analyzed in the EIS would be small.

05.10 (010) Safety and Health Effects

COMMENT
The commenter states that agency officials should be able to answer over the telephone basic questions, such as what is the longevity of radioactive spent fuel.

RESPONSE
Because agency officials are accountable for answers to technical information given over the telephone, it is unreasonable to expect all technical information to be immediately available to the official who answers the telephone. In addition, agency officials consider it prudent to check answers, especially quantitative answers, against available references or with technical experts before providing the information to the public. Whenever possible, questioners were intentionally referred to specific locations in the EIS that would answer their questions in detail, in language agreed to by a wide range of reviewers and experts.

05.10 (011) Safety and Health Effects

COMMENT
The commenter would like DOE to minimize worker and public exposure to radiation during construction, operation, and maintenance activities, using the principle of the "as low as reasonably achievable" approach.

RESPONSE
Maintaining occupational exposure to radiation and radioactive materials as low as reasonably achievable (ALARA) is an integral part of all site radiological control programs. In addition, it is DOE's policy to implement legally applicable radiation protection standards and to consider and adopt, as appropriate, recommendations by authoritative organizations. Examples of such standards and organizations include DOE Order 5400.5, Radiation Protection of the Public and the Environment, the National Council on Radiation Protection and Measurements, and the International Commission on Radiological Protection. See also the response to comment 05.10 (029).

05.10 (012) Safety and Health Effects

COMMENT
Commentors express the opinion that all facets of DOE's nuclear program are lethal and under the protection of bureaucrats.

RESPONSE
Hazardous material resulting from DOE's past, present, and future nuclear programs can be managed and disposed of in a safe manner. This EIS addresses the programmatic management of SNF in the interim to ultimate disposition, as well as environmental management activities at INEL over the next 10 years. It concludes that there would be no significant environmental impacts under any of the reasonable alternatives being considered for implementation. Although vulnerabilities exist, DOE has the management skill, scientific capability, and Secretarial mandate to safely manage SNF and INEL waste management and environmental restoration activities in the period covered by this EIS.

05.10 (013) Safety and Health Effects

COMMENT
The commenter notes a typographical error on the first line of the last paragraph on page 25 of the Summary.

RESPONSE
The commenter is correct that the word "facilities" should be "fatalities." DOE has corrected the error in the Summary and in Volume 1.
05.10 (014) Safety and Health Effects

COMMENT

One commentator refers to the degraded conditions in the Idaho National Engineering Laboratory structures as assessed by the Spent Fuel Working Group. This individual states that the known vulnerabilities in the storage of spent nuclear fuel lead to the risk of radioactive contamination, health problems, accidental criticalities, meltdown, and explosions. Another commentator wants DOE to "address existing storage problems that are a danger to us all."

RESPONSE

Volume 2, section 2.2 discusses the vulnerability of SNF storage at INEL. Actions to address these vulnerabilities are identified in Volume 2, section 2.2, Table 2.2-1. Because of the vulnerabilities identified in Volume 2, section 2.2, a criticality at Building 603 at the Idaho Chemical Processing Plant was considered 10 times more likely than at a modern facility such as Building 666. The consequences of such a criticality are reported in Volume 2, section 5.14. The impacts to the public from such an event would be small; impacts to workers at the scene could vary depending on the circumstances, but because of shielding by water and concrete, it is not likely that radiation exposure would result in a prompt fatality. Workers could have an increased risk of developing cancer over their lifetimes.

05.10 (015) Safety and Health Effects

COMMENT

The commentator requests clarification of the phrases "high, though not fatal, dose" and "probably not likely" in Volume 1, Chapter 5.

RESPONSE

The phrases were used in reference to an estimated worker dose of 120 rem resulting from a particular accident. A dose of 120 rem is considered to be a dose with large potential health effects (e.g., death). A population that receives short-term exposures may have individuals who die from a range of doses. The nominal dose level for death to an individual with no medical intervention is 300 to 500 rem. Some individuals could die with no medical intervention at lower doses. Thus, a short-term dose of 120 rem with no medical intervention could result in death in part of a population. A short-term dose of 120 rem would not be considered a fatal dose for typical individuals. Occupational doses to workers are usually less than 2 rems.

DOE has modified the EIS to clarify the phrases.

05.10 (016) Safety and Health Effects

COMMENT

The commentator questions what number of latent cancer fatalities per year DOE considers significant.

RESPONSE

DOE considers seriously the relationship between radiation exposure and the potential for latent cancer fatalities. Rather than a "number" of fatalities that is considered significant, DOE strives to keep the likelihood of a latent cancer fatality to a member of the public or in its workforce very low. DOE's Nuclear Safety Policy states that "the general public be protected such that no individual bears significant additional risk to health and safety from the operation of a DOE nuclear facility above the risks to which members of the general population are exposed." Quantitatively, the goal translates to an incremental chance of a fatal cancer to a member of the public of one chance in 500,000 per year from DOE operations.

05.10 (017) Safety and Health Effects

COMMENT

The commentator suggests that consistent definitions of maximally exposed individual (MEI) and maximally exposed off-site individual (MOI) are needed. The comment cites the definitions in Volume 1, Appendix H and text in Volume 2, Appendix F-3.

RESPONSE

The definitions in Volume 1, Appendix H agree with the text in Volume 2, Appendix F-3. The text in Volume 2 contains an expanded discussion of the details involved in evaluating the maximally exposed individual, appropriate for a site-specific NEPA document. The less-detailed technical discussion given in Volume 1, Appendix H is appropriate for a programmatic analysis.

05.10 (018) Safety and Health Effects

COMMENT

The commentator suggests that duplication of facilities and missions at several sites is "not likely to enhance safety" and, in fact, can degrade the safety posture of those facilities.

RESPONSE

Volume 1, Chapter 5 summarizes the radiological and health and safety impacts associated with all the alternatives considered in this EIS, including using existing facilities and constructing new ones. Volume 1, section 3.3.6 summarizes the cost evaluation. The health and safety of workers and the public has been considered in the evaluation of these alternatives and the identification of a preferred alternative. The information provided on radiological and health and safety impacts, including facility costs are considered adequate for evaluating and comparing the impacts of all the alternatives. Volume
1, section 3.3.6 has been revised to indicate that there are no widely accepted equivalence values between costs and radiological exposures or other health effects or environmental impacts.

See also the response to comment 04.04 (008) for management of SNF under DOE's preferred alternative.

05.10 (019) Safety and Health Effects
COMMENT
The commentor states that a sentence in the Summary on public and worker health effects implies there is some connection between spent nuclear fuel and natural background radiation. The commentor suggests deleting the sentence.
RESPONSE
The sentence states that radiation exposures also occur from natural sources. DOE considers it important for the reader to understand that natural radiation also contributes to the exposure that humans receive. The EIS has been changed to clarify the intent of the discussion.

05.10 (020) Safety and Health Effects
COMMENT
The commentor suggests that atmospheric testing be added to a discussion about underground testing releases.
RESPONSE
Volume 1, section 4.4 has been changed to include discussion of atmospheric testing.

05.10 (021) Safety and Health Effects
COMMENT
Commentors suggest that adequate baseline health studies need to be conducted at all existing DOE sites, along transportation routes, and at proposed DOE sites to support risk factors used in the EIS. Some commentors request that all epidemiological studies be included in this EIS, or if they have not been performed, explain why and what other public involvement activities were conducted.
RESPONSE
In March 1990, DOE announced that it will turn over responsibility for research on long-term health effects to workers at DOE facilities and the public in surrounding communities to the U.S. Department of Health and Human Services. DOE directed that all worker health and exposure data and all data regarding releases of radioactive and toxic materials be released. Baseline health effects studies for DOE

workers and for members of the surrounding public are either under way or planned at all major DOE facilities. Results of all studies are available to the public.

Some persons have proposed performing epidemiological studies of the people living in communities in the vicinity of installations performing work associated with atomic energy. However, as demonstrated by the studies that have been attempted, such as those in Great Britain, the level of radiation exposure in the communities from man-made radionuclides is very low with respect to the variations in background radiation and other factors introduced by individual lifestyles. This, plus other variables introduced by nature and other industries in the communities, has made it impossible to perform credible studies or develop definitive conclusions. Efforts in this area are expected to continue, but after 50 years of extensive study, the standards of the International Commission on Radiological Protection represent the most reliable data available.

The epidemiological studies of baseline health effects at all existing DOE sites are not essential for decisionmakers to discriminate between the alternatives discussed in this programmatic EIS, because they are not relevant to any reasonably foreseeable adverse impacts.

Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in the EIS. The analyses show that none of the alternatives would have adverse impacts.

05.10 (022) Safety and Health Effects
COMMENT
The commentor notes that cancer fatalities are in the Summary as "one" for all alternatives.
RESPONSE
The values in the Summary were chosen for simplicity of presentation. The analyses in the text and appendices of the EIS provide health effects estimates for each site and alternative. These estimates vary over a wide range and depend on a variety of factors. However, in all cases, the analyses estimate that less than one fatal cancer would result from the activities under each alternative.

05.10 (023) Safety and Health Effects
COMMENT
The commentor questions whether radiation from past practices may be the cause of cancers and other health effects in the area and discusses previous releases and accidents at DOE sites.
RESPONSE

Analysis of impacts from past releases and accidents at DOE sites is not within the scope of this EIS; however, it is DOE policy to identify and correct any inadequate practices concerning safety and health arising from operation of its facilities. In this regard, accidents and accidental releases are required to be reported, and accidents resulting in significant releases from DOE facilities are included in annual monitoring reports that are publicly available. Detailed descriptions of the events concerning prior accidents or releases are outside the scope of the EIS. The Hanford Environmental Dose Reconstruction project currently is evaluating past releases from the Hanford Site.

Analyses in the Health and Safety sections of both volumes of the EIS evaluated potential impacts to the off-site public from both radiological and nonradiological hazards for actions resulting from the alternatives in this EIS. For all alternatives, impacts were estimated to be small, hypothetically resulting in fewer than one additional fatal cancer in the surrounding population over that which would occur without the presence of these DOE activities.

05.10 (025) Safety and Health Effects

COMMENT

The commentor notes that insufficient information is provided on dose assessment methodology to allow verification of the accuracy and representativeness of the predicted impacts and doses.

RESPONSE

Methods for estimating releases to water are described in Volume 2, Appendix F-2. Methods for estimating releases to air are described in Volume 2, Appendix F-3. Exposure and risk assessment methodology is described in Volume 2, Appendix F-4. Additional information is available in the cited reference material available in public reading rooms and information locations listed in the EIS.

05.10 (026) Safety and Health Effects

COMMENT

The commentor suggests that nonradiation workers, visitors, and motorists at Idaho National Engineering Laboratory should be defined as the maximally exposed individuals, rather than a site-boundary resident.

RESPONSE

Potential exposure to nonradiation workers, visitors, and motorists at INEL has been evaluated for both radioactive and nonradioactive releases from site facilities. Descriptions of the exposure scenarios for these situations are contained in Volume 2, sections 5.7 and 5.12. Further information on evaluation methods is in Volume 2, Appendix F-4. Although such individuals may be closer to some site facilities than a site-boundary resident, they are not considered to be the maximally exposed individuals for two reasons. First, workers spend only about 2,000 hours each year at the site; visitors and motorists spend even fewer. Site-boundary residents are assumed to spend 30 weeks (8,400 hours) each year at the site boundary. Second, additional pathways for exposure are included for site-boundary residents that do not apply to workers, visitors, and motorists. In particular, the potential for ingestion of radioactivity from home-grown produce is included in the evaluation for site-boundary residents.

05.10 (027) Safety and Health Effects

COMMENT

The commentor points out that risk estimates for all alternatives are higher for the Savannah River Site than for other sites.

RESPONSE

The estimates of risk from releases of radioactive and nonradioactive materials and from accidents depend on many factors. These include characteristics of the local population distribution, meteorology, groundwater, and surface water. They also include the characteristics of the facilities and activities addressed under each alternative. The assessment methods used for each site are described in Volume 1, Appendices A through F.

Specific information on the risks associated with the alternatives considered for SRS is provided in Volume 1, Appendices C and D, Chapter 5. The analyses in this EIS show that the risks for all alternatives considered would be small.

05.10 (029) Safety and Health Effects

COMMENT

Commentors question the effects from exposure to radiation and the methods for reporting radiation risks, and suggest that the EIS may not have used the most up-to-date or most accepted radiation and health effects dose response factors, particularly as related to induction of cancers.

RESPONSE

The potential health effects from exposure to radiation are the subject of research by scientists throughout the world. Some published results have been subjected to enough review and confirmation in the scientific community to become well accepted. Others have not stood up to careful scrutiny. Others are considered interesting, but unproven, hypotheses. None of these individual studies provides a comprehensive set of risk factors necessary to support the type of analysis required for the EIS. These individual studies are not, by themselves, a technically sound basis for setting radiation standards or making policy decisions.
The dose response factors for cancer induction used in the EIS were taken from the most recent International Commission on Radiological Protection recommendations (1990 Recommendations of the International Commission of Radiological Protection), which reflect the most recent and most widely accepted analysis of all currently available data. The authors of ICRP 60 reviewed all available studies. Volume 1, Appendix D and Volume 2, Appendix F-4 provide useful primers on radioactivity, radiation dose, and resulting health impacts. Volume 2, Appendix F-4 provides a discussion of how radiation doses were calculated and how cancer risks were estimated.

05.10 (030) Safety and Health Effects

COMMENT
The commentor questions whether tritium could be present in urine after 400 days if its biological (retention) half-life is roughly 12 days.

RESPONSE
The biological or retention half-life does not refer to the period of time required for all of the material to be eliminated from the body. It is an estimate of the time for half the material to be eliminated. Half of the remaining tritium will be eliminated in another 12 days, leaving one fourth of the original amount. Half of this amount will be eliminated in the next 12 days, and so on. If the original intake was large enough, it is possible that detectable amounts would be eliminated 400 days later. Additional basic information on radiation and its effects can be found in Volume 2, Appendix A.

05.10 (031) Safety and Health Effects

COMMENT
Commentors suggest that the discussion of radiation and the term "latent cancer fatalities" are misleading or insensitive.

RESPONSE
The terms used in the EIS are not intended to be misleading or insensitive. They are the standard terms used to describe the impacts being evaluated. A glossary is provided in the EIS to aid in understanding technical terms. With regard to the effects of radiation exposure, basic information has been provided in Volume 2, Appendix A. More detailed information is in Volume 2, Appendix F-4.

05.10 (032) Safety and Health Effects

COMMENT
The commentor identifies specific inconsistencies within the EIS.

05.10 (033) Safety and Health Effects

COMMENT
The commentor asks whether the Advanced Neutron Source Facility and the Expended Core Facility should be included in the assessment of potential impacts for the Oak Ridge Reservation.

RESPONSE
The Advanced Neutron Source Facility was included in the analysis of potential SNF facilities at ORR. The Advanced Neutron Source Facility was evaluated separately. Both were included in estimates of dose to the maximally exposed individual. These assessments are in Volume 1, Appendix D and Volume 1, Appendix F, Part Three.

05.10 (034) Safety and Health Effects

COMMENT
The commentor states that preservation of life and protection of property should be paramount in deciding what government-sponsored activities are allowed.

RESPONSE
The health and safety of people and the protection of property are accorded appropriate importance in deciding what activities could be implemented by the government (e.g., DOE Order 5480.1B, Environmental, Safety and Health Program for DOE Operations, Section 7, and EIS Volume 1, Summary).

05.10 (035) Safety and Health Effects

COMMENT
The commentor states that cancer morbidity, not just cancer fatality, should be used as the measure of the impact of radiation exposures.

RESPONSE
The analyses of the potential effects of radiation exposure in this EIS do consider health effects other than cancer fatalities and are based on the standards of the International Commission on Radiological Protection. Volume 1, Appendix D, Attachment F, section F-F.3.3 and Volume 2, Appendix F-4 discuss...
the terminology and risk factors used by the International Commission on Radiological Protection and how these factors were applied in calculating the effects on human health in this EIS.

The International Commission on Radiological Protection defines "health detriments" to include the impact of all fatal cancers, nonfatal cancers, and genetic effects. The health detriments caused by any exposure to radiation are calculated by summing all of these effects after multiplying each effect by a weighting factor intended to represent the severity of the impact of each type of effect on human health. As stated in the EIS, the total health effects (deaths, nonfatal cancers, genetic effects, and other impacts on human health) may be obtained for the public by multiplying the latent cancer fatalities by the factor of 1.46 developed by the International Commission on Radiological Protection.

Cancer fatalities were used to summarize and compare the results in the EIS because this effect was viewed to be of the greatest interest to most people.

05.10 (036) Safety and Health Effects

COMMENT
The commentor questions the accuracy of information in Volume 1, Appendix A on Hanford Site spent nuclear fuel management.

RESPONSE
The information has been updated and the text clarified.

05.10 (037) Safety and Health Effects

COMMENT
The commentor notes that the Summary presents numbers of fatal cancers in the populations surrounding each site for each alternative but does not give the sizes of the populations so that impacts can be estimated.

RESPONSE
Several factors in each site analysis affect the estimate of cancer fatalities, including population sizes, which are different for each site. These data are provided in Volume 1, Chapter 5. The Summary has been changed to reference Chapter 5 to identify the source of this information. The EIS was prepared in a tiered fashion with respect to technical depth of information. The Summary was intended to summarize the information so that it would be generally understandable to nontechnical persons. The first three chapters of each volume present expanded information with more technical detail, but are still in summary form. The remaining chapters in each volume provide the technical information needed to support the conclusions. The appendices are the most technically detailed and provide sufficient
information for a thorough technical review by specialists. The appendices also provide references that contain more information on the methods and results of technical analyses.

05.10 (038) Safety and Health Effects

COMMENT
The commentor asks why the computer code used to estimate health risks associated with DOE releases is not site-specific.

RESPONSE
Because the purpose of the analysis was to allow comparison among the alternatives, including sites, the use of the same source input is appropriate. The computer codes used to estimate health risks associated with releases from DOE facilities allow the input of site-specific data. Wherever possible, site-specific data was used for such input parameters as source terms, hydrology, and demographics. Although conservative generic meteorology classes D, E, and F were used in modeling, no credit was taken for terrain or stack height.

05.10 (039) Safety and Health Effects

COMMENT
The commentor refers to Volume 1, Appendix B, section 5.12 and raises an issue that the analysis for chemical impact focuses on cancer health effects. Some chemicals cause adverse noncancer health effects at exposure levels below those predicted to cause unacceptable increases in cancer incidence. In addition, the commentor states that the potential for synergistic effects from hazardous chemicals should be considered whenever possible.

RESPONSE
Potential synergistic effects from multiple chemical exposures are extremely difficult to assess quantitatively because there is insufficient data to indicate synergistic effects. However, the potential for synergistic effects is small where the concentrations for each individual compound are low, as is the case for the alternatives evaluated in this EIS. To ensure that potential impacts are bounded, conservatively high releases and exposure conditions were assumed. Further, the point of highest concentration for each chemical occurs at different times and places. It is unlikely that any one individual could be exposed to more than one chemical species at the concentrations reported in this EIS.

Radiation doses from historic operations are discussed in Volume 2, section 5.15.8. More information is available in referenced technical documents, which are available for review in reading rooms and information locations listed in the EIS. DOE is not aware of any generally accepted analysis methodology that has been developed to evaluate synergistic effects due to several airborne chemical constituents. DOE is aware that research into this area is continuing.

The evaluation of cumulative effects considers historic accidents only. The implementing regulation for NEPA at 40 CFR, Paragraph 1508.7 specifies "that cumulative impacts result from past, present, and reasonably foreseeable future actions..." For cumulative impacts, DOE has consistently interpreted "reasonably foreseeable" to include construction, operation, maintenance, and other planned activities, but not to include future hypothetical accidents, inadvertent spills, and other unplanned activities. Potential chemical exposure resulting from an accident is evaluated in Volume 2, Appendix F-5. See also the response to comment 05.10 (021).

05.10 (040) Safety and Health Effects

COMMENT
The commentor points out an apparent inconsistency between the dose reported in the EIS for low-level waste disposal operations and the dose given in the Radioactive Waste Management Complex Low-Level Waste Radiological Performance Assessment.

RESPONSE
The commentor is correct that the doses reported in the cited reference for the post-institutional control period exceed those cited in the EIS for the operational period. However, the dose estimates are not directly comparable because the assumptions used in each analysis are significantly different. The doses cited in the EIS are evaluated at the site boundary and represent an upper bound for doses from operations during the time period addressed in the EIS. The doses cited in the RWMC performance assessment are the post-institutional control doses evaluated for a location very near the waste disposal complex (100 meters away) and represent an estimate of doses more than 100 years outside the time period addressed by the EIS. During this post-institutional time period, it is assumed that no controls exist to prevent an individual from approaching the waste disposal complex. Therefore, it is reasonable to expect doses for the post-institutional control period could exceed those cited in the EIS for the operational period.

Further, the doses reported in the RWMC performance assessment do not account for planned remediation of the RWMC under the CERCLA process. These remediation activities could significantly reduce the radiation doses expected from the RWMC over the long term.

The evaluation in Volume 2 of this EIS bounds environmental impacts from environmental restoration (or cleanup) activities at INEL. However, specific decisions related to cleanup at INEL are generally
addressed under an enforceable agreement executed by DOE, EPA Region X, and the State of Idaho on December 9, 1991, the FFA/CO. The FFA/CO establishes a comprehensive process that integrates the remediation requirements of CERCLA and the corrective action requirements of RCRA and the State of Idaho's Hazardous Waste Management Act. Cleanup activities are conducted under the process and schedule established in the FFA/CO. RODs under the FFA/CO process are signed by all three agencies and represent a joint determination that protectiveness will be achieved through implementation of the selected remedy.

05.10 (041) Safety and Health Effects

COMMENT
The commenter asks why the GENII-S computer code was not used for Hanford Site assessments instead of the GENII used in the EIS.

RESPONSE
GENII-S incorporates the same models and data inputs for dose parameters used. The GENII and GENII-S codes yield the same results when used in the deterministic mode. However, GENII-S does not have the capability to calculate the uncertainty in the atmospheric dispersion factors or the transit time to the receptor. These calculations are important particularly where short-lived radionuclides are important dose contributors and distances are long. The model does not allow for any decay on the way to the receptor, and thus, overestimates releases. Considering these limitations, the use of GENII was appropriate.

05.10 (042) Safety and Health Effects

COMMENTS
The commenter requests that radiation doses, expressed in effective dose equivalent, be provided for Brookhaven National Laboratory, as well as for other sites considered in the EIS.

RESPONSE
Radiation doses, expressed in effective dose equivalent, are provided for current activities at Brookhaven National Laboratory in Volume 1, Appendix E, Chapter 3. The evaluation of potential impacts under each alternative is in Appendix E, Chapter 4. No additional quantitative estimates of radiation dose are presented in Chapter 4, because none of the alternatives would result in an increase in emissions at Brookhaven National Laboratory.

05.10 (043) Safety and Health Effects

COMMENT
The commenter asks whether the dose factors in Volume 2, Appendix F-4, Table F-4-5 are for unit intakes by inhalation or ingestion.

RESPONSE
The values in Volume 2, Appendix F-4, Table F-4-5 are for unit intakes by ingestion. The table is referenced in the text under a discussion of dose evaluation for consumption of contaminated groundwater.

05.10 (044) Safety and Health Effects

COMMENT
The commenter suggests that the high efficiency particulate air filter efficiency data stated for operations is not applicable to failed filters and cites a past occurrence at which a facility was shut down due to a filter break.

RESPONSE
The EIS contains evaluations of atmospheric emissions for both intact and failed high efficiency particulate air (HEPA) filters. Several of the accident scenarios address situations in which failed filtration systems are assumed. These assessments provide an upper bound for the potential consequences of such a failure and are discussed in Volume 2, section 5.14. Releases to the atmosphere from operating conditions with intact filtration systems are discussed in the Volume 2, section 5.7. The health and safety impacts from operational releases appear in Volume 2, section 5.12. The filtration systems are not the only control on atmospheric emissions. Other systems, including emission monitoring and administrative controls, are used to ensure that filter efficiency is maintained.

To minimize airborne releases, projects involving radioactive particulates at INEL would take place within a double-confinement structure. Conservative assumptions normally are used to estimate releases to the atmosphere, such as modeling only two filters in series when at least three are planned for actual operations. Also, although HEPA filters have established particulate removal efficiencies of 99.97 percent (down to diameters of 0.3 micrometers), a conservative efficiency factor of only 99 percent typically is used for operational safety and accident analyses. These filters are capable of removing particles as small as 0.001 micrometers from an airstream, but the manufacturer performs the rating calibration at 0.3 micrometers using a standard aerosol-generating device. The filters are tested annually and inspected daily to ensure that their efficiency is maintained.
Safety analyses for forthcoming INEL facility operations will not presume perfect HEPA filter operation. Additional precautions will be taken to minimize airborne releases. The pressure differential across each filter is measured continuously to detect formation of any holes or insecure filter installation. Filter temperature will be measured to promptly detect a filter fire. Finally, radiation sensors will be installed downstream of the filters to continuously monitor atmospheric releases. Detection of radioactive particulates above the natural background levels would result in a prompt shutdown of facility operations.

See also the response to comment 05.11.03 (009)

05.10 (045) Safety and Health Effects
COMMENT
The commenter notes that data mentioned in the text of the EIS on off-site radiation levels are not provided.
RESPONSE
References have been added to Volume 2, section 4.7.3 that contain the data. Specifically, these are the yearly environmental reports for INEL for 1987 through 1991 (The Idaho National Engineering Laboratory Site Environmental Report for Calendar Year 1991). These references are available in reading rooms and information locations listed in the EIS.

05.10 (046) Safety and Health Effects
COMMENT
The commenter suggests that the statistical presentation of risks is misleading.
RESPONSE
The terms used to describe risk are not intended to suggest that individuals can have small fractions of a cancer. Risks applied to individuals reflect the lifetime probability of fatal cancer. Risks applied to populations reflect the number of additional cancers expected in that population. The terms used in the EIS are the standard used to describe the impacts being evaluated. With regard to the effects of radiation exposure, additional basic information is provided in Volume 2, Appendix A. More detailed information is in Volume 2, Appendix F-A.

05.10 (047) Safety and Health Effects
COMMENT
The commenter suggests that other locations or extraordinary circumstances could result in higher exposures and require a redefinition of the maximally exposed individual.

RESPONSE
Every reasonable effort was made to ensure that the doses estimated for the maximally exposed individual provide an upper bound for potential doses from site operations. For example, the locations chosen for evaluation correspond to the highest air and ground concentrations where any member of the public could reside. The dose pathways include conservatively high values for parameters such as time spent outdoors and dietary intakes of locally grown produce. The scenario definition is "generic" in the sense that it includes a set of standard pathways for radiation exposure. However, site-specific data have been used to evaluate these pathways.

The suggested approach of conducting personal field interviews to determine the potential for individuals receiving doses in excess of the maximum individual doses is not warranted. This information is not relevant to estimating foreseeable significant adverse impacts essential to reasoned choices among alternatives.

05.10 (048) Safety and Health Effects
COMMENT
The commenter questions the statement that less than 1 percent of the average radiation exposure to a member of the United States population comes from the nuclear fuel cycle and asks for documentation.
RESPONSE
For the average member of the U.S. population, about 82 percent of total radiation exposure comes from natural background, including radon (55 percent), cosmic radiation (8 percent), radioactive contamination in the soil (8 percent), and natural radioactivity in the body (11 percent). About 18 percent comes from man-made sources including medical diagnosis and treatment (15 percent) and various consumer products (3 percent). Less than 1 percent results from the nuclear fuel cycle and global fallout. There are many references for these facts. One of the most authoritative is the 1990 Recommendations of the International Commission of Radiological Protection.

05.10 (049) Safety and Health Effects
COMMENT
The commenter suggests that DOE adopt an informal de minimis criterion to avoid unnecessary expenditure of resources in protecting and reassuring the public.
RESPONSE
DOE has not adopted a de minimis dose level for members of the public. Balancing of the public dose level versus cost to further reduce the dose to the public is accomplished at DOE facilities within the context of state and Federal regulations applicable to exposure of the public to radionuclide releases.
Balancing of public dose versus cost is effective in preventing the expenditure of funds to further reduce the already-low public exposures from radionuclide releases at DOE facilities. It is beyond the scope of this EIS to establish de minimis goals for DOE facilities.

05.10 (050) Safety and Health Effects

COMMENT
The commentor asks if the term "health effects" in Volume I, Appendix B, section 4.11, page 4.11-7 should be interpreted as "latent cancer fatalities."

RESPONSE
There is no page 4.11-7 in Volume I, Appendix B. DOE assumes that the commentor is referring to text on page 4.12-1 of the Draft EIS. The commentor is correct. The text has been changed to read "latent cancer fatalities" instead of "health effects."

05.10 (051) Safety and Health Effects

COMMENT
The commentor suggests that health risk-based standards be used to develop chemical hazard indices.

RESPONSE
Health risk-based standards were used to develop chemical hazard indices where possible. Such standards are not available for all chemicals. Where risk-based standards were not available, State of Idaho standards were used. This methodology is described in Volume 2, Appendix F-4.

05.10 (052) Safety and Health Effects

COMMENT
The commentor states that, contrary to statements in the EIS, measurable increments in radiological emissions could result from spent fuel alternatives and suggests that the cited statement should be clarified.

RESPONSE
The statement in Volume 1 cited by the commentor has been clarified.

05.10 (053) Safety and Health Effects

COMMENT
The commentor suggests that actual risk values be given and that the bullets in the right column on page 28 of the Draft EIS Summary be used as a summary.

RESPONSE
The EIS Summary is intended to summarize the information in a manner that would be generally understandable by nontechnical persons. The first three chapters of each volume expand information with more technical detail, but are still summary in form. Remaining chapters in each volume summarize the technical information needed to support the conclusions. The appendices are technically detailed and provide sufficient information for a thorough technical review by specialists. The appendices also contain references that provide even more information on the methods and results of the technical analysis.

The Summary has been revised as suggested.

05.10 (054) Safety and Health Effects

COMMENT
The commentor notes that the Idaho National Engineering Laboratory has kept radiation to a minimum and that it is a safe area.

RESPONSE
The comment is noted.

05.10 (055) Safety and Health Effects

COMMENT
The commentor expresses doubt that there are no significant adverse health effects from low-level radiation exposures typical of those received by populations surrounding commercial nuclear reactors or DOE facilities, and does not believe that the Centers for Disease Control and Prevention studies are credible.

RESPONSE
The effects of radiation exposure on human populations has been studied by many different organizations in addition to the Centers for Disease Control and Prevention. The International Commission on Radiological Protection (ICRP) has reviewed the state of knowledge of the effects of radiation exposure in 1990 Recommendations of the International Commission of Radiological Protection. The ICRP concluded that the effects of low-level radiation exposure were adequately represented by the risk factors derived for high-dose exposures (B142, Page 142 of ICRP Publications). These high-dose risk factors were used in the EIS to estimate the health impacts for radiation exposures. The health impacts from radiation exposure to the public associated with the various alternatives would be less than the typical incidence of occupational-accident caused fatalities. (See Volume 1, section 5.3 and Volume 2, sections 5.15 and F-4.2.3 for occupational-accident fatality rates.)
05.10 (056) Safety and Health Effects

COMMENT
The commentor states that the latent cancer fatalities appear to be high (1.6 latent cancer fatalities per 40 years, centralization at the Savannah River Site) and asks that these numbers be checked for accuracy. Additionally, the commentor asks if there are ways, such as more shielding, to reduce impacts.

RESPONSE
DOE believes that the analytical approaches and technical information used in the EIS represent current and accurate information. Every attempt was made to ensure the data are accurate. The technical approaches used in the analyses supporting this EIS were reviewed and evaluated by DOE and independent contractors. The information in the EIS also underwent internal DOE review, and all technical comments provided were considered in preparing the EIS.

More shielding will not be added, as designs comply with NRC regulations applicable to radioactive materials transportation. These regulations are found in 10 CFR Part 71, which includes detailed packaging design requirements and package certification testing requirements. Complete documentation of design and safety analyses and results of the required testing are submitted to NRC to certify the package for use. This certification testing involves the following components: heat, physical drop onto an unyielding surface, water submersion, puncture by dropping package onto a rigid spike, and gas tightness. Some of the required tests simulate maximum reasonably foreseeable accident conditions.

05.10 (057) Safety and Health Effects

COMMENT
The commentor raises questions regarding complete reliance on high efficiency particulate air filters for preventing emissions of radioactive particulates, especially those less than 0.3 micrometers in diameter.

RESPONSE
To minimize airborne releases, projects involving radioactive particulates at INEL would take place within a double-confinement structure. Conservative assumptions normally are used to estimate releases to the atmosphere, such as modeling only two filters in series when at least three are planned for actual operations. Also, although HEPA filters have established particulate removal efficiencies of 99.97 percent (down to diameters of 0.3 micrometers), a conservative efficiency factor of only 99 percent typically is used for operational safety and accident analyses. These filters are capable of removing particles as small as 0.001 micrometers from an airstream, but the manufacturer performs the rating calibration at 0.3 micrometers using a standard aerosol-generating device. The filters are tested annually and inspected daily to ensure that their efficiency is maintained.

Safety analyses for forthcoming INEL facility operations will not presume perfect HEPA filter operation. Additional precautions will be taken to minimize airborne releases. The pressure differential across each filter is measured continuously to detect formation of any holes or insecure filter installation. Filter temperature will be measured to promptly detect a filter fire. Finally, radiation sensors will be installed downstream of the filters to continuously monitor atmospheric releases. Detection of radioactive particulates above the natural background levels would result in a prompt shutdown of facility operations.

05.10 (058) Safety and Health Effects

COMMENT
The commentor raises the issue that the most recent numbers on radiation were not used for analysis in the EIS.

RESPONSE
Volume 1, Appendix F, Figure 4.7-2 provides information on natural background radiation, specifically radon, in homes (inhaled). The information referenced is from the 1987 publication by the National Council on Radiation Protection and Measurement, Ionizing Radiation Exposure to the Population of the United States. This reference provides a number that is recognized nationally. The figure is meant to be indicative of the natural background radiation found in the Oak Ridge area. Values of radon from different areas within the country are still being studied and may differ; they may be smaller in some instances, and larger in others. This information does not affect the analysis, and there have been no changes in the EIS. A brief discussion of occupational and public health and safety for ORR is included in the EIS in Volume 1, Appendix F, Part Three, section 4.12.

05.10 (059) Safety and Health Effects

COMMENT
The commentor observes that health and safety impacts from the Idaho National Engineering Laboratory have apparently been minimal.

RESPONSE
The cumulative impacts analyzed in Volume 2, Chapter 5 for all of the alternatives analyzed in this EIS agree with this observation.

05.10 (061) Safety and Health Effects

COMMENT
The commentor does not want any additional spent nuclear fuel or activities at the Oak Ridge Reservation.
The analysis in Volume I, Chapter 5 and Volume 1, Appendix F, Chapter 5 indicates that the environmental consequences of the alternatives considered in the EIS would be small at any of the sites, including Orr. Therefore, bringing in additional SNF is not likely to add to environmental health hazards that may already exist at this site. See also the response to comment 01.01.01.02 (011).

05.10 (063) Safety and Health Effects

COMMENT

The commentor asks whether a quantitative uncertainty analysis should be done for the EIS.

RESPONSE

Volume 2, section 5.1 and Volume 1, Appendix D, section F.1.5 have been revised to include a discussion of uncertainty analysis. In general, however, environmental impact analyses are designed to produce a reasonable projection of the upper bound for potential environmental consequences. This requires the use of appropriately conservative assumptions and analytical approaches. In this context "conservative" means that an assumption or analysis would tend to overproduce, rather than underpredict, any adverse impacts. However, overly conservative analyses do not provide a useful basis for comparing alternatives. Therefore, the aim has been to avoid overconservatism and base the environmental impact analyses on realistic, site-specific information wherever possible. Each alternative has been analyzed using identical methods and levels of conservatism so that the relative impacts of alternatives can be accurately assessed.

The analysis of the impacts of normal operations and hypothetical accidents are based on calculations that require input data and a model or analytical method for projecting potential impacts. The nature of the input data for each analysis is slightly different. Socioeconomic analyses are based on projected budgets, for example, while air resources analyses are based on estimated releases of pollutants. The analytical models are also fundamentally different for similar reasons. For all analyses where conservative assumptions have been required, generally accepted engineering and scientific approaches have been used to ensure that these assumptions are not outside the range of uncertainty usually associated with the data.

Detailed uncertainty analyses can sometimes be useful to evaluate environmental impacts. They are particularly valuable when projected impacts are large and it is important to know how reliable the projections are. However, quantitative estimates of uncertainty in impacts for hypothetical future activities are difficult to determine. When appropriately conservative estimates of impacts are shown to be small, the exact degree of uncertainty diminishes in importance. The estimates of impacts in this EIS are small enough that detailed quantitative uncertainty analyses are not necessary to meet the objectives of an EIS.

05.10 (064) Safety and Health Effects

COMMENT

The commentor suggests that professional engineers review Idaho National Engineering Laboratory facilities and questions the accountability of personnel who sign off DOE safety documents.

RESPONSE

All DOE facilities are reviewed for hazard classifications per DOE Order 5481.1B, Safety Analysis and Review System. Higher-hazard facilities require extensive safety analysis and review procedures. This includes independent reviews of these analysis summarized in safety evaluation reports. These reports and the safety basis of the facility are approved by the Program Senior Official at DOE Headquarters. The Office of Environmental Safety and Health Oversight (EHS) conducts independent reviews of these documents and must agree with all assumptions, conservatisms, and analyses. This includes operating parameters and hazard classification of the facilities personnel conducting these reviews, including hazard professional engineers. See also the response to comment 06.02 (019).

05.10 (065) Safety and Health Effects

COMMENT

The commentor is concerned that the EIS underestimates the tritium release from the 100-K basin during an accident. The commentor estimates that the tritium release to the environment would be about 40 times higher than estimated by the EIS.

RESPONSE

Volume I, Appendix A, section 1.1.2 has been revised to show that the amount of tritium in the basin is approximately 134 curies.

05.10 (066) Safety and Health Effects

COMMENT

The commentor claims that past court cases have rejected shipments of nuclear waste through Puget Sound's ports and that current government procedures do not adequately guarantee the safe handling of this fuel.

RESPONSE

DOE complies with the DOT regulations for the transport of radioactive material. These regulations are designed to protect workers and the public by minimizing the risks associated with the transport of radioactive material. The EIS analyzes a full range of alternatives, from no action, which involves
extremely limited transport of radioactive material, to centralization, which involves extensive transport of radioactive material. For all alternatives, the potential risks from transportation would be small. This includes the risks associated with maximum reasonably foreseeable accidents. The probabilities and consequences of maximum reasonably foreseeable transportation accidents are discussed and evaluated in Volume 1, Appendices D and I. Although the consequences of an accident of this type might be high, the probability of such an accident having high consequences is on the order of one chance in 10 million, and the consequences of most accidents, including those with a probability of occurring more frequently, would be less than those of the accidents analyzed.

With more than 50 years of radioactive material transportation in the commercial and government sector, there have been few transportation accidents involving radioactive materials, and these have resulted in little or no release of radioactivity. Nonetheless, emergency response teams are trained and ready throughout the United States to respond quickly in the event of a transportation accident. DOE recognizes the importance of preparedness for potential accidents involving transportation of SNF. DOE, DOT, and the Federal Emergency Management Agency (FEMA) provide training and materials to local emergency responders to prepare them to handle accidents properly. DOE provides for Radiological Assistance Program teams, which consist of trained experts equipped and prepared to quickly respond to an accident, and assist local emergency response personnel if requested. This response network, along with other preventive safety measures, such as shipping container design and testing, and adherence to stringent regulations, supports the continued safe shipping of SNF.

SNF shipping containers that could be handled by longshore workers are designed to meet national and international standards for safety, including radiation levels at the outside of the containers.

This EIS analyzes transportation from ports of entry. The potential for radiological exposures to longshore workers is within the scope of the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft).

As stated in this EIS, the Atomic Energy Act of 1954 authorizes DOE to establish standards to protect health and minimize dangers to life and property. Radiation protection standards are based on controlling radioactive releases to as low as reasonably achievable (ALARA) levels in recognition of the potential health risk associated with exposure to radiation. In addition, DOE adopted and enforces the occupational, safety, and health protection requirements that are equivalent to those issued by the Federal Occupational Safety and Health Administration (OSHA). DOE designs, locates, constructs, and operates its facilities in a way that provides a level of safety that is within the safety requirements for workers in private industry for all comparable job categories, including high-hazard occupations such as construction. Analyses are discussed in Volume 1, section 5.1.1; Volume 1, Appendices A through D, Chapter 4, and Volume 2, section 5.12. Health and Safety sections of both volumes of the EIS evaluate both radiological and nonradiological impacts to the health of workers at DOE facilities. For all alternatives, impacts would be small. The Navy complies with OSHA regulations in the nonradiological occupational safety, health, and occupational medicine area.

05.10 (067) Safety and Health Effects
COMMENT
The commenter suggests that a caveat be added to Appendix F to show that exposure from the maximum reasonable foreseeable accident is in addition to exposure from natural background radiation.
RESPONSE
Volume 1, Appendix F has been changed to reflect the commentor's suggestion.

05.10.1 Worker

05.10.01 (001) Worker
COMMENT
The commentor states that chemical exposure risks are not included in the analysis of on-site transportation impacts for hazardous chemicals at the Nevada Test Site.
RESPONSE
Chemical exposure risks associated with on-site transportation are associated only with transportation accidents, because, during normal transportation, the chemicals are in sealed containers. Volume 1, Appendix F, Part Two, section 5.11.1 states that the transportation accident risk is bounded by the risk evaluated for the chemical spill accident at the Expended Core Facility in Volume 1, Appendix D.

05.10.01 (002) Worker
COMMENT
The commentor, quoting a passage from Volume 2, which states that "industrial hygiene practices assure hearing protection for all workers," asks whether Idaho National Engineering Laboratory procedures cover all site employees. The commentor suggests that if they do, no effort has been made to ensure protection of all site workers.
RESPONSE
INEL procedures cover all workers for all operations. DOE Orders are used to enforce standards at DOE sites. DOE Order 5480.4, Environmental Protection, Safety, and Health Protection Standards, specifies
mandatory compliance with Title 29 CFR 1910, Occupational Safety and Health. DOE Order 5483.1A, Occupational Safety and Health Program for DOE Contractor Employees at Government-Owned, Contractor-Operated Facilities, provides additional guidance for DOE contractor employees at government-owned, contractor-operated facilities and specifically requires compliance with OSHA hearing protection requirements.

05.10.01 (003) Worker

COMMENT
The commenter suggests that workers may not be safe near leaking radioactive containers, such as the leaking tanks at the Hanford Site, while an effort is made to stop the source of the leaks.

RESPONSE
DOE considers worker safety in its planning before performing any work in a radiation environment. The DOE policy regarding worker exposure to radioactivity is to minimize the exposure to the lowest level that is reasonably achievable. Radiation workers are intensively trained and follow rigorous operational procedures to ensure safety. Also, workers have the authority to stop any work if they believe conditions are unsafe. Work is not resumed until conditions are declared safe.

05.10.01 (004) Worker

COMMENT
Commenters raise issues about the health and safety of the workers at DOE and Navy facilities.

RESPONSE
As stated in the EIS, the Atomic Energy Act of 1954 authorizes DOE to establish standards to protect health and minimize dangers to life and property. Radiation protection standards are based on controlling radioactive releases to as low as reasonably achievable (ALARA) levels in recognition of the potential health risk associated with exposure to radiation. In addition, DOE adopted and enforces the occupational, safety, and health protection requirements that are equivalent to those issued by OSHA. DOE designs, locates, constructs, and operates its facilities in a way that provides a level of safety that is within the safety requirements for workers in private industry for all comparable job categories, including high-hazard occupations such as construction. Analyses are discussed in Volume 1, section 5.1.1; Volume 1, Appendices A through D, Chapter 4; and Volume 2, section 5.12. Health and Safety sections of both volumes of the EIS evaluate radiological and nonradiological impacts to the health of workers at DOE facilities. For all alternatives, impacts would be small. In the nonradiological occupational safety, health, and occupational medicine area, the Navy complies with OSHA regulations.

05.10.01 (005) Worker

COMMENT
Commentators raise the issue of potential radiation exposure to longshore workers in the Port of Seattle.

RESPONSE
SNF shipping containers that could be handled by longshore workers are designed to meet national and international standards for safety, including radiation levels at the outside of the containers. This EIS analyses transportation from ports of entry. The potential for radiological exposures to longshore workers is within the scope of the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel.

05.10.01 (006) Worker

COMMENT
The commenter states that not all adverse properties of toxic and radioactive materials to which workers may be exposed are addressed in the EIS.

RESPONSE
The risk of contracting fatal cancers from exposure to radiation was used as a measure of impact to public health throughout the EIS to provide a consistent document and to allow ready comparison with other health impacts, such as those from exposure to chemical carcinogens. When nonfatal health effects and genetic effects from radiation are included in the analysis, the lifetime risk increases from 3E-4 per rem of exposure for fatal cancers to 7.3E-4 per rem of exposure for all health effects combined. The risk factors for these health effects are provided in Volume 2, Appendix F-4.

The risk factors for cancer induction used in the EIS have been taken from the most recent International Commission on Radiological Protection recommendations (1990 Recommendations of the International Commission of Radiological Protection), which reflect the most recent and most widely accepted analysis of all currently available data. The authors reviewed all available studies. Volume 2, Appendix A of this EIS provides a useful primer on radioactivity and radiation dose. Volume 2, Appendix F-4 provides a discussion of how radiation doses were calculated and how cancer risks were estimated.

Analysis of exposure of workers to toxic materials is addressed in Volume 2, sections 5.7 and 5.12. The inventory of potential chemical releases at INEL was reviewed and all potentially toxic materials were included in the analysis, even those that are only suspected of having adverse health effects. In addition, the records of all reported occupational injuries and illnesses, regardless of cause, were used to estimate potential future health impacts to workers.
05.10.01 (007) Worker
COMMENT
The commentor notes that Volume 1, section 4.12.1 does not mention anything about worker health and safety beyond radiation exposure and that there have been quite a number of off normal and unusual occurrences at the 100-K area fuel storage basins and spent nuclear fuel storage areas each year. The commentor suggests that occurrences for the last 5 years at the Hanford Site be summarized in the EIS.
RESPONSE
The EIS has been changed to provide additional worker safety and health information.

05.10.01 (008) Worker
COMMENT
The commentor indicates that Idaho National Engineering Laboratory workers would not accept significant risks just to have a job.
RESPONSE
DOE is formally committed to protecting the safety and health of its workers, the public, and the environment. See the response to comment 05.10.01 (004).

05.10.01 (009) Worker
COMMENT
Commentors suggest that potential impacts to workers are deemphasized because they are reported in various sections of the document rather than in one place, and noted that the EIS did not identify the names and affiliations of those who prepared the various sections.
RESPONSE
EIS preparers, their affiliations, their education, and their years of experience are identified in Volumes 1 and 2, Chapter 6. DOE is solely responsible for the preparation and content of the EIS, whether in draft or final form. Although various consultants assisted DOE in preparing this document, DOE provided final technical review and approval of the document.

05.10.01 (028) Worker
COMMENT
The commentor suggests that the national average value for radiation doses from radon may not be the best value to use in describing the Oak Ridge Reservation area.
RESPONSE
Radon doses were included as part of the description of natural background radiation. Doses from radon vary widely at individual locations, as well as across the nation. Results from individual surveys, even at specific locations, change with time due to a variety of factors. Therefore, national average values are the most useful for describing natural background from radon under most circumstances.

05.10.01 (029) Worker
COMMENT
The commentor notes that estimated radiation doses for one alternative appear to exceed the DOE occupational administrative control level, and suggests a lower standard be applied.
RESPONSE
The purpose of the EIS is to evaluate the potential impacts from proposed activities. For this reason, assumptions were made to ensure that estimated doses are conservatively high and represent an upper bound of potential impacts. Although conservatively high, the analysis shows potential radiation dose for the alternative in question would remain within legal limits for occupational exposure. The EIS is not intended to substitute for the assessments required by regulations or by DOE Orders. Any facilities constructed or operated under the chosen alternative will comply with applicable requirements.

05.10.01 (030) Worker
COMMENT
The commentor states that the EIS does not adequately address worker fatalities from operations and accident conditions as a basis for comparing alternatives.
RESPONSE
Volume 1, Chapter 5 discusses the disciplines studied that result in potential impacts and that are of general interest, or may help discriminate among sites. The impacts from radiation exposures resulting from operations and accident conditions were analyzed for all alternatives contained in the EIS. The data are summarized in Volume 1, Appendix K, Table K-2.

05.10.01 (031) Worker
COMMENT
The commentor states that contamination as a result of past nuclear weapons activities has resulted in potential health and safety threats to many defense workers and surrounding communities.
RESPONSE
DOE's policy is to identify and correct and inadequate practices concerning safety and health arising from past or present operation of its facilities. DOE, with the assistance of other agencies and Congress, has initiated many in-depth investigations into these potential health and safety concerns and is implementing corrective actions as soon as possible in cooperation with the respective stakeholders,
within existing budgetary constituents. Detailed descriptions of the events concerning prior accidents or releases are outside the scope of the EIS.

5.10.2 Public

05.10.02 (001) Public

COMMENT

The commentor states the source term inventories in Volume 1, Appendix I-20 to I-23, are incomplete and that no explanation was found to account for how the list was reduced. The commentor further states that spent nuclear fuel typically contains a large number of fission products and their progeny and, for modeling purposes, the list is often truncated by combining certain parent-daughter isotopes or by eliminating the minor contributors to dose.

RESPONSE

In some cases to facilitate modeling, the radionuclide distributions for representative SNF types were truncated to eliminate minor contributors to dose. The radionuclides eliminated accounted for less than 1 percent of the total dose. Volume 1, Appendix I has been revised to clarify this point. Supporting information is contained in documents referenced in Volume 1, Appendix I.

05.10.02 (002) Public

COMMENT

Commentors express a lack of confidence in the transportation analyses because there is insufficient detail in the EIS to explain how the numbers were obtained. For example, one commentor wants to know why centralization at the Idaho National Engineering Laboratory requires fewer shipments than centralization at the Hanford Site, when 80 percent of DOE spent nuclear fuel is already at the Hanford Site. Questions also arise regarding the verification and testing of computer codes used in the EIS. Several commentors question the transportation accident probabilities used and are concerned about the potential for transportation accidents caused by substance abusers. Additionally, commentors question whether health effects of individuals in Idaho transportation corridor cities have been evaluated.

RESPONSE

Volume 1, Appendix I summarizes the methodologies, key data, assumptions, and results of calculations for the transportation analyses. Details on the methodology, computer programs, modeling parameters, and calculations are contained in supporting technical documents that are referenced in the EIS. For example, in Volume 1, Appendix I, DOE Complex Wide Spent Nuclear Fuel Shipment Estimates for the DOE Programmatic Spent Nuclear Fuel Management Environmental Impact Statement, is referenced for details on fuel transportation. Therein it is noted that the Hanford fuel shipping cask holds 1.8 tons of fuel, whereas most of the INEL fuel is shipped in casks holding only 25 kilograms of fuel. Hence, there are fewer shipments of fuel required to move fuel from INEL to Hanford than from Hanford to INEL.

The supporting technical detail is so extensive that it could not physically accompany the EIS. However, these supporting technical documents are available in the in the reading rooms and information locations identified in the EIS.

The computer codes used in the transportation analyses included the generally accepted transportation impact assessment programs RADTRAN 4 and RISKIND, and the generally accepted transportation routing computer codes HIGHWAY and INTERLINE. These computer codes have been used by Federal agencies in numerous EISs, environmental assessments, and other analyses. The computer codes have undergone rigorous independent review and were determined to be adequate for use in the transportation analyses. The computer codes were also chosen to be complementary in order to balance treatment of the potential consequences with risks of transportation.

The derivation of the transportation accident probabilities is described in Volume 1, Appendix I. The accident probabilities used in the EIS are based on historical statistics observed in the truck and rail industries and account for many phenomena, such as weather, road conditions, and substance abuse.

The transportation analysis evaluated shipments from their point of origin to their destination. The accident-free and accident risk transportation analyses are presented for the entire route, which included Idaho, if a shipment happened to travel through, originate, or terminate in Idaho.

The accident consequence analyses are presented for transportation accidents with probabilities of occurrence exceeding 1E-7 per year. The results are for various combinations of population categories (i.e., rural, urban, and suburban) and meteorology. Results were not given for specific towns or cities because of the large number of towns and cities along a transportation route in which an accident could occur. Instead, the results were presented for accidents in various population density zones, such as rural, suburban, and urban. To determine which accident corresponds to their town or city, reviewers would match their particular population density zone to a population zone analyzed in the EIS. For example, to find the consequences of a transportation accident in a suburban area such as Idaho Falls or Pocatello, the reviewer would look up the consequences of an accident in a suburban area. these consequences would be representative of the consequences in Idaho Falls or Pocatello.
COMMENT

05.10.02 (003) Public

The commentor notes that transportation impacts are underestimated and that transportation risks have been trivialized by the comparison with traffic fatalities.

RESPONSE

Analyses in the transportation sections of both volumes of the EIS evaluated potential impacts to workers and the public from the transportation of radioactive material using models, data, and assumptions that were chosen to overestimate the actual impacts of transportation. For all alternatives, the potential risks from transportation would be small.

The comparison of transportation risks with traffic fatalities is appropriate because the overwhelming risk from vehicular transportation accidents is from traffic fatalities that are not associated with the release of radioactive material or exposure to radionuclides released during a transportation accident. The comparison is needed to provide some point of reference or perspective for the risks associated with SNF management. There was no intention to trivialize transportation risks.

05.10.02 (004) Public

COMMENT

The commentor states that the transportation assessment for the waste being sent offsite for incineration is not identified and may present cumulative impacts and waste management concerns for the residuals that are not analyzed in the EIS.

RESPONSE

The comment refers to Volume 2, section 2.2.7, which discusses off-site incineration and return of residuals to INEL as one of the existing options for treating low-level waste generated at INEL. This section does not discuss the transportation assessment for shipping waste offsite for treatment. The transportation assessment is included in Volume 2, section 5.11. Volume 2, Table 5.11-4 summarizes anticipated waste shipments associated with each alternative, including shipments from INEL to an unspecified private-sector facility. To bound the transportation assessment, the private-sector facility was assumed to be located in the southeastern United States, which maximizes the shipping mileage. Both the incident-free and transportation accident analyses include the assessment of waste shipped offsite for treatment. These were also included in the cumulative impact analyses.

05.10.02 (005) Public

COMMENT

The commentor questions the use of average annual risk for transportation impacts when there may be a large difference in the number of yearly shipments.

RESPONSE

The total cumulative risks from transportation for the period 1995 through 2035 are presented in Volume 1, Chapter 5 of the EIS. The total cumulative risk accounts for all years, including years when the number of shipments is low and years when the number of shipments is high; however, the annual validation in the shipping rates is not expected to be large, so the average annual rate was considered the most accurate.

The EIS Summary has been changed to add clarifying words as agreed with EPA.

05.10.02 (006) Public

COMMENT

The commentor expresses an opinion that contractors at the Hanford Site are in a conflict of interest situation and their assessment of contamination of the Columbia River lacks credibility.

RESPONSE

This specific issue discussed is not within the scope of this EIS; however it is the policy of the DOE and other Federal agencies to ensure that their contractors are not placed in or allowed to operate in conflict of interest situations. This EIS was thoroughly reviewed by DOE technical experts to ensure that it is factual and accurate. See also the response to comment 03.03 (008) regarding DOE credibility.

05.10.02 (007) Public

COMMENT

Commentors express general fears about the "dangers" of nuclear power; about residing near nuclear waste, spent nuclear fuel, and/or radioactivity; and what they breathe, drink, and eat. Some commentors cite recent health concerns with their families or neighbors, or the effect on property values if an incident should occur.

RESPONSE

DOE is aware of general public fears regarding radiation and radioactivity. The EIS analyzes the cumulative effect of DOE and Navy operations at the 10 candidate sites for SNF management activities. The EIS concludes that there is no significant risk due to operations or reasonably foreseeable accidents involving SNF management, including transportation at any of the candidate sites. See also the response to comment 05.15 (005) regarding property values.
COMMENT
The commentor states that public exposures from past releases such as the accidental criticality in 1978 are unknown.

RESPONSE
Radiation exposures resulting from past accidents, including the 1978 accidental criticality, have been assessed as cited in *Idaho National Engineering Laboratory Historical Dose Evaluation*. This report is cited as a reference in Volume 2, section 5.14.1.

The 1978 accident involved an unplanned nuclear chain reaction at the Idaho Chemical Processing Plant shielded hot cell. The incident lead to an estimated release of 620 curies, resulting in an effective radiation dose of less than 0.1 millirem to the general public. There were no on-site or off-site fatalities or injuries.

COMMENT
The commentor states that while sodium does not have a maximum contaminant level, it does have a recommended level and does have an effect on humans.

RESPONSE
Although sodium levels exceed the recommended levels in isolated groundwater areas of INEL, sodium disposal has decreased in recent years. Sodium levels are shown on Table 2-4 in the Water Resources Engineering Design File, available in reading rooms and information locations listed in the EIS. Sodium concentrations in the Snake River Plain aquifer are at or below background concentrations at the INEL boundary. There are no increased effects on off-site populations from sodium in groundwater at INEL. On-site groundwater used for human consumption complies with drinking water quality standards established in the Safe Drinking Water Act.

COMMENT
The commentor does not want to receive indirect exposure from radioactive contamination in the food chain.

RESPONSE
The EIS evaluates the potential indirect exposure from contamination in the food chain; and concludes that the risks of radiation exposure to the public and to workers would be small for all alternatives. This is based on evaluations of operations and analyses of potential facility and transportation accidents. The sections in the EIS that cover public safety include Volume 1, Summary, Public and Worker Health Effects; Volume 1, sections 5.7.10 and 5.7.12; Volume 1, Appendices A through F, sections on Occupational and Public Health and Safety, and Facility and Transportation Accidents; Volume 2, Summary, Accident section; and Volume 2, sections 3.3.11, 3.3.13, and 4.11.4.

COMMENT
The commentor states that probabilistic risk assessments are unreliable and should not be used to assess radiological risks to the public or as the basis for decisions.

RESPONSE
The accident analyses in the EIS used combinations of deterministic and probabilistic risk assessments. Deterministic assessments are based on inductive reasoning wherein the analyst evaluates the response to proposed initiating events such as equipment failures, human failures, and natural phenomena. Probabilistic assessments are based on deductive reasoning wherein the analyst assumes an end result (such as the release of radioactive materials from a facility) and then evaluates the necessary conditions required to produce the assumed result. Risk professionals and analysts consider these techniques important and complementary. In the EIS, reasonably foreseeable accidents over a range of likelihood were analyzed using these techniques. The EIS concludes that risk to workers and the public would be small for all the alternatives considered.

COMMENT
The commentor states that public health analyses may not be adequate due to the lack of specific waste and materials characterization.

RESPONSE
Many sites are preparing separate EISs on waste management, including SRS and Hanford. Appropriate waste characterization will be analyzed for impacts to public health in those EISs.

Volume 1 of this EIS covers SNF management. Radiological impacts are addressed in greater detail because these impacts are of greatest significance in managing this material, and are of particular interest to the public.

DOE has added better references to Volume 2 to characterize waste streams and has added additional mapping to those references.
05.10.02 (013) Public
COMMENT
The commentor asks why the time period for obtaining occupational injury and illness rates for DOE and its contractors differs from that for private industry.

RESPONSE
The evaluation in the EIS is based on the latest available reported data from each source. The time periods for obtaining occupational injury and illness rates differ because DOE and the National Safety Council report their data at different intervals.

05.10.02 (014) Public
COMMENT
The commentor states that the analysis of worker doses emphasizes large accidents and does not explicitly address smaller events, such as unscheduled maintenance, that may give high doses to workers. The commentor asks if these are included under routine operations.

RESPONSE
As discussed in Volume 1, Appendix F, Parts Two and Part Three, section 5.15, the accident analysis considered a range of events from comparatively frequent operational upsets to very rare events. Within each range of frequency, accidents with the most severe potential consequences were assessed. Therefore, the accident analysis evaluates the upper bound of consequences for the smaller, more likely events described by the commentor. In addition, these smaller events are included in the evaluation of operations conditions. Potential impacts to workers from operations are based on historical dosimetry records. These records include any doses from unscheduled maintenance and other high-dose activities that appear in the dosimetry database. (See also Volume 1, sections 3.3.2 and 5.1.1 and Appendices A through F.)

05.10.02 (015) Public
COMMENT
The commentor finds a paragraph on radiological health effects difficult to follow and requests rewording.

RESPONSE
Volume 1, Appendix F, Part Two, section 5.12 has been reworded to clarify its meaning.

05.10.02 (016) Public
COMMENT
Commentors raise questions about state that the EIS did not adequately discuss the health and safety of the public and environment as a result of operating facilities.

RESPONSE
Volume 1, Chapter 5 and Volume 2, Chapter 5 discuss radiological and nonradiological impacts to the public relating to SNF management activities and environmental restoration and waste management activities at INEL. For all alternatives considered in this EIS, impacts would be small. The health and safety impacts to the public from the rest of DOE's operations are beyond the scope of this EIS.

05.10.02 (017) Public
COMMENT
Commentors state that radiological health impacts other than fatal cancer, total detriments, should be addressed in this EIS.

RESPONSE
Risk of fatal cancers from exposure to radiation was used as a measure of impact to public health throughout the EIS to provide a consistent document and to allow ready comparison with other health impacts, such as those from exposure to chemical carcinogens. Nonfatal health effects and genetic effects from radiation are a legitimate concern and are included in the EIS. Volume 1, section 5.1 has been changed to clarify fatal and nonfatal cancers and genetic effects.

The EIS analyzes the potential effects of radiation exposure do consider health effects other than cancer fatalities and are based on the standards of the International Commission on Radiological Protection. The term "health detriments" includes the total impact of all fatal cancers, nonfatal cancers, and genetic effects. The health detriments caused by any exposure to radiation are calculated by taking the sum of all these effects after multiplying each effect by a weighting factor intended to represent the severity the impact of each type of effect has on human health.

Volume 1, section 5.1 discusses the terminology and risk factors used by the International Commission on Radiological Protection, which are consistent with those used by NRC. These factors were applied in this EIS in calculating the effects on human health. Cancer fatalities were used to summarize and compare the results in the EIS, because this effect was viewed to be of the greatest interest to most people. The EIS states that the number of total health effects (deaths, nonfatal cancers, genetic effects, and other impacts on human health) may be obtained by multiplying the factor of 1.46 times the latent cancer fatalities.
05.10.02 (018) Public

COMMENT
The commentor questions the safety of spent nuclear fuel when in a shipping cask, and cites as an example the potential radiation exposure of 10 millirem per hour at 1 meter from the surface of the cask.

RESPONSE
The comparison of the 10 millirem radiation dose with a chest x-ray was intended to demonstrate how small the projected doses would be. DOE did not intend to imply that there would be therapeutic value associated with exposure to a shipping cask. In fact, members of the public are likely to receive a radiation dose of as much as 10 millirem because they would be at greater distances from the cask and exposed for much shorter periods of time.

05.10.02 (019) Public

COMMENT
The commentor presents the question of radiation dose and risk impact in Volume 1, Appendix D, Table 3-1 as an example and states that as radiation exposure doubles, the chance of cancer-related deaths increases by approximately a factor of 10.

RESPONSE
The comment is inaccurate. In Volume 1, Appendix D, Table 3-1, units are the lifetime risk of fatal cancer over the entire 40 years for the alternatives listed in the table. The numbers are not in units of millirem per hour.

05.10.02 (020) Public

COMMENT
Commentors suggest that estimated releases from proposed facilities are too near the 10-millirem per year dose limit established under the National Emission Standard for Hazardous Air Pollutants, and controls should be implemented to reduce the dose to as low as reasonably achievable.

RESPONSE
The purpose of the EIS is to evaluate the potential environmental impacts from proposed activities. For this reason, assumptions were made to ensure that estimated doses are conservatively high and represent an upper bound of potential impacts. The EIS is not intended to substitute for the assessments required under the National Emission Standard for Hazardous Air Pollutants or any other regulatory requirement. Any facilities constructed or operated under the chosen alternative will comply with applicable regulatory requirements, including assessments of radiation doses under the National Emission Standard for Hazardous Air Pollutants.

05.10.02 (021) Public

COMMENT
The commentor expresses an opinion that DOE is not fully committed to protecting public health and safety.

RESPONSE
The Secretary of Energy has publicly affirmed that DOE policy and practice now place safety and environmental considerations above other program goals. DOE is working as expeditiously as possible to rectify and eliminate adverse environmental impacts as a result of previous practices. DOE is formally committed to protecting the safety and health of its workers and the public, and to protecting the environment. DOE intends to design, construct, and operate all proposed facilities in a way that provides a level of safety and of safety assurance that complies with applicable Federal, state, and local requirements and DOE Orders.

05.10.02 (022) Public

COMMENT
The commentor questions whether the environmental, safety, and health effects to the air and water from radioactive releases from the K-basins have been adequately considered.

RESPONSE
The health effects for members of the public from radioactive releases are described in Volume 1, Appendix A, section 4.12.2. This section describes the environmental monitoring and the dose consequences to the public from the Hanford Site. Volume 1, Appendix A, section 5.7.1 discusses the releases and dose consequences to the public from current activities at specific facilities, including the K-basins.

05.10.02 (023) Public

COMMENT
The commentor questions whether public health impacts are underestimated in the EIS.

RESPONSE
DOE believes that conservative analyses have been used to estimate public health impacts and risks. Discussion of this matter has been added to the EIS. The environmental impact analyses are designed to produce a reasonable projection of the upper bound for potential environmental consequences. This requires the use of appropriately conservative assumptions and analytical approaches. In this context, "conservative" means that an assumption or analysis would tend to overproduce, rather than underpredict, any adverse impacts. However, overly conservative analyses do not provide a useful basis for comparing alternatives. Therefore, the aim has been to avoid over conservatism and base the
environmental impact analyses on realistic, site-specific information wherever possible. Each alternative has been analyzed using similar methods and levels of conservatism so that the relative impacts of alternatives can be accurately assessed.

The analysis of the impacts of operations and hypothetical accidents are based on calculations that require two elements: input data and a model or analytical method for projecting potential impacts. These elements necessarily introduce some uncertainty in the estimated level of impacts on the environment. The nature of the input data for each analysis is slightly different. Socioeconomic analyses are based on projected budgets, for example, while air resources analyses are based on estimated releases of pollutants. The analytical models are also fundamentally different for similar reasons. Therefore, the exact degree of uncertainty varies among the analyses in the EIS. However, for all analyses where conservative assumptions have been required, generally accepted engineering and scientific approaches have been used to ensure that these assumptions are not outside the range of uncertainty usually associated with the data.

Detailed uncertainty analyses can sometimes be used to evaluate environmental impacts. They are particularly valuable when projected impacts are large and it is important to know how reliable the projections are. However, quantitative estimates of uncertainty in impacts for hypothetical future activities are difficult to determine. When appropriately conservative estimates of impacts are shown to be small, the exact degree of uncertainty diminishes in importance. The estimated impacts in this EIS are small enough that detailed quantitative uncertainty analyses are not necessary to provide a meaningful understanding of potential consequences.

05.10.02 (024) Public
COMMENT
The commenter notes that EIS doses reported in rem are not defined as either "committed effective dose equivalent" or "total effective dose equivalent."

RESPONSE
For readability, the generic term "dose" is used throughout the EIS in place of the more technically correct terms "committed effective dose equivalent" (CEDE) or "total effective dose equivalent" (TEDE). In general, the doses reported in the EIS are TEDE. That is, the reported dose accounts for the effective dose equivalent (EDE) from external radiation sources as well as the 50-year CEDE from internal radiation sources. For the accident analyses in the EIS, the TEDE is generally dominated by the CEDE from the inhalation and ingestion pathways. On the other hand, occupational doses from

operations are almost entirely EDE. In either case, it is appropriate to identify these doses as TEDE, provided that doses from both external and internal pathways are accounted for.

05.10.02 (025) Public
COMMENT
The commenter states that Volume 2, section 4.7.3 overestimates the significance of natural background radiation when compared with other exposures and that exposures that are a small fraction of background radiation are not necessarily "acceptable" because the public is usually unaware of the risks associated with fluctuations in exposure to background radiation.

RESPONSE
Volume 2, section 4.7.3 presents a comparison of doses from INEL activities to background. There is no attempt to call these doses acceptable.

05.10.02 (026) Public
COMMENT
The commenter asks if multiple sclerosis was included in the health effects studied relative to the Idaho National Engineering Laboratory or anywhere else.

RESPONSE
Multiple sclerosis was not one of the health effects studied for INEL or any of the other sites. The health effects considered were the ones generally associated with exposures to radiation or chemicals. These health effects are the clearest indications of the effects of DOE activities discussed in the EIS. Studies of the effects of radiation exposure have not indicated any association between radiation exposure and multiple sclerosis. Multiple sclerosis has been studied by medical researchers. For more information, contact the Multiple Sclerosis Society at 800-624-8236.

05.10.02 (027) Public
COMMENT
The commenter suggests that, with regard to incident-free transportation calculation of fatalities, there may be an oversimplification in either the radiological or the nonradiological models based on differences observed in the range of results presented.

RESPONSE
DOE has reviewed the models used for incident-free transportation calculations for both radiological and nonradiological fatalities and has not identified any over-simplifications. The basis for the commentor's conclusion is apparently a comparison of the range between truck fatalities and rail fatalities for the
general population presented in Tables 1-15 to 1-19 of Appendix I. Radiological and nonradiological fatalities include both fatalities for the general population and for workers.

05.10.02 (028) Public
COMMENT
The commentor objects to the characterization of a 34-percent increase in cancer risk as "minimal."
RESPONSE
The term "minimal" relates to the overall risk from operations of SNF facilities at ORR. Even with the 34-percent increase in risk cited by the commentor, the number of fatal cancers from all sources resulting from 1 year of operations would be 2.9 x 10-2. In other words, a 34-percent increase in a very small number is still a very small number.

5.11 Accidents/Releases

05.11 (001) Accidents/Releases
COMMENT
The commentor is concerned about the effects from even small accidents.
RESPONSE
Volume 1, Chapters 3 and 5 and Appendices A through F; and Volume 2, Chapters 3 and 5 and Appendix F discuss risks to the public, workers and the environment due to a range of large to small accidents. The discussions include extensive evaluations and analyses of accidents. Small accidents have been included in the analysis, particularly if they have a high probability of occurring. The EIS shows that the risk to workers and the public from all accidents would be small for all of the alternatives considered.

05.11 (002) Accidents/Releases
COMMENT
The commentor states that, although there are no known disasters in handling of the nuclear waste as it exists, no one can say that a disaster will not be created.
RESPONSE
Volume 1, Chapters 3 and 5 and Appendices A through F; and Volume 2, Chapters 3 and 5 and Appendix F, discuss risks to the public, workers, and the environment due to facility and transportation accidents, including SNF- handling accidents. The EIS analyses also evaluate the potential consequences of these accidents. These analyses have been extensively reviewed. The EIS shows that the risk to workers and the public from such accidents would be small for all alternatives considered.

05.11 (003) Accidents/Releases
COMMENT
The commentor questions the rationale of including analysis of a spent nuclear fuel transportation accident involving a release of large amounts of radioactive materials, as the historic record of spent nuclear fuel transportation accident shows no such releases.
RESPONSE
DOE agrees with the commentor's assessment of the historical safety record for SNF transportation activities. Consequently, DOE assigned a probability of 1 x 10-7 (one in one million) per year for potential SNF transportation accidents accompanied by a large release of radioactivity.

05.11 (005) Accidents/Releases
COMMENT
The commentor suggested that a rural population would represent a "best case scenario" not a "worst case scenario" in the event of a release from containment at the Oak Ridge site.
RESPONSE
This comment concerns the description of the existing socioeconomic conditions provided in Volume 1, Chapter 4. These generalized population distributions were not used in accident assessments. For facility accident assessments, as discussed in Volume 1, Appendix F, Part Three, section 5.15, actual population distributions in the most populous sector were used to maximize potential radiation doses to the population.

5.11.1 Facility Operations

05.11.01 (001) Operation
COMMENT
The commentor states that DOE should more fully study the potential effect of mass leakage and failure of storage tanks at the Idaho National Engineering Laboratory regarding impacts on all life forms downstream, downwind, and on the site.
RESPONSE
The evaluation of facility accidents in the EIS considered a range of large to small accidents, including maximum reasonably foreseeable accidents. Reasonably foreseeable accidents as defined in Recommendations for the Preparation of Environmental Assessments and Environmental Impact Statements include those for which impacts may have very large or catastrophic consequences. Volume 2, Chapters 3 and 5 and Appendix F discuss risks to the public, workers, and the environment (i.e.,
secondary impacts) due to facility accidents. The EIS shows that risks from accidents would be small for all of the alternatives considered.

The maximum reasonably foreseeable accident considered in the EIS with a potential impact to the Snake River Plain aquifer was the immediate release of 300,000 gallons of radioactive liquid from a high-level waste tank at the Idaho Chemical Processing Plant. The assessment, discussed in Volume 2, section 5.14, shows that the impacts to the aquifer would be small; for example, drinking water standards are not exceeded at the site boundary. No adverse impacts to other life forms would be expected as a result of this accident.

Also discussed in Volume 2, section 5.14 is the maximum reasonably foreseeable accident that would result in an airborne release of radioactive or hazardous material at INEL. This event was a severe earthquake at the Argonne National Laboratory-West Hot Fuel Examination Facility. As shown in Volume 2, Table 5.14-4, should such an incident occur, a potential exists for limited adverse effects to vegetation or wildlife onsite or downwind of the facility. No impacts would be expected to endangered or threatened species for this or any other reasonably foreseeable accident.

05.11.01 (002) Operation

COMMENT

Commentors state that there are significant safety problems at the Idaho National Engineering Laboratory, including historical accidents, and operational incidents.

RESPONSE

DOE's accident history at INEL has been compared with other industries, as summarized in Volume 2, section 5.14.1. This comparison shows that the accident rate at INEL is lower than that for comparable private industrial work. Past accidents were analyzed in Idaho National Engineering Laboratory Historical Dose Evaluation, and reasonably foreseeable accidents were analyzed in Accident Assessments for Idaho National Engineering Laboratory Facilities. Protection of members of the general public and workers against accidents is considered by DOE in the design, location, construction, and operation of facilities. The EIS shows that the risk to workers and the public from facility accidents would be small for all of the alternatives considered.

05.11.01 (004) Operation

COMMENT

The commentor states that the work-day population of the Idaho Chemical Processing Plant is more than 1,000, and that DOE does not explain why a lower number of workers was used in the assessment of a potential collapse of the main stack caused by an earthquake.

RESPONSE

A seismic event large enough to cause a stack collapse would clearly initiate an emergency response. Workers would either take cover or evacuate as directed by the emergency response announcements. A qualitative assessment of the number of workers either within the range of the stack collapse or whose normal evacuation path might be impeded by debris from the stack collapse indicated that about 50 workers could be affected.

05.11.01 (005) Operation

COMMENT

The commentor states that the more material that exists at a particular location, the more likely a spill or accident will occur.

RESPONSE

DOE agrees with the comment. The likelihood of accidents as assessed in the EIS depends in part on the handling rate and the amount of waste. Both of these considerations were included in the accident analyses discussed in Volume 1, site-specific Appendices A through F, and Volume 2, section 5.14.

05.11.01 (006) Operation

COMMENT

The commentor states that the analysis associated with a radiological release following an earthquake-induced accident at the Idaho National Engineering Laboratory should include possible releases to the Snake River Plain aquifer.

RESPONSE

In terms of the consequences to the Snake River Plain aquifer, the maximum reasonably foreseeable accident analyzed with a potential impact was a release of the entire contents of a high-level waste tank at the Idaho Chemical Processing Plant. This potential accident is discussed in Volume 2, section 5.14 and Appendix F-5. The analysis assumed a seismic event of sufficient magnitude to cause one or more tanks to fail, and 300,000 gallons of high-level waste to be released to the soil beneath the tank farm. Modeling of migration of contaminants into the aquifer showed that even without any mitigation measures, the maximum concentration of radionuclides at the nearest site boundary was within requirements of safe drinking water standards.
The analyses of accidents described in Volume 1 and Volume 2 of this EIS include a range of accidents that might release radioactive material to the Snake River Plain aquifer or to the atmosphere. These analyses are described in Volume 1, Appendices B and D, and in Volume 2, section 5.14 and Appendix F. These analyses show the risks to the public and workers would be small for all of the alternatives considered.

05.11.01 (007) Operation

COMMENT

The commentor expresses the opinion that the fuel handling control systems at the Idaho Chemical Processing Plant are inadequate, and suggests the likelihood of a criticality may be higher than determined in the EIS, particularly as the Idaho National Engineering Laboratory consolidates, re-racks, and handles more spent fuel. The commentor states that a criticality accident at ICPP-666 would have an annual frequency closer to 1E-01 per year rather than 1E-03 per year. Thus, the commentor suggests that an evaluation of an inadvertent nuclear criticality in ICPP-666 is needed to complete the EIS.

RESPONSE

DOE established an estimated annual frequency for a criticality accident during SNF-handling operations in a water pool by consensus of a group of experts. To the knowledge of these experts, there has never been a criticality accident anywhere in the world during storage of SNF in a water pool. The consensus of the experts was that a frequency of 1E-4 events per year was a representative value for the probability of an accidental criticality in a water pool throughout all DOE SNF handling and storage operations. It was the consensus that controls in effect at a specific facility and the condition of fuel and equipment at that facility may justify the use of a larger or smaller value, but that overall the probability values should fall in the range of 1E-03 to 1E-05 events per year. Detailed review of the EIS would reveal that this range has been used to describe the frequency of this accident in specific facilities.

Based on this consensus, the estimated annual frequency for a criticality accident at ICPP-666 was selected as 1E-03 per year in Volume 1, Appendix B. The higher frequency of occurrence was selected because of the storage arrangement, and the type, age, and condition of fuel in ICPP-603. ICPP-666 is a newer facility and storage arrangements for fuel in ICPP-666 are better than for fuel in ICPP-603. It would therefore be expected that the frequency of occurrence of an accidental criticality in ICPP-666 would be smaller than in ICPP-603. Accordingly, a starting estimate of 1E-04 per year is more appropriate for ICPP-666.

ICPP-666 has a larger fuel inventory than ICPP-603. Methodology was established and is discussed in the EIS to adjust the frequency of occurrence for fuel inventories and for the number of fuel-handling operations. It was determined that a fuel inventory difference does not directly affect the frequency of occurrence of an inadvertent criticality, but only indirectly through an affect on the number of fuel-handling operations. The EIS states in Volume 1, Appendix B, section 5.1.5 that the number of fuel-handling operations will be approximately the same in the future as it was in the past. Accordingly, it is appropriate to use 1E-04 per year as the estimated frequency of occurrence of a criticality accident at ICPP-666.

The commentor also implies that receipt of more reactive Navy fuel would cause the likelihood of a criticality accident to increase. Because fuel is more reactive does not necessarily increase the frequency of occurrence of an inadvertent criticality. ICPP imposes additional administrative controls for handling more reactive fuel (e.g., when such fuel is being handled, only one module is allowed to be out of storage at a time). Thus, the frequency of occurrence of an inadvertent criticality for handling more reactive fuel at ICPP-666 remains on the order of 1E-04 per year.

The commentor states that 1) ICPP has not performed a detailed assessment of nuclear characteristics of fuel and ICPP-666 fuel-handling operations; 2) ICPP has not conducted comprehensive deterministic accident analyses of planned operations; and 3) ICPP has not developed and implemented an appropriate fuel control system. The commentor is incorrect. All of these actions were completed prior to shipment of fuel to ICPP-666.

The commentor further alleges that if SNF is consolidated at the Idaho National Engineering Laboratory, "there will be a much higher probability that an accidental nuclear criticality will occur than is suggested by the EIS." The results in the EIS for ICPP-603 represent the bounding inadvertent criticality event. The frequency of this event does not change for various alternatives, because movement of fuel from ICPP-603 would take place under all alternatives. If other fuels are consolidated at ICPP, ICPP-603 would not be used for storing that fuel. The frequency of occurrence of an inadvertent criticality accident may increase somewhat in another facility, either existing or yet to be built, for storage of the additional fuel. For example, the frequency of an inadvertent criticality in ICPP-666 may increase from 1E-04 to 1E-03 per year if all the consolidated fuel were handled there. Nevertheless, the bounding event under all alternatives is expected to be an event in ICPP-603 as stated in the EIS.
05.11.01 (008) Operation
COMMENT
The commentor states that the location selected for the potential spent nuclear fuel management facility at the Oak Ridge Reservation will be next to the Y-12 "walk-in pits," which contain shock-sensitive, pyrophoric chemicals.

RESPONSE
The Y-12 pits are actually 4 miles from the West Bear Creek Valley site selected for potential SNF management activities at ORR. The distance is accounted for in accident impacts and in cumulative impacts in the EIS, and no significant adverse environmental or health and safety impacts are reasonably foreseen as a result of the proximity of the Y-12 pits.

05.11.01 (009) Operation
COMMENT
The commentor asks for a description of the cask drop accident mentioned in Volume 1, section 5.1.

RESPONSE
The cask drop accident mentioned is a postulated scenario in which a cask holding SNF is dropped and overturned in the fuel transfer area of the 105-KE or 105-KW basins at the Hanford Site. As a result, broken spent fuel rods might spill out of the cask and onto the floor of the building, but away from the spent fuel pool. This accident is described in detail in Volume 1, Appendix A, section 1.1. Volume 1, section 5.1 of the EIS has been changed to correctly reference the cask drop accident.

05.11.01 (010) Operation
COMMENT
The commentor recommends clarifying how the estimated frequency of a fuel-handling accident at the Idaho National Engineering Laboratory, and the impacts associated with it, would change between the alternatives.

RESPONSE
The characteristics of accidents analyzed under each of the alternatives are adjusted through the use of scaling factors developed for both frequency and consequences (see Accident Assessments for Idaho National Engineering Laboratory Facilities). For example, the expected frequency of a handling accident involving SNF would be greater in the 1992/1993 Planning Basis alternative than the No Action alternative because of the increased number of handling events in the 1992/1993 Planning Basis alternative compared with the No Action alternative. But no adjustments to the consequences would be expected because the same type and amount of "material at risk" would be involved.

05.11.02 (001) Transportation
COMMENT
Commentors indicate the EIS failed to analyze transportation accidents while transporting spent nuclear fuel through inland waters of the United States.

RESPONSE
Volume 1, Appendix I has been expanded to include three additional shipping scenarios for transporting N-Reactor SNF from the Hanford Site to Sellafield, England, for processing. The scenarios include inland and U.S. territorial water barge transport of SNF and transoceanic shipment of SNF to Sellafield, England. Accident consequences are included for port activities as well as during ocean transit. Risk to workers and the public from these activities has been shown to be very small. This evaluation is performed as an example of reasonably foreseeable impacts. Analyses, impacts, and consequences of transporting foreign research reactor (FRR) SNF on the open seas to the United States is addressed in the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel.
05.11.02 (005) Transportation

COMMENT

Commentors suggest that the EIS describe the historical spent nuclear fuel accidents that occurred between 1971 and 1993 to determine if any had occurred in urban or suburban areas where the probability of an accident was noted by the EIS to be very low (less than 1 x 10\(^{-7}\) per year).

RESPONSE

The 1 x 10\(^{-7}\) per year probability cited by the commentors does not refer solely to the probability of an SNF accident; rather, it refers to the probability of an SNF accident accompanied by a large release of radioactivity. Based on the historical record, no SNF accidents in any areas (rural, suburban, or urban) have resulted in the release of large amounts of radioactivity.

05.11.02 (006) Transportation

COMMENT

The commentor notes that the EIS does not address the potential for shipboard fires and spread of contamination as a result of those fires, or the impact to emergency response personnel in port or at sea should a shipboard fire occur.

RESPONSE

The analysis of accidents, including shipboard fires, in ports and on ships, and the resulting impacts on emergency response personnel for FRR SNF is beyond the scope of this EIS. However, these types of accidents and their impacts are being addressed in a separate EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft) (FRR EIS), as well as a decision as to whether the United States will receive such SNF.

The criteria used to choose the ports of entry are outlined in the Notice of Intent for the FRR EIS (Federal Register Vol. 58, No. 202, October 21, 1993, pages 54336-54340). These criteria included: (a) adequacy of harbor and dock characteristics to satisfy the cask-carrying ship requirements, (b) availability of safe and secure lag storage, (c) adequacy of overland transportation systems from ports to the storage sites, (d) experience in safe and secure handling of hazardous cargo; (e) emergency preparedness status at the port and nearby communities: and (f) proximity to the proposed storage sites.

A range of alternative ports will also be analyzed in the FRR EIS. The decision regarding port selection will not be made until both this EIS and the FRR EIS are completed.

An analysis of a shipboard fire involving Naval SNF is included in Volume 1, Appendix D, Attachment F.

05.11.02 (007) Transportation

COMMENT

The commentor requests inclusion of a shipboard fire accident scenario in the EIS.

RESPONSE

Shipboard transport and handling of SNF is beyond the scope of this EIS. Policy alternatives for United States origin foreign research reactor SNF, and for its transport, receipt, handling, and storage are being addressed in a separate environmental impact statement (58 FR 54336). The FRR SNF EIS will assess impacts of marine transport and receipt of FRR SNF at six or more ports of entry. Incident-free operations and potential accidents, including a shipboard fire, will be evaluated.

An analysis of a shipboard fire involving Naval SNF is included in Volume 1, Appendix D, Attachment F.

05.11.02 (008) Transportation

COMMENT

Commentors raise the issue that transportation-accident health impacts to Tribal members and shipment inspectors along Interstate-15 through the Shoshone-Bannock Reservation are not included in the EIS.

RESPONSE

As discussed in Volume 1, section 5.11.2, radiological impacts for incident-free transportation have been determined for (1) crewmen (drivers) and (2) members of the public. The crewmen category refers to the drivers of the shipments, and the members of the public category includes Tribe members.

For incident-free transportation, the radiological effects a shipment inspector might receive are encompassed within the effects to a crewman or driver of shipments based on the intermittent time the inspector interacts with a shipment compared to the interaction time of the driver. The radiological health effects to the driver are based on the driver receiving radiological exposure, within DOT regulatory limits, while in the cab of the vehicle and during detailed inspections of the cargo and the vehicle carrying the radioactive material.

Incident-free radiological impacts to Tribe members for SNF and radioactive waste shipments through the reservation are encompassed in the existing EIS analyses for members of the public based on population density along a generic transport route.

A reservation-specific accident analysis would not provide information additional to the information provided in Volume 1, Appendices D and I for the programmatic alternatives considered in this EIS. The
probability of an accident occurring along a specific 20-mile segment of interstate highway during an SNF shipment is so small that it is beyond the range of analysis required for a programmatic EIS.

5.11.3 General

05.11.03 (001) General

COMMENT

The commentor states that previous releases and accidents at DOE sites were intentional and/or covered up. The commentor also discusses previous and potential releases of radioactivity and accidents at U.S. government sites.

RESPONSE

It is DOE policy to identify and correct any inadequate practices concerning safety and health arising from operation of its facilities. In this regard, accidents and accidental releases are required to be reported, and releases from DOE facilities under all operating conditions are included in annual monitoring reports. Detailed accounts of the events related to prior accidents or releases are outside the scope of the EIS. The EIS addresses the impacts of a number of reasonably foreseeable accidents related to SNF management, with no significant risk of health effects or environmental impacts identified. DOE has considered past, current, and reasonably foreseeable future activities in assessing the cumulative impacts, which would be small.

The environmental impact analyses are designed to produce a reasonable projection of the upper bound for potential environmental consequences. This requires the use of appropriately conservative assumptions and analytical approaches. In this context, "conservative" means that an assumption or analysis would tend to overproduce, rather than underpredict, any adverse impacts. However, overly conservative analyses do not provide a useful basis for comparison among alternatives.

05.11.03 (003) General

COMMENT

Commentors, when referring to the transportation discipline, state they are confused by the term "maximum reasonably foreseeable accident." For example, commentors state they wonder if this is equivalent to a worst-case accident and whether the EIS has evaluated such an accident. Commentors wonder what constitutes the maximum reasonably foreseeable accident, and commentors state they wonder how DOE would deal with such an accident if it occurred.

RESPONSE

The EIS evaluates two complementary aspects of the impacts from transportation accidents. The first aspect is the risk associated with transporting radioactive material; transportation risk takes into account the probabilities and consequences of a complete spectrum of transportation accidents (i.e., accidents with high probabilities and low consequences, to accidents with low probabilities and high consequences).

The second aspect is the consequence associated with a bad transportation accident. A worst-case accident is too subjective and statistically, has virtually no probability of occurring. Instead, the EIS analyzes an accident that better represents an accident that could occur, but one which has little chance of occurring. This kind of accident is termed the "maximum reasonably foreseeable accident." In accordance with DOE guidelines for accident analyses in EISs, this accident was chosen based on having a probability of about 1 x 10^-7 per year or about one in 10 million per year. This kind of accident is roughly comparable with what used to be called a worst-case accident, except that it is chosen based on a specific probability criterion (1 x 10^-7).

For most alternatives, an accident involving a rail shipping container containing SNF is the maximum reasonably foreseeable accident. The precise accident scenario that leads to the maximum reasonably foreseeable accident is not described because there are different combinations of fire and impact that could lead to the accident conditions. For example, a high-speed train collision with the shipping container followed by a high-temperature fire that lasts 2 to 3 hours could lead to these conditions, but there are also other combinations of fire and impact that could lead to the same conditions. Appendix I describes these various combinations.

The mitigation of transportation accidents may come either before or after the accident. Measures that are used before the accident include shipping the radioactive material in approved containers. For shipments containing large amounts of radioactive material, such as SNF, only containers that are specifically designed to withstand hypothetical accident conditions are used. In addition, transportation routes are also chosen to minimize the risk associated with transporting radioactive material. Measures that are used after a transportation accident include emergency response and EPA protective action guides that are designed to limit doses.

The EIS Summary was changed to clarify this concept.
COMMENT
The commenter asks about the impacts to the Idaho agricultural industry resulting from accidental releases of hazardous materials to the air or to groundwater.

RESPONSE
Volume 1, Chapters 3 and 5 and Appendices A through F, and Volume 2, Chapters 3 and 5 and Appendix F, discuss risks to the public, workers, and the environment due to facility accidents. The EIS shows that impacts from accidents would be small for all of the alternatives considered.

The maximum reasonably foreseeable accident considered with a potential impact to the Snake River Plain aquifer was a release of the entire contents of a high-level waste tank at the ICPP, as evaluated in Volume 2, section 5.14. The assessment shows that even without taking credit for mitigation measures, impacts to the aquifer would be small; for example, drinking water standards would not be exceeded at the site boundary. As shown in Volume 2, Table 5.14-4, for any accident involving an airborne release of radioactive or hazardous material at INEL, there is a potential for limited economic impacts associated with 1-year restrictions to public lands or up to a 1-year agricultural land withdrawal for land on and immediately adjacent to INEL (up to an estimated 10,000 acres).

COMMENT
The commenter notes that it is inconsistent to say no cases were found where an accident in one facility could cause an accident in a colocated facility when an earthquake could cause multiple accidents at a facility and across the entire site.

RESPONSE
Qualitative assessments of accidents associated with existing and proposed operations and their potential for causing accidents in another facility were part of the accident evaluation. No cases were identified in which an accident in one facility would cause an accident in another facility greater than the bounding accidents already considered in the EIS. The potential for simultaneous accidents caused by a single seismic initiator is described in Volume 2, section 5.14. DOE's analysis shows that potential multiple-facility releases or multiple-release mechanisms from a single facility resulting from a severe seismic event would be bounded by those resulting from the postulated accidents at the Argonne National Laboratory-West Hot Fuel Examination Facility. Consistent with the accident selection methodology described in Volume 1, Appendix B, the consequences and risks associated with multiple facility releases were eliminated from further consideration because they do not represent the maximum reasonably foreseeable accidents within the frequency categories defined in Volume 1, Appendix B, Table 5.15-5.

COMMENT
Commentators state that the effects of a large earthquake at the Nevada Test Site should be evaluated as a high consequence, low probability event.

RESPONSE
In the EIS, the accident yielding the largest radiation dose (i.e., the bounding event) is the airplane crash into the dry cell facility scenario. This accident scenario assumes a breach of the containment and a subsequent airplane fuel fire resulting in a plume of contaminants. The results of this hypothetical accident are provided in Volume 1, Appendix F, Part Two, Tables 5.15.1 through 5.15.6.

A large-earthquake scenario was considered in the EIS. It was determined that the earthquake scenario differs from the airplane crash scenario in that there is limited combustible material in the structures, the spilled airplane fuel is not present during an earthquake, and ignition sources are minimal. Thus, the impact of subsequent fires and resultant contaminant plumes was found to be less in the earthquake scenario than for the airplane-crash scenario. As a result, a more detailed analysis was not warranted.

COMMENT
The commenter expresses disbelief that impacts from accidents such as Three Mile Island or Chernobyl would not cause damage if they occurred at the Idaho National Engineering Laboratory.

RESPONSE
The nature of potential accidents associated with storing SNF, as well as treating and storing radioactive wastes, at INEL differs from the types of accidents the commenter mentions. Nuclear fuels in the reactor accidents cited were so intensely radioactive that the heat they generated internally was sufficient to melt or burn the fuels in the absence of cooling. For SNF in long-term storage at INEL, natural decay of radioactivity has occurred long enough that the heat the fuel generates would be much lower than that required for fuel melting. The fraction of radionuclides available to be released to the environment is much smaller for nonmelted fuel than for reactor fuel that could melt by internally generated heat.

This EIS shows that the risk to workers and the public from INEL facility accidents would be small for all of the alternatives considered.
05.11.03 (008) General

**COMMENT**

The commentor notes that flooding could occur at the Idaho National Engineering Laboratory and that impacts to water resources should be addressed.

**RESPONSE**

The INEL accident analyses, summarized in Volume 1, Appendices B and D, and Volume 2, Chapter 5 considers flooding and other natural phenomena as potential causes of accidents. Some potential accidents were selected for detailed analysis because they were comparatively likely, and some causes were selected for detailed analysis because of their large potential consequences. The consequences of a seismic failure of the high-level waste tanks was selected for detailed analysis instead of flooding because the radioactive inventory in the high-level waste tanks has a larger potential for consequences to water resources than a flood. The high-level waste tank failure accident is reported in Volume 2, section 5.14, and the impacts to the aquifer would be small under all the alternatives that were analyzed.

05.11.03 (009) General

**COMMENT**

The commentor states that risks associated with Idaho National Engineering Laboratory aboveground storage, waste management, and rebuial of wastes for the Pit 9 Retrieval project have not been characterized in the EIS. The commentor further asks what if the Pit 9 waste is not safe to store above ground, what is the case with the safety of the tons of high-level waste in storage.

**RESPONSE**

The Pit 9 Retrieval Project is an on-going project initiated under INEL FFA/CO and applies to all alternatives. Simply stated, the project will excavate previously buried wastes, separate transuranic components, and rebury the remaining waste. The separated components would be placed in drums and stored in the Transuranic Storage Area of the RWMC. While the Project has separate NEPA documentation, the Pit 9 Retrieval Project impacts were included in this EIS as part of the INEL baseline. A summary of Pit 9 Retrieval Project is given in Volume 2, Appendix C. Risks, including accident risks, associated with the Pit 9 Retrieval Project are part of the baseline impacts summarized in Volume 2, Chapter 5. Post-treatment low-level waste from Pit 9 could be stored safely above ground, but low-level waste contaminated with fewer than 10 nanocuries per gram alpha-emitting radionuclides could be returned to shallow land burial. The section in the EIS Summary entitled Public Worker Health Effects notes that the risk from facility accidents would be small for the alternatives considered.

05.11.03 (010) General

**COMMENT**

The commentor states that collocation issues are not discussed, and that there is little written about the secondary impacts from an accident in one facility on other operating facilities at the Idaho National Engineering Laboratory.

**RESPONSE**

Volume 2, Chapters 3 and 5 and Appendix F discuss risks to the public, workers, and the environment due to facility accidents at INEL. As indicated in the EIS, the discussion is a summary of facility accidents detailed in Accident Assessments for Idaho National Engineering Laboratory Facilities. The discussion includes evaluations and analyses of accidents that were extensively reviewed. Qualitative assessments of accidents associated with existing and proposed operations, and their potential for causing accidents or secondary impacts in another facility, were part of the accident evaluation. No cases were identified where an accident in one facility would cause an accident in another facility greater than the bounding accident already considered in the EIS. Secondary impacts to other facilities were limited to potential cleanup costs. No other collocation issues were identified.

05.11.03 (011) General

**COMMENT**

Commentors suggest that particles released from the main stack at the Idaho Chemical Processing Plant in an incident on April 2, 1992, could be dispersed by wind and that a single 3-millirem-per-hour particle could cause an exposure of 10 millirem in about 3 1/2 hours. Commentors suggest that long-term ingestion of such particles was not analyzed because of the assumption of interdiction measures.

**RESPONSE**

In the incident at the ICPP main stack, a release of quarter-sized flakes of ammonium nitrate occurred at an elevation of about 250 feet. All detectable material was found within an area 2,560 yards wide by 350 yards long, about 12 acres. Thus, it is unlikely that any detectable radioactivity was transported beyond the INEL boundary. A subsequent cleanup effort with high efficiency particulate air filtered vacuum equipment returned the contaminated area to levels below those for noncontaminated areas, in accordance with DOE Order 5480.11, Radiation Protection for Occupational Workers.

Resuspension of radioactive materials from the ground by wind is acknowledged as a potential dispersion mechanism. Windborne resuspension reduces the amount of exposure at any given distance from the point of releases, but increases the area in which some exposure occurs. The commentor incorrectly concludes that direct contact with a 3-millirem-per-hour particle for about 3 1/2 hours would result in an effective whole body dose of 10 millirem. Rather, only that part of the body in contact with
the particle would receive a localized dose of 10 millirem. Depending on the exposure pathway, it may take thousands of such particles to result in an effective whole body dose of 10 millirem. For the INEL facility accidents with the maximum reasonably foreseeable consequences, and with the most unfavorable meteorological conditions, some restrictions on use of agricultural products might be implemented in accordance with established protective action guides.

05.11.03 (012) General

COMMENT

Commentors raise the issue of health risks involved should there be an accidental spill or a leak to the water table at the Idaho National Engineering Laboratory.

RESPONSE

Volume I, Chapters 3 and 5 and site-specific Appendices A through F; and Volume 2, Chapters 3 and 5 and Appendix F discuss risks to the public, workers, and the environment due to a range of large and small facility accidents. The maximum reasonably foreseeable accident considered with a potential impact to the Snake River aquifer was the release of the entire contents of a high-level waste tank at the Idaho Chemical Processing Plant. This accident is discussed in Volume 2, section 5.14. The assessment shows that even without taking credit for mitigation measures, impacts to the aquifer would be small; that is, concentrations at the site boundary would be within requirements of the safe drinking water standards.

05.11.03 (013) General

COMMENT

The commentor states that the EIS fails to fully assess the Idaho Chemical Processing Plant high-level waste tanks and vaults, including structural constituents, seismic (risks), leakage in and out of the vaults, and service line leaks.

RESPONSE

A maximum reasonably foreseeable accident associated with the high-level waste tanks was performed for the EIS, as reported in Volume 2, section 5.14. A more detailed description of the assessment is given in Accident Assessments for Idaho National Engineering Laboratory Facilities. The analysis assumed a seismic event of sufficient magnitude to cause one or more tanks to fail, and 300,000 gallons of high-level waste to be released to the soils beneath the tank farm. Modeling of migration of contaminants into the Snake River Plain aquifer showed that even without any mitigation measures, the maximum concentration of radionuclides at the nearest site boundary would be within requirements of safe drinking water standards.

05.11.03 (014) General

COMMENT

Commentors express disbelief that a criticality would occur only once in 10,000 years in a spent nuclear fuel storage pool; risk methods used to estimate number of latent cancers a criticality could produce are also not believable to commentors.

RESPONSE

DOE acknowledges a typographical error in Volume 1, Chapter 5. The estimated probability of a criticality accident at the ICPP is 1 chance in 1,000 per year of operation, not 1 in 10,000 as printed. While DOE recognizes the potential for a criticality accident in an SNF storage pool, there has never been a nuclear criticality in an SNF storage pool in the history of the DOE complex or in the much larger experience base represented by the commercial nuclear power industry.

The evaluations in this EIS of the probability of an inadvertent criticality consider a number of factors, including facility design controls, administrative controls, fuel inventories, fuel types, degraded conditions of some fuels, and fuel-handling frequencies. In addition to the estimated probability of occurrence, the risk depends on the consequences of a criticality, which were conservatively calculated in the EIS.

The risk factors for cancer induction used in the EIS were taken from the most recent International Commission on Radiological Protection recommendations (1990 Recommendations of the International Commission on Radiological Protection), which reflect the most recent and most widely accepted analysis of all currently available data. The authors of ICRP 60 reviewed all available studies. Volume 2, Appendix A provides a useful primer on radioactivity and radiation dose. Volume 2, Appendix F-4 provides a discussion of how radiation doses were calculated and how cancer risks were estimated. Volume 1, Appendix D, section F.1.3.3 and Volume 2, Appendix F-4 discuss the terminology and risk factors used by the International Commission on Radiological Protection and how these factors were applied in calculating the effects of radiation on human health in this EIS.

Cancer fatalities were used in the EIS to summarize and compare the results, since this effect was viewed to be of the greatest interest to the most people. The typographical error in Volume 1, Chapter 5 has been corrected.
05.11.03 (015) General

COMMENT
The commenter asks DOE to clarify whether the "accident scenario with the highest risk" as reported in the Summary is equivalent to the "maximum credible accident" or "maximum conceivable accident" or "maximum foreseeable accident" or "maximum reasonably foreseeable accident" as reported in Volume 2.

RESPONSE
The accident scenario with the highest risk as reported in the Summary is not necessarily the same as a "maximum credible" or "maximum conceivable" or "maximum foreseeable" or "maximum reasonably foreseeable" accident. The evaluation of facility accidents in Volume 1, Appendices A through F, section 5.15; and Volume 2, section 5.14 consider a range of accidents, from relatively common events, such as handling accidents, to very rare events, such as an aircraft crash into a facility. The assessments included "maximum reasonably foreseeable" accidents. For NEPA purposes, they are accidents that "have catastrophic consequences even if their probability of occurrence is low, provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason" [40 CFR section 1502.22(b)]. In many cases, these accidents were beyond the design basis of the facilities and more severe than the maximum reasonably foreseeable accident for the facilities. Accident risks were determined by multiplying accident consequences by accident probabilities, and those with the highest risk are reported in the Summary because they bound the risks from facility accidents.

05.11.03 (016) General

COMMENT
The commenter suggests that because of the potential for causing contamination in the event of a seismically initiated Mackay Dam failure, a dynamic analysis of the dam structure should be undertaken to determine its level of seismic resistance.

RESPONSE
DOE considered the failure of the Mackay Dam in its analysis and found that the consequences of the potential event would be much less than the maximum reasonable foreseeable accident, as discussed below. As a result, a dynamic analysis of the dam structure to determine its level of seismic resistance is unwarranted.

Mackay Dam is an earthenfill structure completed in 1917 and has a storage capacity of 44,500 acre-feet. The dam was not built to conform to seismic or hydrologic design criteria. In 1978, Mackay Dam was classified as a high-hazard dam by the State of Idaho, based on inspections by the Idaho Department of Water Resources and the U.S. Army Corps of Engineers (Phase 1 Inspection Report). Mackay Dam is 11 miles northwest of the epicenter of the 1983 Borah Peak earthquake. Following the earthquake, the dam was inspected and there was no structural damage to the dam or the outlet works. Therefore, although the structure's ability to withstand severe seismic activity is unknown, the performance of the structure during the Borah Peak earthquake demonstrated the stability of the embankment during moderate earthquake ground motion (Flood Routing Analysis for a Failure of Mackay Dam). Following the Borah Peak earthquake, stabilization work was completed on the right abutment of the dam and the spillway was cleared of rock debris. The dam was inspected by the Idaho Department of Water Resources and a certificate was issued for continued operation of the dam and storage (Letter, Department of Water Resources to Mr. J. Doyle Jensen, Big Lost River Irrigation District, April 20, 1985).

In spite of the good record for the dam, various postulated dam failure scenarios have been examined with regard to flooding of INEL facilities. These postulated failures include piping failures, seismically induced dam collapse, and overtopping of the dam structure during the hypothetical probable maximum flood. In all cases, the reservoir was assumed to be full at the start of the initiating event. In the case of seismic failure, the failure was assumed to occur during the 25-year return period flood with an inlet flow to the full reservoir of 4,030 cubic feet per second (Flood Routing Analysis for a Failure of Mackay Dam). These conditions bound any additional water that could be impounded by ice dams above the reservoir, because the Big Lost River plain is relatively flat and the depth of the river is relatively shallow (a few feet), making the storage of significant bodies of water behind ice dams beyond reasonably foreseeable.

In all the above cases, it is assumed that the Big Lost River diversion dam would be over-topped by the floodwaters, with the probable maximum flood being by far the worst case (Flood Routing Analysis for a Failure of Mackay Dam). The probability of a probable maximum flood leading to dam failure has been estimated to be less than 1.0E-6 per year [Flood Evaluation Study: Radioactive Waste Management Complex (Draflu)]. Although the probability for a seismically induced failure of the dam has not been calculated, the probability of seismic failure causing total collapse, coupled with a full reservoir and a 25-year recurrence interval flood is believed to be very small. None of the postulated failures of the Mackay Dam would overtop dikes at the RWMC (Safety Analysis Report for the Radioactive Waste Management Complex at the Idaho National Engineering Laboratory), although there would be some flooding at Test Reactor Area, ICPP, Expended Core Facility, and Test Area North areas (Flood Routing Analysis for a Failure of Mackay Dam). Even for probable maximum flood conditions, the flood waters and any transported contamination would be contained within the boundaries of INEL (Flood Routing Analysis...
DoE Order 5480.28, *Natural Phenomena Hazards Mitigation*, sets forth DOE procedures to design, assess, and operate DOE facilities so that workers, the general public, and the environment are protected from the impacts of natural phenomena hazards on DOE facilities. This Order specifically requires facilities to be re-evaluated upon any change in design and construction standards. Existing facilities at INEL have undergone continual safety analysis and seismic design review. Several of the projects described in Volume 2, Appendix C of the EIS are proposed by DOE to replace or upgrade facilities at the INEL. Likewise, actions such as the transfer of fuels from potentially vulnerable facilities to modern facilities have resulted from the ongoing safety analysis and seismic design reviews.

No new analyses are required for DOE Idaho Operations Office-managed facilities because the EIS summarizes existing credible scientific evidence relevant to understanding the existing environment, identifying reasonably foreseeable impacts, and evaluating potential consequences. The evaluation of impacts is based on methods generally accepted by the scientific community. The analyses reported in the EIS evaluate the potential consequences including direct, indirect, cumulative, irreversible and irretrievable effects and long-term productivity losses. See also the responses to comments 05.08.01 (014) and 05.08.01 (030).

General discussions of waste management procedures and plans are covered in Volume 2, Chapters 1 and 2. Therein it is noted that the DOE is committed to a strategy emphasizing waste minimization and avoidance, with the goal being that most newly generated radioactive waste will be created during necessary cleanup activities and decommissioning of contaminated facilities that no longer serve essential missions. The DOE complex-wide management and cleanup of wastes associated with those...
activities is outside the scope of this EIS. However, they are currently being addressed in the forthcoming Waste Management Programmatic EIS.

With respect to cleaning up INEL, the INEL Environmental Restoration Program, including both remediation and decontamination and decommissioning, is discussed in Volume 2, section 2.2.6. For a description of the significant progress already made in this program at INEL, see the response to comment 02.04 (047).

The generation and storage of SNF is discussed in Volume 1, section 1.1. Therein it is noted that most DOE SNF was generated in DOE production and experimental reactors that have ceased to operate, so considerable source reduction has already occurred. See Volume 1, Appendix E for further information on experimental reactors. In addition, the Navy is developing longer-lived Naval reactor cores, thereby reducing the amount of SNF that will be generated. Completely eliminating the sources of SNF, however, is outside the scope of this EIS.

05.11.03 (019) General
COMMENT
The commenter suggests that an additional failure scenario of the Mackay Dam be evaluated (collapse-induced flooding during high water at times when cold weather results in ice obstructions on the river).

RESPONSE
The Mackay Dam failure scenarios analysis in Flood Routing Analysis for a Failure of Mackay Dam and cited in the EIS includes a probable maximum flood scenario considered to be the most severe flood event reasonably possible using NRC siting criteria for commercial nuclear reactors. The Mackay Dam failure study includes sensitivity analyses that indicate significant changes in parameters would result in minor variations in flooding at INEL. Therefore, DOE believes the Mackay Dam failure model accurately assesses reasonably foreseeable INEL flooding hazards that could occur as a result of flooding of the Big Lost River. The combination of probable maximum flood estimated frequency and additional events and their probabilities would result in flooding hazards with probabilities lower than those that are reasonably foreseeable.

No new analyses are required for DOE Idaho Operations Office-managed facilities because the EIS summarizes credible scientific evidence relevant to understanding the existing environment, identifying reasonably foreseeable impacts, and evaluating potential consequences. This information is provided in Volume 2, section 4.8 and Volume 2, Appendix F-2.

05.11.03 (020) General
COMMENT
Commentors state that nuclear waste, spent nuclear fuel, and other dangerous materials can be involved in accidents.

RESPONSE
Volume 1, Chapters 3 and 5 and site-specific Appendices A through F, and Volume 2, Chapters 3 and 5 and Appendix F discuss risks to the public, workers, and the environment, and secondary effects resulting from a range of potential accidents. The discussions include evaluations and analyses of accidents. Although DOE cannot guarantee that no accidents will occur, the results of evaluations and analyses in this EIS indicate that risks to workers, the public, and the environment would be small for all the alternatives considered. (See the EIS Summary, Public and Worker Health Effects.)

05.11.03 (021) General
COMMENT
The commenter suggests that the EIS discuss an accident at the Idaho National Engineering Laboratory involving up to 6,000 gallons of hydrofluoric acid.

RESPONSE
An accidental release of hydrofluoric acid is discussed in Volume 1, Appendix B, section 5.15. Hydrofluoric acid is stored outside in the ICPP facility area in a 30,290-liter (8,000-gallon) storage tank. Although there are only about 11,336 liters (3,000 gallons) in the tank, the accident was modeled assuming a full storage tank. The tank is over a catch basin that would contain the contents of the tank if the tank ruptures or if there is a piping failure. All the tank's contents were assumed to leak immediately. The amount of hydrofluoric acid released and the surface area of the acid in the catch basin were considered in the analysis. Downwind concentrations of acid are independent of the amount of acid spilled and depend only on the evaporation rate from the catch basin. The evaporation rate, in turn, depends on the surface area of the catch basin, as well as other factors. The duration of the release, however, depends on the total amount of acid spilled.
The EIS shows that the consequence of this potential event at the nearest site boundary is 0.078 milligrams per cubic meter of hydrofluoric acid. As to the impact to the maximally exposed individual, this concentration represents 0.2 percent of the Emergency Response Planning Guide Level 3 (ERPG-3) for hydrofluoric acid. For reference purposes, 100 percent of the ERPG-3 level is the maximum concentration of the specific toxic material from which a person not wearing a respirator could escape within 30 minutes, without having his ability to escape impaired or experiencing irreversible side effects.

05.11.03 (022) General
COMMENT
The commentor suggests that after an accident, communication with members of the public who may consume contaminated vegetables and other food produced in the vicinity is not well established at the Idaho National Engineering Laboratory.
RESPONSE
The accident analyses in the EIS were performed with the plume rise going to the locations where maximum dose is received. See Volume 1, section 5.1.

05.11.03 (023) General
COMMENT
The commentor questions whether the maximally exposed individual is the person at the site boundary and recommends that further analysis be done to show that this individual has indeed received the maximum individual dose.

RESPONSE
The accident analyses in the EIS were performed with the plume rise going to the locations where maximum dose is received. See Volume 1, section 5.1.

05.11.03 (024) General
COMMENT
The commentor wants to better understand the assumptions used to determine risk acceptability, what constitutes acceptable risk, and who is responsible for this determination.
RESPONSE
The emergency management program incorporates activities associated with planning, preparedness, and response, including simulated emergency exercises with states, counties, and other agencies. Emergency preparedness requirements for the facilities would be part of the planning that would occur after a ROD. Command, control, and communication are key parts of these emergency management programs. However, the details of such planning are beyond the scope of the EIS.

For the off-site population, the need for any protective action would be based on the guidance provided in the protective action guides developed by EPA. Interdiction activities by INEL accident recovery personnel are expected to take place following an accident to limit doses to off-site individuals at risk. This interdiction can limit ingestion exposure to the public.

For accidents with maximum reasonably foreseeable consequences at INEL, interdiction in accordance with protective action guides was assumed in the EIS analyses. Doses resulting from the ingestion pathway were calculated assuming contaminated foods comprised 10 percent of the person's 1-year diet following the accident. More information on the parameters used in the accident analysis and the assumptions regarding ingestion of contaminated food can be found in Accident Assessments for Idaho National Engineering Laboratory Facilities, sections 2.1.2 and 2.1.3.

05.11.03 (025) General
COMMENT
Commentors raise the issue of impacts a nuclear accident could have on the State of Idaho, such as impacts on tourism and the economy.
RESPONSE
Volume 1, Chapter 5 and Appendices A through F, and Volume 2, Chapters 3 and 5 and Appendix F of the EIS discuss reasonably foreseeable accidents and their impacts. Although DOE cannot guarantee that accidents will be prevented or that contamination will not occur, for all alternatives considered in the EIS, the risk to workers and the public from facility accidents would be small. DOE expects that impacts from reasonably foreseeable accidents on tourism and the economy would be limited and of short duration. As noted in Volume 2, section 5.14, there would be a potential for limited economic impacts.
As used in this EIS, risk is defined as the product of the probability of an event times the consequences of that event. Volume 1, Appendices A through F, and Volume 2, Appendix F provide the details of how the risk analyses for this EIS were performed.

05.11.03 (026) General

COMMENT
Commentors state that accidents, accidental releases, and long-term effects of accidents are unpredictable.

RESPONSE
DOE cannot guarantee that accidents will not occur. Given that Volumes 1 and 2, Chapter 5 summarize the results of analyses of reasonably foreseeable accidents. Volumes 1 and 2, Chapter 5 also discuss impact avoidance and mitigation measures. These analyses show that the risks of reasonably foreseeable accidents under all the alternatives considered would be small.

05.11.03 (027) General

COMMENT
The commentor states that assumed ground-level releases from a facility accident may underestimate the impacts to the off-site population, because the modeling assumptions bias the model output and the conclusions of the accident analysis. An example provided is that a small number of workers close to the release point receive a higher dose than the large numbers of members of the public outside the site perimeter.

RESPONSE
"As environmental impact analyses are designed to produce a reasonable projection of the upper bound for potential environmental consequences. This requires the use of appropriately conservative assumptions and analytical approaches. In this context, "conservative" means that an assumption or analysis would tend to overproduce, rather than underpredict, any adverse impacts. However, unreasonably conservative analyses do not provide a useful basis for comparing alternatives. Therefore, the aim has been to avoid unreasonable conservatism and base the environmental impact analyses on realistic, site-specific information whenever possible. Facility accidents were modeled using a release elevation consistent with the specific accident scenario. For example, some scenarios would have an elevated release point, such as through a stack, and others would have a ground-level release point. Each alternative has been analyzed using comparable methods and levels of conservatism so that the relative impacts of alternatives can be assessed accurately.
near the site, as well as to try to make the scenario realistic, but generally conservative. Raising the percentage to a greater value would represent an unwarranted overconservatism in the total dose to the MEI.

The environmental impact analyses are designed to provide a reasonable projection of the upper bound for potential environmental consequences. This requires the use of appropriately conservative assumptions and analytical approaches. In this context, "conservative" means that an assumption or analyses would tend to overproduce, rather than underpredict any adverse impacts. However, overly conservative analyses do not provide a useful basis for comparison among alternatives.

More information on the parameters used in the accident analyses and the assumptions regarding ingestion of contaminated food can be found in Accident Assessments for Idaho National Engineering Laboratory Facilities, sections 2.1.2 and 2.1.3.

05.11.03 (031) General

COMMENT

The commenter suggests that the degrading structural integrity of spent nuclear fuel is a significant risk driver and that the EIS should include this prominent factor in the discussion of risk for the No Action alternative. As an example, the commenter states that the degraded fuel at the Hanford Site was said to be contributing to elevated radionuclide activities, which contaminates the groundwater that flows into the Columbia River.

RESPONSE

The accident risks presented in the EIS for the No Action alternative reflect an assessment of the current accident probabilities associated with SNF management, including the probabilities associated with degraded (vulnerable) fuels and facilities. Under the No Action alternative, DOE would limit actions to the minimum necessary for safe and secure management of SNF at the generation site or current storage location.

Volume 2, section 5.1.2 has been modified to state: "Consequences would be bounded by existing accident assessments, but likelihood may increase."

05.11.03 (032) General

COMMENT

The commenter states that the cumulative impacts from more than one accident initiated simultaneously by a major earthquake must be evaluated in the EIS.

05.11.03 (033) General

COMMENT

The commenter states that nonradiological health effects resulting from an accidental release of hazardous materials through a groundwater or surface water pathway at the Idaho National Engineering Laboratory have been overlooked.

RESPONSE

As discussed in Volume 2, section 4.6.3, seismic events were found to be the most likely common-cause initiators with the potential to cause releases at more than one facility and involve more than one waste type. Further, the potential for simultaneous accidents caused by a single seismic initiator is described in Volume 2, section 5.14.2. DOE's analysis shows that potential multiple-facility releases or multiple-release mechanisms from a single facility resulting from a severe seismic event would be bounded by those resulting from the postulated accidents at the Argonne National Laboratory-West Hot Fuel Examination Facility. Consistent with the accident selection methodology described in Volume 1, Appendix B, section 5.15.3, the consequences and risks associated with multiple facility releases were eliminated from further consideration because they do not represent the maximum reasonably foreseeable accidents within the frequency categories defined in Volume 1, Appendix B, Table 5.15-5.

05.11.03 (034) General
05.11.03 (034) General

COMMENT
The commenter suggests a seismically induced accident associated with the 100-K basins should be included in the Hanford Site accident assessments since an "unreviewed safety question" was declared on May 5, 1994.

RESPONSE
A discussion of the seismic effect on the 100-K basins has been added to Volume 1, Appendix A, section 5.15.

05.11.03 (035) General

COMMENT
The commenter states that thousands of cancers could result from one mistake that causes an accident involving transportation or a criticality in an inversion layer.

RESPONSE
Volumes 1 and 2, Chapter 5 discuss the probabilities and consequences of transportation and facility accidents, including those caused by human error. These discussions and their supporting documents include extensive evaluations of accident consequences using generally accepted engineering principles and practices including analysis under various meteorological conditions. The EIS shows that the risks to the public from facility and transportation accidents would be small for the alternatives considered.

05.11.03 (036) General

COMMENT
The commenter states that a dam failure, rather than flooding at the Hanford Site, is the event that would inundate spent nuclear fuel facilities. A reference to the dam failure discussion would be appropriate.

RESPONSE
Volume 1, Appendix A, section 4.8 discusses natural flooding at the Hanford Site because there is a potential for collapse of the shoreline along the riverbank in the White Bluffs area. A cross-reference to dam failure in Appendix A has been added. Neither the probable maximum flood, nor a flood caused by collapse of the shoreline in the White Bluffs area would impact SNF operations at the Hanford Site. Flooding from a 50 percent failure of Grand Coulee Dam would inundate the K-basins.

05.11.03 (037) General

COMMENT
The commenter states that only "worst case" accidents should be the basis for a decision, or that worst-case, maximum credible accidents require evaluation.

RESPONSE
CEQ regulations no longer require analysis of worst-case accidents. Rather, CEQ regulations require only assessment of effects of reasonably foreseeable accidents. In accordance with CEQ regulations and DOE guidance, the evaluation of reasonably foreseeable accidents in the EIS considers both high-risk and high-consequence accidents over a range of frequency of occurrences. (See Volume 1, Appendices A through F, section 5.15 and Volume 2, section 5.14.) The high-risk and high-consequence accidents were considered because they produce effects that are very unlikely to be exceeded by severe accidents. Smaller-consequence accidents were considered, particularly if they had a high probability of occurrence, because they could potentially represent a higher risk (risk = probability x consequence) than those lower probability accidents with higher consequences. The EIS shows that the risk to workers and the public from all accidents analyzed would be small for all alternatives considered.

05.11.03 (038) General

COMMENT
The commenter notes that spent nuclear fuel is dangerous, but that so is gasoline if not handled properly. If gasoline had the same handling requirements as spent nuclear fuel, it would be too expensive to buy.

RESPONSE
DOE agrees that potential consequences from accidents involving some hazardous materials are much greater than those from SNF management.

05.11.03 (039) General

COMMENT
The commenter states that DOE has not considered impacts from shipboard fires and earthquakes.

RESPONSE
The EIS addresses seismicity in Volume 1, section 5.2.4, accidents in Volume 1, section 5.7.12, and accidents involving shipboard fires in Volume 1, Appendix D, section F-1.4.4. Locations considered for SNF management have emergency action plans and equipment to respond to accidents and other emergencies. Shipboard fires would be included as one of the types of accidents, if applicable to the location. The plans would be updated to cover any new SNF facilities and activities. DOE would coordinate activities with state and local agencies to establish and implement an appropriate emergency response training program for potential accidents for the location. The details of such planning are beyond the scope of the EIS.
5.11.3.1 Not used
5.11.3.2 Not used
5.11.3.3 Miscellaneous

05.11.03.03 (001) Miscellaneous

**COMMENT**

The commentor states that the source terms in Volume 2, Table 4.7.1 are constants and wants to know the range of values over a 10-year period. Additionally, the commentor requests projection of source terms under postulated abnormal conditions involving several facilities.

**RESPONSE**

The projection requested by the commentor is provided in Volume 2, Chapter 5, which presents the impacts of the alternatives, including impacts under abnormal and accident conditions.

5.12 Transportation Issues

**05.12 (001) Transportation Issues**

**COMMENT**

Commentors object to the shipment of radioactive material because the risk is perceived to be too high. Commentors state that an adequate study of the worst-case accident is needed and a policy is required to publicly fund response team training, and that some longshoremen may refuse to handle high-level waste shipments.

**RESPONSE**

DOE complies with the DOT regulations for transporting radioactive material. These regulations are designed to protect workers and the public by minimizing the risks associated with transporting radioactive material. The EIS analyzes a full range of alternatives, from no action, which involves extremely limited transport of radioactive material, to centralization, which involves extensive transport of radioactive material. For all alternatives, the potential risks from transportation would be small. This includes the risks associated with maximum reasonably foreseeable accidents. The probabilities and consequences of maximum reasonably foreseeable transportation accidents are discussed and evaluated in Volume 1, Appendices D and I. Although the consequences of an accident of this type might be high, the probability of such an accident having high consequences is on the order of one chance in 10 million years, and the consequences of most accidents, including those with a probability of occurring more frequently, would be less than those of the accidents analyzed.

With more than 50 years of radioactive material transportation in the commercial and government sectors, there have been few transportation accidents involving radioactive materials, and these have resulted in little or no release of radioactivity. Nonetheless, emergency response teams are trained and ready throughout the United States to respond quickly in the event of a transportation accident. DOE recognizes the importance of preparedness for potential accidents involving SNF transportation. DOE, DOT, and FEMA provide training and materials to local emergency responders to prepare them to handle accidents properly. DOE provides for Radiological Assistance Program teams, which consist of trained experts equipped and prepared to quickly respond to an accident, and assist local emergency response personnel if requested. This response network, along with other preventive measures, such as shipping container design and testing, and adherence to stringent regulations, supports the continued safe shipping of SNF.

SNF shipping containers that could be handled by longshore workers are designed to meet national and international standards for safety, including radiation levels at the outside of the containers.

This EIS analyzes transportation from ports of entry. The potential for radiological exposures to longshore workers is within the scope of the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel.

**05.12 (002) Transportation Issues**

**COMMENT**

One commentor states a definition of the term "general transportation" in Appendix I could not be found.

**RESPONSE**

The term "general transportation" is discussed in Volume 1, Appendix I, section I-9.1 and refers to "transportation activities that take place that are unrelated to the alternatives evaluated in this EIS or to reasonably foreseeable actions. Examples of these activities are shipments of radiopharmaceuticals to nuclear medicine laboratories and shipments of commercial low-level radioactive waste to commercial disposal facilities." The activities described by general transportation activities are those that occur independent of DOE work and over which DOE has no control.

**05.12 (003) Transportation Issues**

**COMMENT**

The commentor states that the EIS should address the condition of the transportation infrastructure (e.g., rail lines, crossings, bridges, and tunnels).
RESPONSE

Adequate rail lines, crossings, bridges, and tunnels exist to support the SNF transportation. The shipment of SNF requires no special transportation infrastructure that is not also necessary for safe transport of commodities in the United States today. DOT is the regulatory agency responsible for establishing and enforcing the standards for the transportation infrastructure.

05.12 (005) Transportation Issues

COMMENT

The commenter states that DOE should halt shipments of spent nuclear fuel during inclement weather.

RESPONSE

Although the comment is not specifically related to the effects of weather on SNF transport, the same response applies for radioactive material transportation. DOT requirements for containers and the EIS modeling codes used to analyze potential impacts of transportation account for such things as bad weather, accidents, natural phenomenon, etc.

05.12 (006) Transportation Issues

COMMENT

The commenter states that the EIS used a generic approach to the mitigation of impacts and states that the secondary route comparison factors discussed in the mitigation section are critical in some rural sections of Idaho. The commenter also notes that TRANSAX-92 demonstrated that state corridor emergency responders are not prepared for radiological incidents.

RESPONSE

The primary and secondary route comparison factors discussed in the mitigation section were developed by DOT; DOE and the Navy believe them to be accurate. Pursuant to 49 CFR 397.67, motor carriers transporting hazardous material required to be placarded or marked in accordance with 49 CFR 177.823 and not subject to a nonradioactive hazardous material routing designation, shall operate the vehicle over routes that do not go through heavily populated areas, places where crowds are assembled, tunnels, narrow streets, or alleys, except where the motor carrier determines that: (1) there is no practicable alternative; (2) a reasonable deviation is necessary to reach terminals, points of loading and unloading, facilities for food, fuel, repairs, rest, or a safe haven; or (3) a reasonable deviation is required by emergency conditions, such as a detour that has been established by a highway authority, or a situation exists where a law enforcement official requires the drivers to take an alternate route.

DOE participates with other Federal, state, and local authorities to sponsor and fund various emergency response training courses throughout the United States. These courses are provided for the benefit of state and local authorities responsible for public safety and emergency response to natural disasters and man-made accidents, including those involving nuclear materials. The government has organized, trained, and equipped state and Federal emergency response teams that are quickly available to assist local authorities in the event of an emergency.

05.12 (007) Transportation Issues

COMMENT

The commenter states that DOE does not have a good record with respect to building apparatus such as nuclear fuel casks and waste repositories, and getting the cooperation of the states within a very short period of time.

RESPONSE

The commenter is referring to lengthy delays in the construction and opening of the Yucca Mountain and Waste Isolation Pilot Plant sites, as well as the 5- to 10-year time period for designing and certifying radioactive material shipping casks.

DOE operates within the framework of Federal regulations and DOE policy, which are designed for public and stakeholder involvement when procuring shipping casks or constructing new facilities. Unfortunately, such a process is costly and time consuming; however, DOE feels it is a process that affords the best opportunity to obtain facilities or apparatus designed with the highest standards of safety, utility, and public/stakeholder input into the process.

05.12 (008) Transportation Issues

COMMENT

The commenter states that DOE did not address the environmental impacts of moving spent nuclear fuel.

RESPONSE

Volume 1, Appendices D and I analyze the transportation of SNF. NEPA, 42 USC Section 4321 et. seq., and CEQ regulations at 40 CFR Part 1500 et. seq. require that an EIS describe the purpose and need for the proposed action; alternatives, including no action; the affected environment; and the environmental consequences associated with the proposed action and alternatives. Volumes 1 and 2 of this EIS meet these requirements. In each volume, Chapter 2 describes the purpose and need for the proposed action; Chapter 3 describes the alternatives being considered; Chapter 4 describes the affected environment; and Chapter 5 describes the environmental consequences.
Input was solicited from the public during a 90-day public comment period, which allowed commentors to send written comments, give oral comments and send a facsimile by a toll-free telephone line, or attend one or more of the 33 public hearings held in 20 locations around the United States.

All supporting documents referenced in the EIS are on file and are available to the public.

05.12 (010) Transportation Issues

COMMENT
The commentor requests specific information on the number of 40-year-period spent nuclear fuel shipments, highway routes affected, and populations exposed to risks.

RESPONSE
Specific information on the number of SNF shipments is in Volume 1, Appendices D and I.

The HIGHWAY computer code predicts highway routes for transporting radioactive materials within the United States. The HIGHWAY code currently describes approximately 240,000 miles of roads. A complete description of the interstate highway system, United States highways, most of the principal state highways, and a number of local and community highways are identified in the database. The HIGHWAY computer code calculates routes that maximize the use of interstate highways. This feature allows the user to predict routes for shipping radioactive materials that conform to DOT regulations (as specified in 49 CFR Part 177). The routes calculated conform to applicable guidelines and regulations; therefore, they represent routes that could be used.

The impacts of transportation for all programmatic alternatives considered in this EIS would be small.

05.12 (011) Transportation Issues

COMMENT
The commentor questions the need for cross-country shipments under the Regionalization by geography alternative.

RESPONSE
For the Regionalization by geography alternative, all existing and future SNF would be shipped to the destination site without crossing the Mississippi River. However, there would be cross-country shipments of Naval SNF. To examine all Naval SNF in a cost effective manner, examination would occur at one location. Because the Navy disperses and refuels ships at shipyards on the east and west coasts, cross-country shipments would be necessary for the fuel to reach the examination and storage site. Overviews of the alternatives analyzed in the EIS are found in Volume 1, Chapter 3.

05.12 (012) Transportation Issues

COMMENT
The commentor states that a history of the movement of spent nuclear fuel is not in the EIS and provides a specific example that gives the understanding that all previous shipments of spent nuclear fuel brought to the Savannah River Site from Newport News/ Hampton Roads have been transported by truck, representing many hundreds of shipments. Yet, the discussion of movements out of the Newport News/ Hampton Roads area in Volume 1, section 4.6.2 mentions only 10 shipments, each conducted by rail.

RESPONSE
The EIS conducted a comprehensive transportation cumulative impacts analysis, evaluating the historical, present, and future or projected shipments of radioactive material, which includes radioactive waste and SNF. Dose information is contained in Volume 1, Appendix I. The transportation cumulative impacts analyses includes historical shipments of SNF and is found in Volume 1, Appendix D for Naval SNF and Appendix I for non-Naval SNF.

The example given by the commentor refers to Naval SNF shipments, which travel by rail. The additional references provided in Table 1-58 contain the historical data for non-Naval SNF shipments, which predominantly travel by truck.

05.12 (013) Transportation Issues

COMMENT
The commentor suggests specific information regarding Fort St. Vrain fuel, number of shipments, destination facility, and inventory be added to the Final EIS.

RESPONSE
The EIS already contains this information in either Volume 1 or Volume 2. Volume 1 reference from a 1994 letter to distribution from T.L. Wichmann, Spent Nuclear Fuel Inventory Data., gives specific information regarding quantity of Fort St. Vrain fuel currently stored at INEL and the quantity that could be received in the future. The quantity that could be received could be stored at a specific location, but may be managed in other facilities and in other ways. The EIS has bounded the information by the assumptions and methodologies used in calculating the individual and cumulative impacts. Because the EIS is considered to bound the information suggested by the commentor, the EIS has not been changed.
05.12 (014) Transportation Issues

COMMENT
The commentor states that the EIS concentrates on the radiological impacts of transportation to the exclusion of the other hazardous materials.

RESPONSE
Volume 2, section 5.11 discusses the transportation of both hazardous and radioactive materials for both incident-free and accident cases. In incident-free transportation, there are no emissions from materials being transported, so the only hazardous materials emissions considered were those from particulates and sulfur dioxide present in urban population zones. The methodologies for determining transportation impacts associated with hazardous materials transportation accidents are discussed in Volume 2, section 5.11.1. The analysis of the maximum reasonably foreseeable case truck accident scenario for all alternatives is in Volume 2, Table 5.11-15. The impacts of a hazardous material transportation accident are low under all alternatives.

05.12 (015) Transportation Issues

COMMENT
The commentor states that the EIS should discuss the impacts of the increase in highway traffic and the associated roadway congestion, as well as the impacts of increased rail traffic.

RESPONSE
A discussion of highway and rail transportation impacts and potential accident impacts is in the sections of the EIS entitled Traffic and Transportation, Transportation, and Offsite Transportation of SNF. Based on public and agency comments, DOE has modified descriptions of on-site traffic patterns where appropriate. DOE complies with the DOT requirements for off-site transportation of SNF, including the use of licensed shipping containers that meet DOT performance requirements. As a result, the potential for exposing the public to radiation hazards is extremely low. DOE further minimizes accident risks by following training and route-selection guidelines and uses other procedural controls for hazardous and radioactive shipments. In the unlikely event of an accident, DOE and local governmental authorities will implement emergency response measures. As described in the EIS Summary, Public and Worker Health Effects section, the overall risk from transportation would be small.

See also the response to comment 05.12 (003).

05.12 (016) Transportation Issues

COMMENT
The commentor expresses concern that the EIS inadequately addresses the nonradiological impacts of transportation activities, and questions the adequacy of the 1982 reference document used in the EIS.

RESPONSE
Incident-free nonradiological fatalities were estimated using unit risk factors. These unit risk factors account for the fatalities associated with exhaust emissions, but the distances used to estimate the impacts must be doubled to reflect the round-trip distance, because these impacts occur whether or not the shipment contains radioactive material. Two sets of data were evaluated: 1) data from Non-radiological Impacts of Transporting Radioactive Material and 2) data from the Motor Vehicle-Related Air Toxics Study. In Non-radiological Impacts of Transporting Radioactive Material, the nonradiological unit risk factor for trucks was $1.0 \times 10^{-7}$ fatalities per kilometer, and the nonradiological unit risk factor for trains was $1.3 \times 10^{-7}$ fatalities per kilometer. These unit risk factors are applicable only in urban areas. In Motor Vehicle-Related Air Toxics Study the unit risk factor was calculated to be $7.2 \times 10^{-11}$ fatalities per kilometer; this unit risk factor is applicable in all areas (i.e., rural, suburban, and urban). Based on the routes analyzed in this EIS, the unit risk factors from Non-radiological Impacts of Transporting Radioactive Material were found to overestimate impacts by about 20 or 30 times relative to the unit risk factors from Motor Vehicle-Related Air Toxics Study. Therefore, the unit risk factors from Non-radiological Impacts of Transporting Radioactive Material were used as a conservative estimate of the incident-free nonradiological fatalities presented in this EIS. Unit risk factors from Non-radiological Impacts of Transporting Radioactive Material account for all fatalities, not just cancer fatalities. Other effects of chronic exposure to diesel exhaust emissions have been followed in occupationally exposed workers, but these data are not sufficient to make a correlation between the effects and the exposure experienced (Motor Vehicle-Related Air Toxics Study). Therefore, these impacts were not estimated in the EIS.

5.12.1 Not used
5.12.2 Rail

05.12.02 (001) Rail

COMMENT
The commentor states that the Mackay Branch has been abandoned by the Union Pacific Railroad and there is an application before the Interstate Commerce Commission to abandon the Secoville Branch from Arco, Idaho, to Mile Post 43.
RESPONSE
The map showing the Mackay Branch will be corrected to reflect abandonments by the Union Pacific Railroad.

5.12.3 Waterborne

05.12.03 (001) Waterborne

COMMENT
The commenter states that purpose-built ships would greatly add to the safety of handling foreign research reactor spent nuclear fuel shipped to ports in the United States.

RESPONSE
The risks associated with the transport by ship of FRR SNF and its handling at U.S. ports, including purpose-built ships, are being evaluated in the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft).

05.12.03 (002) Waterborne

COMMENT
Commentors question the choice of ports of entry to the United States that are analyzed in the EIS and state that the EIS does not consider transportation or radioactive material handling impacts, such as shipboard fires, at port facilities.

RESPONSE
The analysis of impacts at port facilities and nearby communities, the specific port selection process, and the overseas transportation of FRR SNF to United States ports is being addressed in the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft) (FRR EIS). Only the impacts of transportation of SNF from these ports of entry to DOE facilities are analyzed in this EIS.

The criteria used to choose the ports of entry are outlined in the Notice of Intent for the FRR EIS (Federal Register Vol. 58, No. 202, October 21, 1993, pages 54336-54340). These criteria included: (a) adequacy of harbor and dock characteristics to satisfy the cask-carrying ship requirements, (b) availability of safe and secure lag storage, (c) adequacy of overland transportation systems from ports to the storage sites, (d) experience in safe and secure handling of hazardous cargo, (e) emergency preparedness status at the port and nearby communities, and (f) proximity to the proposed storage sites. A range of alternative ports will also be analyzed in the FRR EIS. The decision regarding port selection will not be made until both this EIS and the FRR EIS are completed.

In addition, in response to public comments, this EIS discusses the consequences of a shipping accident that results in a shipboard fire approximately 2 miles from Seattle (Volume 1, Appendix D, section F).

05.12.03 (003) Waterborne

COMMENT
The commenter is concerned that Puget Sound will be a possible point of entry for hundreds of shipments of radioactive material and that the DOE fails to recognize the danger for this urban area.

RESPONSE
The analysis of impacts at port facilities and nearby communities, the specific port selection process, and the overseas transportation of FRR SNF to United States ports is being addressed in the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (Draft) (FRR EIS). Only the impacts of transportation of SNF from these ports of entry to DOE facilities are analyzed in this EIS.

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In addition, in response to public comments, this EIS discusses the consequences of a shipping accident that results in a shipboard fire approximately 2 miles from Seattle (Volume 1, Appendix D, section F).

5.12.4 Packaging

05.12.04 (001) Packaging

COMMENT
A commenter raises the issue of the proposed movement of nuclear waste from Washington, DC, to Tennessee in what his sources indicate are leaky containers.

RESPONSE
DOE is not proposing to ship nuclear waste from Washington, DC, and believes that the commenter may have Washington state or other states with DOE facilities in mind. DOE is evaluating in this EIS several
alternatives that would entail transporting SNF to ORR for storage. Any transportation would be conducted in compliance with DOT regulations using NRC transportation standards.

05.12.04 (002) Packaging

COMMENT

A commentor provides recommendations for the packaging of radioactive materials for transportation.

RESPONSE

DOE complies with the applicable requirements of DOT regulations covering the packaging of radioactive materials. DOE has conducted analyses using representative packaging for radioactive materials in the EIS; if an alternative is chosen that requires transportation of radioactive materials, the recommendations made by the commentor will be considered. These analyses are adequate for comparison of alternatives under consideration in this programmatic EIS.

05.12.04 (003) Packaging

COMMENT

The commentor believes the EIS does not adequately address the potential health effects from external radiation from spent nuclear fuel casks.

RESPONSE

Volume 1, Appendices D and I provide analyses of potential health effects from external radiation associated with SNF transportation. These analyses show that the health effects from external radiation under all alternatives considered in the programmatic EIS would be small.

5.12.5 Routes

05.12.05 (001) Routes

COMMENT

The commentor states that the EIS should analyze a more realistic scenario of transportation than either all shipments by truck or all shipments by rail. A combination of the two forms of transportation should be analyzed.

RESPONSE

The assumption of all shipments by truck or all shipments by rail serves to produce analytical results representing the limits of potential transportation impacts; any combination of truck and rail shipments would have impacts between these extremes. Therefore, additional analyses are not required. In each case of transport by truck or rail, the potential impacts would be small.

05.12.05 (002) Routes

COMMENT

The commentor states that the description of the regional transportation infrastructure around the Hanford Site implied that Interstate 90 would be used for shipping campaigns, and that the shipping campaigns in northern Idaho are not considered in the EIS.

RESPONSE

The description of the regional transportation infrastructure is a discussion of the existing transportation environment at and around the Hanford Site; it is not meant to imply that Interstate 90 may be used for shipping campaigns. The analysis of transportation risks is provided in Volume 1, Appendices D and I. These analyses cover all appropriate shipping routes and show that the risks for all of the programmatic alternatives considered would be small.

5.12.6 Regulations

05.12.06 (001) Regulations

COMMENT

One commentor questions the regulatory status of on-site shipments in noncertified containers.

RESPONSE

The Hazardous Materials Transportation Act applies only to hazardous material shipments conducted "in commerce." A letter written in 1991 from the U.S. Department of Transportation, Research and Special Programs Administration, addresses the definition of the term "in commerce" and the applicability of the Hazardous Materials Transportation Act to shipments conducted on DOE sites. The referenced letter states that shipments conducted in areas to which the general public does not have unrestricted access are not "in commerce" and as such, need not meet the requirements of 49 CFR. The above discussion notwithstanding, DOE has implemented specific procedures, as required by DOE Order 5480.3, Safety Requirements for the Packaging and Transportation of Hazardous Materials, Hazardous Substances, and Hazardous Wastes, which ensures the health and safety of the public and workers are protected during onsite shipments. These procedures include (but are not limited to) speed restrictions, use of escort vehicles, and prior notification of appropriate emergency response personnel that the shipment will take place.
05.12.06 (002) Regulations

COMMENT

Commentors question the adequacy of transportation regulations, including radiation limits, container accident safety requirements, and routing. For example, commentors question the external radiation limits associated with the shipping containers, the ability of a shipping container to withstand fire, and the routing of radioactive material shipments.

RESPONSE

A brief discussion of transportation regulations is in Appendix I of the EIS. DOE follows DOT regulations for shipping radioactive material, which include requirements for external radiation, ability of a shipping container to withstand hypothetical accident conditions (including fire), and transportation routing. These requirements were established by DOT to protect workers and the public and are designed to minimize the risks associated with transporting radioactive material. DOE has no reason to question the adequacy of the DOT regulations. As discussed in the EIS, the risk from transportation would be very small.

The criteria used to choose the ports of entry are outlined in the Notice of Intent for the EIS entitled Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Reactor Spent Nuclear Fuel (FRR EIS). These criteria included: (a) adequacy of harbor and dock characteristics to satisfy the cask-carrying ship requirements, (b) availability of safe and secure lag storage, (c) adequacy of overland transportation systems from ports to the storage sites, (d) experience in safe and secure handling of hazardous cargo, (e) emergency preparedness status at the port and nearby communities, and (f) proximity to the proposed storage sites. A range of alternative ports will also be analyzed in the FRR EIS. The decision regarding port selection will not be made until both this EIS and the FRR EIS are completed.

05.12.06 (003) Regulations

COMMENT

Commentors ask about notification and inspection of radioactive materials shipments. In particular, commentors question the inspection of foreign research reactor spent nuclear fuel.

RESPONSE

The DOE complies with all DOT regulations regarding notification and inspection of radioactive materials shipments. The inspection of FRR SNF before it reaches the United States would be the responsibility of the shipper, who must certify that the radioactive material is in proper condition for transport. This includes compliance with external radiation and contamination requirements.

05.12.06 (004) Regulations

COMMENT

The commenter states that the EIS has not acknowledged the right of Indian Tribes to regulate transportation of spent nuclear fuel and other hazardous materials across Tribal lands under the Hazardous Materials Transportation Act.

RESPONSE

DOE is and always has been committed to safe and secure transportation of SNF to appropriate facilities for storage or other management activities. Consistent with this commitment, DOE will comply with applicable requirements promulgated by a state, a political subdivision, or an Indian Tribe that is authorized and has not been preempted by the Hazardous Materials Transportation Act, Atomic Energy Act, or other applicable Federal law.

5.12.7 Not used

5.12.7.1 Accidents

05.12.07.01 (001) Accidents

COMMENT

Commentors state that the consequences of the maximum reasonably foreseeable transportation accident are provided only for a rural population zone. The commenter asks about the consequences if the same accident occurred in an urban population zone.

RESPONSE

NEPA requires that an EIS evaluate reasonably foreseeable impacts from proposed actions. For this EIS, an accident is considered reasonably foreseeable if it has a probability of at least 1 x 10^{-7} per year, or one chance in 10 million years. Factors that affect accident probability include state-specific accident rates; accidents per kilometer; the fraction of accidents that occur in rural, suburban, and urban population zones; the probability that an accident will be of a certain severity; and the annual shipping mileage in rural, suburban, and urban population zones. Weather conditions also affect the probability of accident consequences because stable, worst-case, weather conditions are only about one-tenth as likely as neutral, average weather conditions.

Volume 1, Appendix I, Table I-41 summarizes the maximum reasonably foreseeable transportation accident for the Regionalization by geography alternative, in which all SNF is sent to the Hanford and SRS. The footnotes to the table state that the maximum reasonably foreseeable accident occurs in a suburban population zone, not a rural zone. If this same accident were postulated to occur in an urban vicinity.
population zone, the accident probability would be less than $1 \times 10^{-7}$ per year, which makes it so unlikely that the scenario was not analyzed.

Volume I, Appendix I, Table I-31 summarizes the maximum reasonably foreseeable transportation accident for the Decentralization alternative. Footnote "a" to the table states that the maximum reasonably foreseeable accident occurs in a rural population zone. If an accident of equal severity were postulated to occur in an urban or suburban population zone, the accident probability has been calculated to be less than $1 \times 10^{-7}$ per year, which makes it so unlikely that the scenario was not analyzed. The methodology used to calculate the probability of rail transportation accidents is summarized in Appendix I.

Volume I, Appendix I, Table I-55, summarizes the maximum reasonably foreseeable transportation accident for the Centralization alternative at ORR. The table shows that under neutral weather conditions, the maximum reasonably foreseeable transportation accident could occur in an urban area with a probability of $1 \times 10^{-7}$ per year. If the accident occurred under stable weather conditions, the probability would be one-tenth of the probability under neutral weather, or $1 \times 10^{-8}$ per year, which is less than one chance in 10 million per year. Calculations documented in the references also show that an accident of equal severity in a suburban area also has a probability of less than $1 \times 10^{-7}$ per year. Only in the rural population zone, because most of the distance traveled by the shipments would be in rural areas, has a probability greater than $1 \times 10^{-7}$ per year for an accident of maximum severity to occur under stable, worst-case, weather conditions. Other less severe accidents would have a probability of less than one chance in 10 million per year in urban and suburban areas under stable, worst-case, weather conditions, but their consequences would be less than the results shown in Table I-55.

The consequences of transportation accidents in rural areas include ingestion doses because this is a predominantly agricultural area where residents most likely eat what they produce from the land. This is in contrast to the consequences for transportation accidents in urban and suburban areas, which do not include ingestion doses. Residents of these areas are most likely not involved in agriculture and do not produce what they eat at their resident location. Therefore, the consequences of transportation accidents in rural areas may be greater than the consequences in suburban or urban areas, even though the population densities in the later areas are higher.

05.12.07.01 (002) Accidents

COMMENT

A commentor states no emergency response systems are set up to respond to transportation accidents involving spent nuclear fuel.

RESPONSE

DOE has developed and implemented emergency response systems to respond to transportation accidents involving DOE radioactive materials and SNF. This is discussed in Volume I, Appendix I, section 6. To date, accidents involving SNF have been rare. In the event of an accident involving an SNF shipment in transit, local fire and police organizations are first to respond. DOE, DOT, and FEMA provide training and training materials to local emergency responders to prepare them to handle accidents properly. DOE provides Radiological Assistance Program teams, which consist of trained experts equipped and prepared to quickly respond to an accident and assist local emergency response personnel if requested. This response network, along with preventive measures, such as shipping container design and testing, and adherence to stringent regulations, supports the continued safe shipping of SNF.

DOE uses the Transcom satellite tracking system for each of its SNF shipments. This system uses a transponder located on the trailer with the shipment that relays continuous position of the shipment via satellite to computer terminals at DOE facilities around the country. In the unlikely event a problem occurs with a shipment, the exact position of the shipment can be immediately determined remotely in order to dispatch response teams and aid in assessing the situation.

5.12.8 Need

05.12.08 (001) Need

COMMENT

Commentors note that the future selection of a national central repository would require further shipments of spent nuclear fuel and that analyses of these shipments should be included in the EIS. Additionally, the commentors state that the public has not been properly sensitized to the full transportation issues.

RESPONSE

Further shipments of SNF might be needed when a decision is made regarding ultimate disposition in a permanent repository. Assessment of the impacts of these shipments is not included in this EIS because the method for ultimate disposition has not been selected and such analyses would be premature. Volume I describes the alternatives for SNF management until 2035. This amount of time may be
required to make and implement a decision for ultimate disposition of SNF. DOE has evaluated in the EIS a range of reasonable alternatives for safely managing SNF during the period 1995 to 2035.

To inform the public concerning SNF transportation issues, this EIS evaluates the transportation impacts for a reasonable range of alternatives. The alternatives vary from no action, involving limited transport of radioactive material, to centralization, which involves extensive transport of radioactive material. The analyses in the EIS show that the potential risks from transportation of SNF would be small for all the alternatives considered. Minimizing transportation is one of the factors that has been considered in the DOE decision-making process.

05.12.08 (002) Need
COMMENT
The commentor questions why and how these waste products must be moved.
RESPONSE
Transportation of SNF and radioactive wastes may be necessary to implement alternatives for safely and effectively managing these materials during the period evaluated by the EIS. The need for these activities is discussed in Volume 1, Chapters 1 and 2, and in Volume 2, Chapters 1 and 2. Most SNF and radioactive wastes would be transported by truck or train using shipping containers that satisfy all applicable requirements of DOT and NRC. DOE follows DOT regulations for the shipment of radioactive material, which include requirements for routing, external radiation limits, and the ability of a shipping container to withstand hypothetical accident conditions, including fire. A brief discussion of transportation regulations is in Volume 1, Appendix I.

5.12.8.1 Cost/Shell Game

05.12.08.01 (001) Cost/Shell Game
COMMENT
The commentor notes that the increased shipments required to centralize spent nuclear fuel at the Nevada Test Site matter because of the low risk of transportation and the eventual need to transport the spent fuel to Nevada for ultimate disposition at Yucca Mountain.
RESPONSE
The commentor is correct that for all alternatives, the potential risks from transportation would be very small. It is true that centralization at NTS could provide interim storage of SNF in close proximity to the potential site of ultimate disposition. DOE has considered these, as well as other factors, in the identification of a preferred alternative and the ROD. See also the response to comment 04.04 (008) on DOE’s preferred alternative.

5.13 Emergency Preparedness

05.13 (001) Emergency Preparedness
COMMENT
Commentors state that DOE has not agreed to pay for monitoring, training, and equipping local emergency responders at ports of entry and along shipping routes. One commentor states that the EIS should establish DOE responsibility for training emergency responders to DOE.
RESPONSE
As a shipper of radioactive materials, DOE is responsible for complying with the regulations applicable to the safety of its shipments. This includes assisting state, tribal, and local emergency responders if an accident occurs. DOE’s Transportation Emergency Preparedness Program includes initiatives on planning and training, exercises, and technical assistance to state, tribal, and local governments.

DOE participates with other Federal, state, and local authorities to sponsor and fund various emergency response training courses throughout the United States. These courses are usually provided for the benefit of local, state, and tribal authorities responsible for public safety and emergency response to natural disasters or man-made accidents. The funds for these training sessions come from Federal grants or direct allocations of state tax dollars. Trainees provide their own transportation to these sessions and, generally provide their own emergency response equipment; however, Federal assistance is provided at times. The Federal Government has organized, trained, and equipped state and Federal regional emergency response teams, which are quickly available to assist local authorities in the event of an emergency.

5.13.1 Facilities

05.13.01 (001) Facilities
COMMENT
The commentor wants to know the mechanics of dissemination of information to the public when incidents occur at the Idaho National Engineering Laboratory.
RESPONSE
The DOE Idaho Operations Office maintains a Warning Communications Center (WCC) that is manned 24 hours a day, 7 days a week. WCC personnel operate in four teams, with each team on duty 1 week at
a time. Incident information is immediately passed to the WCC by INEL personnel and others. Depending on the nature of the incident, different media are informed. Incidents such as car collisions that impact traffic are sent to local radio stations e.g. With radioactive materials releases that could affect the public, however, information is immediately sent to not only local radio stations, but to all state television stations, major state radio stations, newspapers, and public officials. Information is updated frequently, and during an incident, additional personnel are brought in to answer questions from public officials, the press, and the general public.

05.13.01 (002) Facilities

COMMENT

Commentors propose that DOE inform all those living within a 500-mile radius of nuclear waste storage sites of the wastes generated and stored nearby and the significant danger these wastes represent to all life.

RESPONSE

The action proposed by the commentors is being accomplished by the preparation and publication of this EIS and other site-specific EISs that will be prepared to assess the environmental impacts of SNF and radioactive waste management at DOE sites. SNF and radioactive waste management pose risks that must be understood and minimized. This EIS evaluates these hazards and the engineered safeguards and management practices designed to reduce or eliminate the hazards. Sites have emergency action plans and equipment to respond to accidents and other emergencies. DOE requirements for emergency response preparedness are contained in DOE Orders 5500.1B, 2B, and 3A (Emergency Management System, Emergency Categories, Classes, and Notification and Reporting Requirements; and Planning and Preparedness for Operational Emergencies, respectively). DOE emergency notification requirements are based on the Emergency Response Planning Zone determined for each facility based on hazard assessments for the facilities. DOE notifies out to the distance required by the Emergency Response Planning Zone and applicable state and local requirements.

05.13.01 (003) Facilities

COMMENT

The commentor points out that, in the event of an incident involving spent nuclear fuel at the Idaho National Engineering Laboratory, large numbers of highly trained personnel are always on hand to combat the effect of any incidents.

RESPONSE

The commentor is correct. INEL's highly trained work force includes a broad range of technical disciplines and skills; this expertise, knowledge of plant systems and procedures, and training in

emergency response actions and priorities are key elements in the control of emergency situations and the mitigation of impacts.

05.13.01 (004) Facilities

COMMENT

The commentor questions whether statements related to the evacuation time for motorists at the nearest public highway to the Idaho National Engineering Laboratory are substantiated.

RESPONSE

The commentor is referring to a statement in Volume 2 that a motorist at the nearest public access highway could be evacuated in 2 hours. In the event of an accident at an INEL facility that results in an airborne release to the environment, normal precautionary actions include establishment of road blocks on affected portions of public highways traversing the site. The road blocks prevent members of the public from entering the affected area; site security personnel would also patrol the affected portion of highway to ensure no motorists remained after the road blocks were established. Evaluations of site security response times indicate that these actions can be accomplished well within the 2-hour period assumed in the Volume 2 accident analysis.

5.13.2 Transportation

05.13.02 (002) Transportation

COMMENT

The commentor suggests that switching from truck to train for transportation of spent nuclear fuel might result in inadequate emergency preparedness along the new routes.

RESPONSE

The EIS addresses accidents in Volume 1, section 5.7.12. Locations considered for SNF management have emergency action plans and equipment to respond to accidents and other emergencies. The plans would be updated to cover any new SNF facilities and activities. DOE would coordinate activities with state and local agencies to establish and implement an appropriate emergency response training program for potential accidents. The details of such planning are beyond the scope of the EIS.

05.13.02 (004) Transportation

COMMENT

The commentor states that the Shoshone-Bannock Tribes have limited emergency response personnel and lack any equipment in the event of an accident on the Fort Hall Reservation.
In the event of an accident involving a hazardous or radioactive material shipment on the Fort Hall Reservation, local fire and police organizations are first to respond. DOE, DOT, and FEMA provide training and training materials to local emergency responders to prepare them to handle accidents properly. If the accident involves a release of hazardous or radioactive material, assistance is available on short notice from the State Hazardous Materials Team located 15 minutes away in Pocatello. DOE provides for Radiological Assistance Program teams consisting of trained experts equipped and prepared to quickly respond to a radiological accident and assist local emergency response personnel, if requested. The DOE response team could respond to a request for assistance from the Tribes in much less than 4 hours, based on documented response times to other locations such as Dubois, Idaho, and the State of Oregon. Although the accident analysis presented in the EIS takes no credit for emergency response measures, the impacts of the potential accidents would be small.

05.13.02 (005) Transportation

COMMENT

The commentors state that emergency response systems are not set up to respond to transportation accidents involving spent nuclear fuel.

RESPONSE

To date, accidents involving SNF have been rare, but they do occur; however, no significant releases have resulted from any of the accidents during SNF transportation. In the event of an accident involving an SNF shipment in transit, local fire and police organizations are first to respond. DOE, DOT, and FEMA provide training and training materials to local emergency responders to prepare them to handle accidents properly. DOE provides for Radiological Assistance Program teams, which consist of trained experts equipped and prepared to quickly respond to an accident and assist local emergency response personnel if requested. This response network, along with preventive measures, such as shipping container design and testing and adherence to stringent regulations, supports the continued safe shipping of SNF.

05.13.02 (006) Transportation

COMMENT

The commentor states that DOE needs to define a position regarding the funding of local emergency response in states along spent nuclear fuel transportation corridors.

RESPONSE

DOE recognizes the importance of preparedness for potential accidents involving transportation of SNF. Currently, training is available on a limited basis at the awareness level for first responders. DOE is working with state and local officials through the Transportation External Coordination Working Group to develop a national approach for training and technical assistance.

05.13.04 (001) Infrastructure/Coordination

COMMENT

Commentors question the adequacy of notification of civil agencies and inspection of shipments of radioactive materials. In particular, some commentors express concern about the inspection of foreign research reactor spent nuclear fuel.

RESPONSE

DOE complies with DOT regulations and, when applicable, the International Atomic Energy Agency regulations regarding notification and inspection of radioactive material shipments. Foreign shippers transporting material to ultimate destinations within the United States are also required to comply with the regulations. Inspection of FRR SNF before it reaches the United States is the responsibility of the shipper, who must certify that the radioactive material is in proper condition for transport. This includes compliance with external radiation and contamination requirements.

The Naval Nuclear Propulsion Program does not announce the times or routes of shipments to make it more difficult for terrorists, saboteurs, or hijackers to plan and execute an attack on these shipments.

This is in accordance with Federal Government policy and regulations governing such shipments. The Navy's policy on notification is also in full compliance with the applicable state and Federal regulations for such shipments containing highly enriched weapons-grade uranium.

05.13.04 (002) Infrastructure/Coordination

COMMENT

The commentor requests that DOE consider Governor Campbell's request for assistance with South Carolina's emergency response capability because of the shipment of foreign research reactor spent nuclear fuel within the state.

RESPONSE

DOE responded to former Governor Campbell's request by providing funds to assist with South Carolina's emergency response capability.
5.14 Not used

5.15 Socioeconomics

05.15 (001) Socioeconomics
COMMENT
The commentor states that the negative public perception and adverse effect considered.
Commenlors suggest looking at clean energy sources and toward alternative jobs that would be generated.

RESPONSE
The development of clean energy sources and the associated new jobs and employment opportunities are not within the scope of this EIS.

05.15 (002) Socioeconomics
COMMENT
Commenlors state they are concerned about the loss of spent nuclear fuel management jobs under any of the alternatives.

RESPONSE
Employment and job issues are discussed in Volume 1, Chapter 5 and site-specific Appendices A through F, and in Volume 2, Chapters 4 and 5. These sections discuss direct and indirect job creation and impact on the labor force of affected communities. The EIS Summary section Spent Nuclear Fuel-Related Employment concludes that employment-related impacts would be small for all the alternatives considered.

05.15 (003) Socioeconomics
COMMENT
The average daily memberships for city school districts, such as Oak Ridge and Harriman, are included in the total average daily membership presented for the four county school districts in Volume 1, Appendix F, Part Three, section 4.3.3.

RESPONSE
The commentor states that the EIS should include a more detailed socioeconomic analysis for Nye and Clark Counties in Nevada, including consideration of the impact of this project in conjunction with other activities planned for the Nevada Test Site.

05.15 (005) Socioeconomics
COMMENT
Commenlors state that the EIS socioeconomic analysis should include effects on local property values, subsequent effects on the tax base, and the effects on the effort to diversify the local economy.

RESPONSE
Because the environmental impacts associated with SNF management under all alternatives would be small, there is no reason to believe that storage or examination of SNF at any location evaluated would have a discernible effect on local property values, as described where appropriate in Volume 1, Appendices A through F, and Volume 2, section 5.3. Changes in the economic conditions under any of the alternatives considered would be small relative to the local economies of the potential sites and would not affect long-term housing demand and property values. Consequently, impacts on the local tax base and any efforts to diversify local economies would be small.

05.15 (006) Socioeconomics
COMMENT
The commentor notes that in addition to the four county school districts, there are city school districts in Oak Ridge and Harriman, Tennessee.

RESPONSE
The average daily memberships for city school districts, such as Oak Ridge and Harriman, are included in the total average daily membership presented for the four county school districts in Volume 1, Appendix F, Part Three, section 4.3.3.

05.15 (007) Socioeconomics
COMMENT
The commentor states that the EIS should include a more detailed socioeconomic analysis for Nye and Clark Counties in Nevada, including consideration of the impact of this project in conjunction with other activities planned for the Nevada Test Site.

RESPONSE
The EIS, Volume 1, Appendix F, Part Two, section 5.16, presents the potential cumulative impacts from the proposed SNF management facilities. The approach for analysis in Volume 1, Appendix F, Part Two, section 5.3, is adequate for comparing alternatives in a programmatic EIS.
determine estimates of migrating population. Because it is unlikely that any affected person on the Reservation would migrate, the difference in household size does not impact the population analyses.

Transportation and accident analyses do not indicate that Reservation lands would be damaged; therefore, no impact to agricultural production or hunting or gathering are expected. The residents' food supply is not expected to be impacted.

05.15 (010) Socioeconomics

The commentor observes that there is no discussion on the adequacy of public facilities and services in the region of influence around the Idaho National Engineering Laboratory.

RESPONSE

Data regarding community resources are presented in Volume 2, section 4.3.3. The data do not indicate any remarkable excesses or deficiencies in levels of service; therefore, their adequacies were not specifically evaluated. The data-collection process did not reveal outstanding problems in levels of service.

05.15 (011) Socioeconomics

The commentor disagrees with the use of current employment figures rather than more recent employment projections for the Idaho National Engineering Laboratory and states that the analysis ignores cumulative impacts and reasonably foreseeable actions.

RESPONSE

The EIS has been revised to reflect current projections of employment, including the results of the INEL contractor consolidation including program changes at Argonne National Laboratory-West.

Cumulative employment impacts are presented in Volume 2, section 5.15. The cumulative employment figures include the effects of (1) baseline changes at INEL, (2) alternative impacts, and (3) off-site (i.e., non-DOE) project impacts. The cumulative employment impacts are based on the best available data at the time of the analyses. The projected INEL employment figures are bounding for the region of influence. With the announced INEL employment reductions, employment estimates for any of the Volume 2 alternatives are easily accommodated within the existing site and region of influence infrastructure.

The purpose of this EIS is to analyze the potential impacts related to the alternatives. Impacts related to changes in baseline conditions are addressed in general to support the impact analysis. However, there would be no significant impacts to the socioeconomic resources of the region of influence as a result of the changes in regional economic, transportation, health, accidents, or environmental conditions induced by the SNF management alternatives at the potential sites or environmental restoration and waste management program alternatives at the INEL. Therefore, it was not considered necessary to specifically analyze potential impacts to the Shoshone-Bannock Tribes or the Fort Hall Reservation. Impacts of implementation of any of the EIS alternatives are expected to be small.

With respect to INEL, employees represent less than 2 percent of employed persons residing on the Fort Hall Reservation (25 out of 1,544). Employment changes at INEL as a result of the alternatives are not expected to disproportionately affect the Tribes or the Reservation; therefore, separate analyses were not performed.

The migration assumptions do account for a proportion of the population remaining in the area if jobs are lost. If the commentor is concerned that residents of the Reservation would not migrate, that possibility is reflected in the migration assumptions contained in the EIS. Household size assumptions were used to...
The Final EIS and ROD will be issued in 1995; therefore, fiscal year 1995 would be used as the baseline for analyzing potential impacts that could result from implementation of the SNF and INEL environmental restoration and waste management alternatives. The analysis in Volume 2, section 5.3 evaluates the potential impacts under each alternative relative to conditions in 1995. However, INEL employment data are provided beginning with fiscal year 1990 (Volume 2, section 4.4.3 and Figure 4.3-1); therefore, the reader may compare the projected impacts to employment levels during years prior to 1995. The issue raised in the comment regards baseline employment only. The absolute impacts of the alternatives remain the same regardless of which baseline year is chosen. It is the "relative" impact that differs. Furthermore, the analysis conducted estimates the impacts of the alternatives, not of changes in baseline. Change in baseline employment is not an alternative, and therefore, is not analyzed as such.

05.15 (012) Socioeconomics

COMMENT

The commenter states that the socioeconomic analyses should have identified local jurisdictions surrounding the Idaho National Engineering Laboratory and discussed the fiscal health and impacts of the alternatives on those specific areas.

RESPONSE

Community resources were analyzed, and the results are presented in Volume 2, section 4.3.3 and Table 4.3-4. Existing economic, social, and community profiles for affected communities are presented. The potential socioeconomic impacts associated with the alternatives are so small that detailed analysis of local jurisdictions is not needed. Most INEL employees live in Bonneville County (67 percent). Therefore, it could be expected that any potential impacts would be focused in that area.

05.15 (013) Socioeconomics

COMMENT

The commenter states that the higher wage rate of Idaho National Engineering Laboratory employees, as compared to the average wage rate in the region of influence, was not considered in the socioeconomic analysis.

RESPONSE

It is true that INEL jobs on average are higher paying than the average private-sector job in Idaho. However, job losses (under the Ten-Year Plan and Minimum Treatment, Storage, and Disposal alternatives) and job gains (under the Ten-Year Plan and Maximum Treatment, Storage, and Disposal alternatives), as discussed in Volume 2, section 5.3, are not expected to be sufficient to generate adverse impacts with or without wage differentials taken into account. Volume 2, section 5.3 describes methods used to analyze impacts, including total employment and earnings impacts that were estimated using Regional Input-Output Modeling System multipliers. As described in Volume 2, section 4.3, during fiscal year 1990, INEL directly employed approximately 11,100 persons, while the population directly supported by INEL employment was estimated to be approximately 38,000 persons.

05.15 (014) Socioeconomics

COMMENT

Commentors object to shipment and storage, and potential sabotage of nuclear waste at Idaho National Engineering Laboratory, because it would seriously affect the tourist industry and economy of Idaho and western Wyoming.

RESPONSE

Because the actual environmental impacts associated with SNF management under all alternatives considered in the EIS would be small, there is no reason to believe that storage or examination of SNF at any of the locations evaluated would have any significant effect on tourism. Even the impacts of hypothetical accidents are limited in extent and small enough that there should be no impact on tourism.

05.15 (015) Socioeconomics

COMMENT

The commenter raises an issue about the lack of quantitative analysis of the socioeconomic impacts that would result from a 1-year restriction of agricultural use of land surrounding the Idaho National Engineering Laboratory that has been contaminated following an accident and release of radioactive material.

RESPONSE

The impacts have been addressed in Volume 2, section 5.14 in a qualitative manner. While it is anticipated that the major part of the land that would be restricted following an accident at INEL would be onsite, there is a potential for existing agricultural land near INEL to become contaminated and also restricted from use. More likely, however, is the possibility of a temporary restriction of land use pending completion of surveys to ascertain whether contamination has occurred under allowable limits. Such temporary restriction would be of short duration.

Although the economic value of any contaminated land is highly subjective, in the event that damages are incurred as a result of contamination and restriction of land use, persons injured may be able to recover their losses in accordance with applicable laws and regulations.
05.15 (016) Socioeconomics

COMMENT
The commenter requests that the socioeconomic portion of the EIS address DOE's strategic plan to improve U.S. competitiveness in a world economy and to transfer technology from the public to the private sector. Specifically, the commenter asks what the impacts of each alternative are on competitiveness and technology transfer.

RESPONSE
DOE is in the process of identifying technologies for transfer from the public to the private sector at each of its facilities and has ongoing programs targeting improving U.S. competitiveness in the world economy. The activities associated with SNF management use existing technologies and do not appear to offer opportunities for technology transfer.

05.15 (017) Socioeconomics

COMMENT
The commenter is of the opinion that managing spent nuclear fuel at the Savannah River Site, coupled with projected employment declines, will impede economic development in the region and have an adverse impact on the quality of public education in Aiken County, South Carolina.

RESPONSE
As noted in Volume 1, Appendix C, section 5.3, DOE believes that the projected decline in employment at SRS would be offset, in part, by the creation of operations jobs to support SNF management activities. DOE does not anticipate any adverse impacts to the public education system under any of the management alternatives being considered.

In terms of economic development in Aiken County and the region, DOE believes that the research and development activities and opportunities that may accompany SNF management activities could stimulate economic development in the region.

05.15 (018) Socioeconomics

COMMENT
The commenter notes the importance of maintaining the pool of experts.

RESPONSE
The commenter is correct in noting the importance of maintaining a pool of expert personnel. In addition, it is necessary to maintain the existing infrastructure and skilled resources necessary to manage SNF as well as other nuclear materials and waste. One of the factors considered in identifying sites for SNF management was maximizing the use of existing expertise and overall SNF infrastructure, including environment, safety, and health; waste management safeguards and security; and emergency response capabilities.

05.15 (022) Socioeconomics

COMMENT
The commenter raises an issue about adverse employment impacts to the Shoshone-Bannock Tribes and asks whether DOE will mitigate those impacts.

RESPONSE
Volume 1, section 5.7.2 states that DOE will minimize impacts by coordinating with the local and regional planning agencies to address impacts on community services, housing, infrastructure, utilities, and transportation.

05.15 (023) Socioeconomics

COMMENT
The commenter states that the number used for the population located within 50 miles of the Nevada Test Site is too low and that workers from the Nevada Test Site are not considered in the analysis.

RESPONSE
Volume 1, Appendix F, Part Two, section 5.7 states that a population of 15,100 persons was estimated to be within 50 miles of the proposed SNF facilities at NTS in 1995. This population estimate is based on 1990 census data extrapolated to 1995 using county growth rates. Volume 1, Appendix F, Part Two, section 4.3, considers Nye and Clark counties, where most of the NTS work force resides.

05.15 (024) Socioeconomics

COMMENT
The commenter states that DOE needs to make firm commitments to mitigate adverse employment impacts that could occur, ranging from retraining displaced workers to providing support for the local communities.

RESPONSE
As stated in Volume 1, Chapter 5, DOE will coordinate its planning efforts with local communities and county planning agencies to address impacts on community services, housing, infrastructure, utilities, transportation, and employment. In the past, DOE has worked to retrain and refocus workers due to changes in mission, such as the transition from past emphasis on defense-related activities during the Cold War to current environmental restoration activities. Also, as in the case of the City of Idaho Falls, DOE is working with community leaders to help diversify the economic base away from a large dependence on DOE activities at INEL.
5.16 Safeguards and Security

05.16 (001) Safeguards and Security

COMMENT
The commenter states that this EIS addresses nothing new in establishing a viable waste policy and that moving nuclear wastes around only delays the problem to the next generation.

RESPONSE
DOE is committed not only to developing Federal geologic repositories for permanent isolation of SNF, but to providing safe interim storage pending availability of permanent disposal facilities. Transportation of SNF is necessary to varying degrees under the alternatives DOE is analyzing for providing safe interim storage and management of SNF. The alternatives have definite purposes for relocating SNF, such as storing similar fuel types within a single secure facility. Thus, the alternatives attempt to balance transportation concerns with other worthy considerations, including nonproliferation, worker safety, and cost effectiveness.

The potential impacts from storing radioactive materials associated with SNF are discussed in Volume 1, Chapter 5. Environmental consequences of SNF management for all alternatives are discussed in Volume 1, section 5.1, and mitigation measures are discussed in Volume 1, section 5.7. DOE has a program for safety managing and storing SNF and other radioactive materials at each of the sites considered in the EIS. It is DOE policy to design, construct, and operate its facilities in a way that provides a level of safety and safety assurance that meets applicable Federal, state, local, and DOE requirements and regulations. DOE will manage SNF in accordance with applicable Federal, state, local, and DOE requirements and regulations in a manner that ensures protection of the environment and the health and safety of the public and site employees.

05.16 (002) Safeguards and Security

COMMENT
The commenter states that there should be "a lot more" security associated with the various alternatives described in Volume 1, and these alternatives should all be comparable with the measures taken for the Centralization alternative.

RESPONSE
DOE has security systems in place at all facilities that handle nuclear materials. The extent of the security systems established for the various alternatives would be appropriate for the activities involved.

See also the response to comment 05.16 (001).

05.16 (003) Safeguards and Security

COMMENT
Commentors request declassification of environmental, safety, and health documentation relevant to establishing historical Idaho National Engineering Laboratory source terms (radioactive releases), because unavailability of this previously classified documentation has prevented an accurate assessment of the impacts.

RESPONSE
This comment relates to DOE's dose reconstruction project, which is outside the scope of this EIS.

The U.S. Department of Health and Human Services (HHS) and DOE have two Memoranda of Understanding (MOUs) for public health responsibilities around DOE sites. Under the MOU, which was signed in December 1990, DOE transferred the responsibility for managing and conducting energy-related analytic epidemiologic research to HHS. HHS has delegated responsibility to the Centers for Disease Control and Prevention (CDC). Baseline health effects studies for both DOE workers and for members of the surrounding public are either under way or planned at all facilities. To support this effort, DOE has directed that all worker health and exposure data and all data regarding releases of radioactive and toxic materials be released. DOE is responding to all CDC requests for declassification of documents relating to the dose reconstruction project. All studies will be made available to the public and the scientific community. For more information on this matter, contact the DOE Office of Public Affairs.

In recent years, DOE has released significant amounts of previously classified data and will continue to release additional information as it becomes declassified. Although most environmental monitoring data are not classified, other data on DOE activities are very sensitive and will remain classified until released by the Secretary of Energy.

05.16 (005) Safeguards and Security

COMMENT
The commenter asks about the consequences of terrorist attacks, and states that storage and disposal facilities should be where the least damage could occur.
RESPONSE
The EIS evaluates 10 sites as reasonable alternatives for some level of SNF management activity. The analysis in the EIS includes a number of factors including the potential risks to the public from both operations and reasonably foreseeable accident conditions. Discussions on public health and safety can be found in the Occupational Public Health and Safety sections in Volume 1 (and its associated site-specific Appendices A through F), and in the Health and Safety section in Volume 2. The EIS concludes that there would be no significant risks to the public or the environment due to SNF management activities at any of the 10 sites being considered.

The consequences of postulated terrorist acts are expected to be bounded by the results of other human-initiated events, such as plane crashes, explosions, fires, etc.; therefore, terrorist attacks require no specific analysis. SNF is not attractive to terrorists due to the bulk of the fuel and transport containers and also to the high radiation fields surrounding unshielded SNF.

DOE and the Navy have extensive security systems at all facilities handling nuclear materials. Security precautions are routine for all shipments of government-owned nuclear material. For more than 40 years, security precautions have successfully prevented the theft of government-owned nuclear materials.

05.16 (006) Safeguards and Security

COMMENT
The commenter is opposed to nuclear power because of the concern about nuclear materials falling into "the wrong hands."

RESPONSE
DOE has extensive security systems in place at all facilities that handle nuclear materials. Security precautions, including emergency response team notification, are routine for all shipments of DOE nuclear material. Even in the event of a successful attack on a DOE nuclear facility, the accident analyses detailed in the EIS, which bound any credible terrorist attack scenario, describe consequences far less severe than "the extinction of mankind" mentioned by the commenter. However, scenarios involving the use of nuclear weapons are outside the scope of this EIS. Volume 2, section 5.14 has been changed to include acts of terrorism as an initiating event.

05.16 (007) Safeguards and Security

COMMENT
The commenter is opposed to nuclear power because of the concern about nuclear materials falling into "the wrong hands."

RESPONSE
DOE has extensive security systems in place at all facilities that handle nuclear materials. Security precautions, including emergency response team notification, are routine for all shipments of DOE nuclear material. Security precautions have, for more than 40 years, successfully prevented the theft of DOE nuclear materials. Questions and concerns regarding nuclear proliferation are outside the scope of this EIS. However, Volume 1, sections 1.2.3 and 1.2.4 refer the reader to other DOE-sponsored NEPA reviews. Nuclear nonproliferation policies will be addressed in two future DOE publications: EIS on a Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel and Proliferation EIS for the Management and Disposition of Excess Nuclear Material (Draft).

5.17 Monitoring

05.17 (001) Monitoring

COMMENT
The commenter states that adequate funds must be available to support environmental monitoring activities at Idaho National Engineering Laboratory.

RESPONSE
INEL has adequate funds to support environmental monitoring activities per DOE Order 5400.1, General Environmental Protection Program, which implements the established environmental protection program at INEL.

05.17 (002) Monitoring

COMMENT
The commenter states that the EIS does not evaluate the potential need for additional environmental monitoring of new Idaho National Engineering Laboratory facilities described under the alternatives.

RESPONSE
The purpose of the EIS is to evaluate the potential environmental impacts from proposed activities. The EIS is not intended to substitute for the assessments required by regulations. Any facilities constructed
or operated under the chosen alternative will comply with applicable regulatory requirements, including
requirements for monitoring emissions from facilities and surveillance of the surrounding environment.

05.17 (003) Monitoring
COMMENT
The commentor has requested documentation of the results of the environmental monitoring programs,
particularly those of the Environmental Protection Agency, in the Volume 1 site descriptions.
RESPONSE
DOE has added references to the environmental monitoring results at the various sites discussed in
Volume 1, Chapter 4.

05.17 (004) Monitoring
COMMENT
The commentor requests that the EIS contain a detailed monitoring plan for the preferred alternative and
describe the feedback mechanisms by which the monitoring results are used to modify mitigation
strategies based on changing information.
RESPONSE
The Idaho National Engineering Laboratory Environmental Monitoring Plan has been provided as a
reference for the EIS. For existing facilities, it is independent of the alternative selected. For monitoring
new facilities, more specific information, such as specific locations and facility operational parameters,
is required before an appropriate monitoring plan could be prepared. The facility-specific monitoring
plan would be prepared after final issuance of an EIS. DOE believes that inclusion of a detailed
monitoring plan in this EIS would not provide useful information to decisionmakers, because it would
not provide a discriminator for comparison of the alternatives.

5.18 General Operations

05.18 (001) General Operations
COMMENT
The commentor questions what techniques are being developed to ensure safe, long-term storage of
nuclear waste, and that this is not dangerous material and ways of safely storing it really need to be
reexamined.
RESPONSE
Numerous technologies are already available for managing radioactive materials, and others are being
considered for this purpose. Technological options for SNF management are described in Volume 1.
section 1.1.3 and Appendix J. Current management practices for all types of radioactive wastes are discussed in Volume 2, section 2.2.7, and technology development activities are described in Volume 2, section 3.1. (Volume 2 is specific to INEL, but waste management technologies also generally apply to other DOE sites.) DOE has established a policy of compliance with all applicable Federal, state, and local regulations and DOE Orders. All radioactive materials will be managed to protect the environment and the health and safety of the public and site employees.

05.18 (002) General Operations

COMMENT

The commenter believes that technologies for safe, long-term storage of nuclear waste and plutonium may not exist because the material being stored has a long half-life and will outlast the storage containers.

RESPONSE

DOE has a program to safely manage and store radioactive materials (including both radioactive wastes and SNF) at each of the sites considered in the EIS. The potential impacts of storing SNF and associated mitigation measures are discussed in Volume 1, Chapter 5. Supporting information on types of SNF and storage options for them is provided in Volume 1, Appendix J. Management and storage of radioactive materials at INEL are described in Volume 2, Chapters 1 and 2. It is DOE’s policy to comply with applicable Federal, state, and local regulations and DOE Orders. All radioactive materials will be managed to ensure protection of the environment and the health and safety of the public and site employees.

One of the concerns that must be addressed prior to ultimate disposition is the concern raised by the commenter that the waste may outlast some storage methods. While ultimate disposition is outside the scope of this EIS, DOE is researching and developing disposition technologies that will address the issue of the longevity of the waste and ensure that the public and environment are protected.

General long-term solutions proposed for managing SNF at INEL are discussed in Volume 2, Chapters 1 and 2. The alternatives for safe SNF management in the interim are discussed in section 3.1 of Volume 1.

5.18.1 Waste Management

05.18.01 (002) Waste Management

COMMENT

Commentors raise an issue about the disposing of hazardous and radioactive wastes using environmentally unacceptable methods.

RESPONSE

DOE accepts the responsibility to operate its hazardous and radioactive waste management activities in compliance with applicable requirements. DOE continues to improve the procedures and technologies associated with waste management. Accordingly, the lessons learned from past waste management practices and the knowledge being gained from current research and development programs are incorporated into future waste management programs. One purpose of this EIS is to further these objectives.

Volume 1 is intended to provide the public and decisionmakers with a programmatic view of proposed actions and alternatives for managing SNF. For all alternatives analyzed, DOE is committed to meeting applicable Federal, state, local, and DOE requirements to ensure that SNF is safely managed and that the environment and health of the public and site employees are protected. Under the No Action alternative, only the minimum actions necessary for continued safe management of SNF would be implemented.

Volume 2 is a site-specific assessment of SNF and environmental restoration and waste management alternatives at INEL. Again, the intent of Volume 2 is to provide the public and decisionmakers with the information necessary to select the best alternative for these activities at INEL. DOE is also preparing a programmatic EIS for waste management, which will provide a broader view of complex-wide waste management programs similar to the way Volume 1 of this EIS addresses the programmatic concerns for SNF.

05.18.01 (003) Waste Management

COMMENT

The commenter states that for Volume 1, high-level, transuranic, and mixed waste are different wastes, with different risks, and should be dealt with separately in the EIS. The commenter also asks for a definition of mixed waste.
RESPONSE
DOE agrees with the comment that these three wastes are of different types, with different risks, and different disposal requirements. While it would be necessary in a site-specific EIS to treat each of these as separate entities, for this programmatic EIS, they were lumped together (and separated from low-level wastes) for two reasons: (1) the volumes of high-level, transuranic, and mixed wastes that would be generated from SNF management under the No Action alternative are uniformly small compared with volumes of these wastes already at DOE sites, and (2) high-level, transuranic, and mixed wastes must eventually be disposed of offsite, whereas low-level wastes can be disposed of onsite. A definition of mixed waste has been added to Appendix H.

05.18.01 (004) Waste Management
COMMENT
The commenter indicates that Figure 5-2 and the text on page 5-25 do not agree.
RESPONSE
The text in Volume 1, section 5.1.3.3 indicates that the Hanford Site would generate 110 cubic meters per year of high-level, transuranic, and mixed waste due to processing. Volume 1, Figure 5-2 illustrates the volumes of waste that would be generated from the Decentralization alternative.

05.18.01 (005) Waste Management
COMMENT
The commenter has questions about safe temporary storage and ultimate disposal of radioactive materials.
RESPONSE
DOE agrees with the comment that these three wastes are of different types, with different risks, and different disposal requirements. While it would be necessary in a site-specific EIS to treat each of these as separate entities, for this programmatic EIS, they were lumped together (and separated from low-level wastes) for two reasons: (1) the volumes of high-level, transuranic, and mixed wastes that would be generated from SNF management under the No Action alternative are uniformly small compared with volumes of these wastes already at DOE sites, and (2) high-level, transuranic, and mixed wastes must eventually be disposed of offsite, whereas low-level wastes can be disposed of onsite. A definition of mixed waste has been added to Appendix H.

05.18.01 (006) Waste Management
COMMENT
The commenter asks about three waste treatment facilities under development by the Scientific Ecology Group, Inc. at the Oak Ridge Reservation site.
RESPONSE
Scientific Ecology Group, Inc., has three commercial waste treatment facilities under development, which are not located at ORR. It has recently completed construction of a Carlsbad, New Mexico, facility; has recently purchased property for a Hanford, Washington, site; and is in the planning stages for an Idaho Falls, Idaho, site. As stated in Volume 1, Appendix F-4, Scientific Ecology Group, Inc., operates a low-level radioactive waste incinerator at ORR. The addition of a second radioactive waste incinerator is being considered, as stated in Volume 1, Appendix F, Part Three, section 5.16. While some enhancements to this facility will be made, it will remain within the property boundaries of the site. The potential incremental impacts from the addition of a second radioactive incinerator are assessed in a qualitative manner in the EIS.

05.18.01 (007) Waste Management
COMMENT
The commenter questions the meaning of off-site disposal as a waste management activity at the Nevada Test Site.
RESPONSE
Off-site disposal in the context of Volume 1, section 4.4 means disposal off of the Nevada Test Site at a DOE facility or permitted commercial disposal facility. The destination disposal site would depend on the type of waste. The text in the Final EIS has been changed to clarify that DOE does not manage wastes offsite.

05.18.01 (008) Waste Management
COMMENT
The commenter questions the meaning of off-site disposal as a waste management activity at the Nevada Test Site.
RESPONSE
Off-site disposal in the context of Volume 1, section 4.4 means disposal off of the Nevada Test Site at a DOE facility or permitted commercial disposal facility. The destination disposal site would depend on the type of waste. The text in the Final EIS has been changed to clarify that DOE does not manage wastes offsite.

05.18.01 (009) Waste Management
COMMENT
The commenter asks about the time and volume of waste generated in the absence of an off-site incinerator at ORR.
RESPONSE
The commenter asks about the time and volume of waste generated in the absence of an off-site incinerator at ORR.

05.18.01 (010) Waste Management
COMMENT
The commenter asks about the time and volume of waste generated in the absence of an off-site incinerator at ORR.
RESPONSE
The commenter asks about the time and volume of waste generated in the absence of an off-site incinerator at ORR.

05.18.01 (011) Waste Management
COMMENT
The commenter asks about the time and volume of waste generated in the absence of an off-site incinerator at ORR.
RESPONSE
The commenter asks about the time and volume of waste generated in the absence of an off-site incinerator at ORR.

05.18.01 (012) Waste Management
COMMENT
The commenter asks about the time and volume of waste generated in the absence of an off-site incinerator at ORR.
RESPONSE
The commenter asks about the time and volume of waste generated in the absence of an off-site incinerator at ORR.

05.18.01 (013) Waste Management
COMMENT
The commenter asks about the time and volume of waste generated in the absence of an off-site incinerator at ORR.
RESPONSE
The commenter asks about the time and volume of waste generated in the absence of an off-site incinerator at ORR.

05.18.01 (014) Waste Management
COMMENT
The commenter asks about the time and volume of waste generated in the absence of an off-site incinerator at ORR.
RESPONSE
The commenter asks about the time and volume of waste generated in the absence of an off-site incinerator at ORR.

05.18.01 (015) Waste Management
COMMENT
The commenter asks about the time and volume of waste generated in the absence of an off-site incinerator at ORR.
RESPONSE
The commenter asks about the time and volume of waste generated in the absence of an off-site incinerator at ORR.

05.18.01 (016) Waste Management
COMMENT
The commenter asks about the time and volume of waste generated in the absence of an off-site incinerator at ORR.
RESPONSE
The commenter asks about the time and volume of waste generated in the absence of an off-site incinerator at ORR.

05.18.01 (017) Waste Management
COMMENT
The commenter asks about the time and volume of waste generated in the absence of an off-site incinerator at ORR.
RESPONSE
The commenter asks about the time and volume of waste generated in the absence of an off-site incinerator at ORR.
INEL, but also generally applies to wastes at other DOE sites. DOE has established a policy of complying with all applicable Federal, state, and local regulations and DOE Orders, including applicable regulations establishing disposal requirements, including RCRA disposal of wastes in hazardous waste sites, and, if appropriate, EPA/NRC-permitted radioactive waste disposal sites. All radioactive and nonradioactive materials will be managed to protect the environment and the health and safety of the public and site employees.

05.18.01 (009) Waste Management

COMMENT
The commenter states that several types of low-level radioactive waste should be considered greater-than-Class-C waste, which requires an engineered barrier for disposal in burial grounds.

RESPONSE
DOE radioactive wastes are specifically managed according to DOE Order 5820.2A, *Radioactive Waste Management*, which classifies radioactive wastes somewhat differently than regulations promulgated by NRC for commercial radioactive wastes. In particular, DOE has only one category for low-level wastes, which encompasses the A, B, C, and greater-than-Class-C distinctions made by NRC. Specific management measures may still be prescribed for DOE low-level wastes according to the type and quantity of radionuclides present, analogous to standards for disposal of commercial radioactive wastes. For example, DOE low-level waste analogous to NRC greater-than-Class-C waste is required by DOE Order 5820.2A, *Radioactive Waste Management*, to be handled as a special case, and is not permitted to be buried in the RWMC. Additional information on special-case waste at INEL has been added to Volume 2, section 3.1.3.

05.18.01 (011) Waste Management

COMMENT
The commenter urges that until we can eliminate the generation of nuclear waste, keep it where we can see it and monitor it, and people have an interest in seeing that the generation is eventually eliminated or substantially curtailed.

RESPONSE
Under the No Action alternative, DOE would limit actions to the minimum necessary for safe and secure management of SNF at the generation sites or current storage locations. Most DOE SNF was generated in DOE production and experimental reactors that have ceased to operate, so considerable source reduction has already occurred. SNF management plans are presented for all alternatives in Volume 1, section 1.1, and mitigation measures are discussed in section 5.7.

05.18.01 (012) Waste Management

COMMENT
The commenter expresses an opinion that all waste should be stored in a retrievable manner using the best technologies available.

RESPONSE
Descriptions of how wastes would be managed under the proposed alternative actions are in Volumes 1 and 2, section 3.1. These alternative actions also consider the best technologies available. Technology development activities, including stabilization technologies, aimed at advancing the best technologies available for waste management are described in Volume 2, section 3.1.

05.18.01 (013) Waste Management

COMMENT
The commenter wants to know if the statement on Volume 1, page 5-72 stating “but with processing approximately 2 cubic meters per year (3 cubic meters per year) of high-level waste generated” refers to a process or a reprocessing activity at the Savannah River Site.

RESPONSE
The statement refers to "processing," as shown in Volume 1, Appendix C, section 3.1.

05.18.01 (014) Waste Management

COMMENT
The commenter suggests a wording change in Volume 1, Appendix A, section 2.3 to better define the characteristics of the Hanford Spent Nuclear Fuel Management Plan.

RESPONSE
The suggested wording change has been incorporated into the EIS.

05.18.01 (015) Waste Management

COMMENT
The commenter states that the EIS should reconsider the procedures for burial at the Idaho National Engineering Laboratory Radioactive Waste Management Complex of the material removed from the ends of fuel modules during examination at the Expended Core Facility, and that the EIS does not contemplate changes to this procedure.

RESPONSE
The Navy and DOE rely on definitions and classifications of nuclear materials set forth in the Nuclear Waste Policy Act, as amended, and regulations issued by EPA (40 CFR 261) and NRC (10 CFR 61). The categories set forth in these regulations are "Spent Nuclear Fuel," "High-Level Waste," "Transuranic

Volume 1, Appendix H sets forth the definition of SNF used in this EIS as "fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated."

The definition of high-level waste in Volume 1, Appendix H is "highly radioactive waste material that results from the reprocessing of spent nuclear fuel, including liquid waste produced from reprocessing and a solid waste derived from the liquid..." Transuranic waste is defined as "waste containing more than 100 nanocuries of alpha-emitting transuranic isotopes, with half-lives greater than 20 years, per gram of waste,..." Low-level waste is defined as "waste that contains radioactivity and is not classified as high-level waste, transuranic waste, or spent nuclear fuel."

The ends removed from Naval SNF modules at the Expended Core Facility are structural material that provides support and directs the flow of cooling water during operation. The material removed from the ends of the fuel modules does not contain any fuel or fission products from fuel and therefore cannot be considered SNF. It does not contain transuranic elements or fission products and thus cannot be considered high-level waste or transuranic waste. The amounts of radioactivity in the end boxes cause them to be classified as low-level waste. Consequently, the material removed from the ends of the modules at the Expended Core Facility is categorized as low-level waste due to the amount of radioactivity in it. Their disposal at the RWMC at INEL is accomplished in accordance with applicable regulations. As indicated in Volume 1, Appendix D, section 5.2.15, the amount of low-level waste generated each year at the Expended Core Facility is 425 cubic meters. The radioactive isotopes, which represent 99 percent of the activity in the material removed from the ends of fuel modules, are identified below.

<table>
<thead>
<tr>
<th>ISOTOPE</th>
<th>HALF LIFE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fe55</td>
<td>2.73 years</td>
</tr>
<tr>
<td>Co60</td>
<td>5.271 years</td>
</tr>
<tr>
<td>Ni59</td>
<td>76,000 years</td>
</tr>
<tr>
<td>Ni63</td>
<td>100 years</td>
</tr>
</tbody>
</table>

A description of the composition of material removed from the ends of fuel modules during examination has been added to Volume 1, Appendix D, Attachment B.

5.18.2 SNF Management

05.18.02 (001) SNF Management

COMMENT

The commenter states that he was unaware that spent fuel storage generates transuranic waste and is concerned that this may be due to extensive fuel leakage.

RESPONSE

As reported in Volume 1, section 5.1.1 and site-specific Appendices A through F, transuranic waste is generated in small quantities by the routine operations associated with transporting, receiving, and managing SNF (from fillers, ion exchange columns, etc., particularly during examination and stabilization activities) rather than extensive leakage.

05.18.04 (001) Past Practices

COMMENT

The commenter points out that the vulnerability assessment states that canned fuel in ICPP-603 being transferred to ICPP-666 could lead to contamination and additional vulnerabilities, and that the EIS fails to address this issue.

RESPONSE

DOE is aware of the potential for contamination if transfers are not conducted in a safe, well-planned manner. All fuels to be transferred from ICPP-603 at the Idaho Chemical Processing Plant to ICPP-666 have been inspected for corrosion and other potential breaches. Potentially breached or deteriorated fuels will be placed in suitable containers to prevent release of radioactive material. All fuels will be transported in shielded transfer casks. ICPP-666 has extensive monitoring and water purification capabilities, and any leaking container or fuel element would be identified and necessary corrective actions taken. No additional vulnerabilities are anticipated.

The EIS discusses the Spent Fuel Working Group Report on Inventory and Storage of the Department's Spent Nuclear Fuel and Other Irradiated Nuclear Materials and Their Environmental, Safety, and Health Vulnerabilities (known as the vulnerability assessment) and associated action plans to resolve identified vulnerabilities in Volume 1, section 1.1.2 and Appendix I-2 and in Volume 2, section 2.2.5.
05.18.04 (002) Past Practices

COMMENT
Many commentors raise issues about DOE's past record of waste-handling practices at such sites as Hanford, Oak Ridge, and Idaho National Engineering Laboratory, resulting in releases to the environment.

RESPONSE
DOE has identified, or is currently evaluating many of the problems that exist with its waste management infrastructure, or that have resulted from past releases of contaminants to the environment. Waste management strategies are continually evolving to meet current regulatory requirements and take advantage of technology advancements. Many facilities across the DOE complex are either undertaking, evaluating, or planning upgrades or replacements to come into compliance with applicable regulations. Historical contaminant releases are addressed by DOE's Environmental Restoration Program. Each DOE site listed on EPA's National Priorities List must negotiate an agreement with the appropriate regulatory agencies to prioritize work and develop enforceable schedules for cleanup of contaminated areas. An example is INEL's FFA/CO, which is signed by DOE, EPA Region X, and the State of Idaho.

As discussed in Volume 1, Chapter 1, DOE is committed to complying with all applicable Federal and state laws and regulations, DOE Orders, and interagency agreements governing SNF and environmental restoration and waste management.

As discussed in Volume 1, Chapter 3, safe management of SNF requires that many factors be analyzed, including site security, presence of skilled workers, safety, and the affected environment. The EIS did not reach a decision regarding in which state or states SNF will be stored. Analysis of impacts for a number of potential storage locations were included in the EIS. As part of the public comment process, specific public input regarding the eventual location of SNF storage facilities was sought. Consideration of this input was part of the process used in arriving at the preferred alternative. The preferred alternative in the EIS, as well as other factors, will be considered in the ROD for the proposed action.

Volume 1, section 5.1.1 summarizes potential impacts from waste management activities associated with the SNF management alternatives. Site-specific details are discussed in Volume 1, Appendix A for the Hanford Site, Volume 1, Appendix F, Part Three for ORR, and Volume 1, Appendix B for INEL.

5.18.5 Mitigation

05.18.05 (001) Mitigation
COMMENT
The commentor wants mitigations measured for their effectiveness and addressed in the EIS. A thorough discussion of proposed mitigation for direct, indirect, and cumulative impacts should be included. A Council on Environmental Quality regulation states that an EIS should include the means to mitigate adverse environmental effects.

RESPONSE
As discussed in Volume 1, Chapter 5, the EIS evaluated impacts to socioeconomics, utilities, materials and waste management, occupational health and safety, public health and safety, and transportation: in all cases, the results indicate that impacts to the environment and to humans would be small. However, general mitigation techniques are discussed in Chapter 5. This level of detail is appropriate for a programmatic EIS. Follow-on-site-specific NEPA analyses would address specific mitigation features considered for identified impacts. Comparison of specific impacts by alternatives for Volume 2 is provided in Table 3.3-1, with an indication of proposed mitigation measures. Possible mitigation measures are further discussed in Volume 2, Chapter 5. Specific mitigation measures to be undertaken will be developed for the ROD, and if necessary, a formal mitigation action plan will be developed, as appropriate.

5.19 Miscellaneous

05.19 (001) Miscellaneous
COMMENT
Several commentors state preferences for truck, rail, barge, or air as modes of transportation. Numerous reasons were provided for favoring one mode of transportation over another.

RESPONSE
The EIS evaluates truck, rail, barge, and ship transportation because they are believed to be most practical in terms of risk and cost. Other modes of transportation were not evaluated.

Truck transport of radioactive material is a legal and viable option and the potential risks from this mode of transportation are very small. Rail transport of radioactive material is also a legal and viable option. The EIS evaluates both truck and rail transportation for DOE shipments. Navy SNF has been transported by rail, except for transportation by ship from Pearl Harbor Naval Shipyard to Puget Sound Naval Shipyard, where the containers are transferred to railcars and heavy-lift transporters move casks to the...
nearest rail access at the Kesseling Site. Transport of SNF or radioactive waste by air would not occur under any alternative being considered in this EIS.

An analysis of barge transport analysis has been added to the EIS.

05.19 (002) Miscellaneous

COMMENT
The commenter identifies errors or omissions in the text and suggests alternative wording to clarify the meaning of the text.

RESPONSE
The errors or omissions identified by the commenter have been corrected in the Final EIS.

05.19 (003) Miscellaneous

COMMENT
The commentor expresses support for DOE ecological activities and research at the Idaho National Engineering Laboratory, which are not specific to this EIS.

RESPONSE
The comment is noted.

05.19 (004) Miscellaneous

COMMENT
Commentors express fear of moral impacts and obligations, catastrophic events, radiation and/or nuclear materials, and emotional concerns over the management of nuclear material such as spent nuclear fuel.

RESPONSE
DOE has attempted in this EIS to develop reasonably foreseeable, quantifiable environmental impacts due to the proposed action(s), including operations and accident consequences. Other potential concerns such as moral, emotional, and psychological (including fear, dread, mental anguish, negative effects on youth, hatred, etc.) issues are beyond the scope of required NEPA evaluations. The U.S. Supreme Court, in Metropolitan Edison v. People Against Nuclear Energy, 103 S. Ct. 1556 (1983), clearly delineated the aforementioned NEPA evaluative requirements.

05.19 (005) Miscellaneous

COMMENT
Many commentors state they are concerned about errors and inconsistent use of information throughout the document, while others express concern about misleading discussions that need to be clarified.

05.19 (006) Miscellaneous

COMMENT
Commentors question the existence or effectiveness of quality assurance or quality control within DOE or its facilities.

RESPONSE
DOE and its contractors implement quality assurance/quality control requirements for all phases of work and facility operations. Formal quality program requirements are derived and implemented from DOE Order 5700.6C, Quality Assurance, which defines the interrelations of criteria and includes requirements for managing, achieving, and assessing quality that result in improved safety and reliability of DOE's products and services. In accordance with these requirements, approved quality programs are invoked at the project/program level. These quality programs are tailored to meet the specific needs and requirements of the projects/programs and apply the appropriate industry standard criteria unique to that work, e.g., NQA-1 for nuclear reactor operations, EPA environmental quality assurance management requirements for remediation activities, etc. In recent years, DOE has adopted the Total Quality Management philosophy, whereby employees at all levels are encouraged to take ownership in applying quality principals for all aspects of their respective duties and interactions, resulting in more immediate and positive results.

05.19 (007) Miscellaneous

COMMENT
The EIS has been reviewed for errors and inconsistencies, including those identified by individual commentors. Changes have been made to the EIS to correct errors or clarify misleading discussions.

05.19 (008) Miscellaneous

COMMENT
Commentors express reservation and/or discontent about residing near nuclear waste and/or radioactivity.

RESPONSE
DOE is aware of general public fears regarding radiation and radioactivity, a significant portion of which arise from a basic unfamiliarity with such risks. The EIS analyzes the cumulative effects of DOE and Navy operations at the 10 candidate sites for management activities involving SNF. The EIS concludes that there would be no significant risk due to either operations or credible accidents involving the management of SNF, including transportation, at any of the candidate sites.
05.19 (009) Miscellaneous

COMMENT
The commenter asks why the value for the State of Idaho appears to be omitted from Volume 1, Figure 5.15-1 of the EIS.

RESPONSE
This error has been corrected.

05.19 (011) Miscellaneous

COMMENT
Commentors raise the issue of the potential impacts to the environment and the people of Idaho.

RESPONSE
Descriptions of the existing environment at INEL and the potential impacts to the environment as a result of implementation of the alternative actions are in Volumes 1 and 2, Chapters 4 and 5, respectively. These chapters discuss the current environmental situation and the expected consequences, if any, of the alternative actions on the environment and show that the impacts would be small for all alternatives. The measures that DOE could implement to control or reduce impacts to the environment are described in Volume 1, section 5.7 and Volume 2, section 5.19. As described in these sections, DOE is committed to operating its facilities in compliance with all applicable laws and regulations protecting environmental resources to ensure that the impacts of DOE activities on those resources are small.

05.19 (012) Miscellaneous

COMMENT
The commenter notes that the EIS identifies irreversible and irretrievable commitments of air and water resources likely to occur due to the proposed action and notes "the assertion that air quality resources may be and groundwater resources already have been irretrievably impacted." The commenter also states that DOE has an obligation to protect natural resources under its jurisdiction and to remediate harm that the agency has caused.

RESPONSE
The identification of irreversible and irretrievable commitments of resources is a standard component of an EIS. Irreversible and irretrievable commitment of resources refers to the process of making resources unavailable for use as a result of past, present, or proposed actions. Irreversible and irretrievable commitment of resources does not imply adverse environmental impacts. The discussion of cumulative impacts in Volume 2, section 5.15 shows that the impacts from past, present, and proposed actions at INEL would be small.

05.19 (013) Miscellaneous

COMMENT
The commenter suggests specific deletions, corrections, or additions to the EIS.

RESPONSE
If the suggested change was considered editorial or significant to the decision-making process, the appropriate change has been incorporated into the EIS.

05.19 (014) Miscellaneous

COMMENT
The commenter states that a discussion of Oak Ridge spent fuel inventories in Volume 1, Appendix I incorrectly refers the reader to a section that does not exist.

RESPONSE
Volume 1, Appendix F, Part Three, section 2.3.7 has been modified to correct this error.

05.19 (015) Miscellaneous

COMMENT
The commenter expresses the opinion that all facets of DOE's nuclear program are lethal and under the protection of bureaucrats.

RESPONSE
This EIS addresses the programmatic management of SNF in the interim to ultimate disposition, as well as environmental restoration and waste management activities at INEL over the next 10 years. Volume 1, Chapter 5 and Appendix K, and Volume 2, Chapter 5 summarize the environmental impacts of all the alternatives considered in this EIS. The analyses show that the impacts of all alternatives would be small. Although vulnerabilities exist, DOE has the management skill, scientific capability, and Secretarial mandate to safely manage SNF and INEL waste management and environmental restoration activities during the period covered by this EIS. See also the response to comment 03.07 (004).

05.19 (016) Miscellaneous

COMMENT
The commenter states that a description of the amount of radiation expected to be released in the course of this project is a necessary item in the EIS.

RESPONSE
This information is provided for all alternatives and all sites considered in the EIS. Volumes 1 and 2, Chapter 5 summarize information on potential releases to the environment. Additional details are provided in Volume 1, Appendices A through D and K, and Volume 2, Appendix F.
05.19 (017) Miscellaneous

COMMENT
The commentor identifies sections of Volume 2 of the EIS that require clarification or additional information to more completely address the material in appropriate sections.

RESPONSE
The EIS has been modified to include the additional information requested by the commentor in Volume 2, Chapter 4.

05.19 (018) Miscellaneous

COMMENT
The commentor requests a specific change to the EIS.

RESPONSE
The commentor's suggested language has been incorporated in Volume 1, section 5.1.1.

05.19 (019) Miscellaneous

COMMENT
The commentor is unclear what the term "estimated population dose" means and states that the text in Volume 1 refers to Figure 5-1 as representing the estimated population dose, but that figure does not contain that term.

RESPONSE
The statement should have referred to estimated annual latent cancer fatalities. The sentence referred to by the commentor has been revised in the EIS.