DOE/EIS-0026-S-2

# Waste Isolation Pilot Plant Disposal Phase Final Supplemental Environmental Impact Statement

## Volume III
## Comment Response Document

September 1997

Department of Energy
Carlsbad Area Office
Carlsbad, New Mexico

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# TABLE OF CONTENTS

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# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| ALARA | as low as reasonably achievable |
| ANL-E | Argonne National Laboratory-East |
| ANL-W | Argonne National Laboratory-West |
| ATW | accelerator transmutation of waste |
| BIR-2 | Baseline Inventory Report, Revision 2 |
| BIR-3 | Baseline Inventory Report, Revision 3 |
| BLM | Bureau of Land Management |
| C&C Agreement | Agreement for Consultation and Cooperation |
| CAST | Colorado Allstate Trucking |
| CCA | Compliance Certification Application |
| CEQ | Council on Environmental Quality |
| CERCLA | Comprehensive Environmental Response, Compensation and Liability Act |
| CFR | Code of Federal Regulations |
| CH | contact-handled |
| DARHT | Dual Axis Radiographic Hydrodynamic Test (Facility) |
| DDREF | dose and dose-rate effectiveness factor |
| DoD | U.S. Department of Defense |
| DOE | U.S. Department of Energy |
| DOT | U.S. Department of Transportation |
| DTPA | diethylenetriamine pentaacetic acid |
| EDE | effective dose equivalent |
| EEG | Environmental Evaluation Group |
| EPA | U.S. Environmental Protection Agency |
| ERPG | Emergency Response Planning Guideline |
| FEIS | Final Environmental Impact Statement for the Waste Isolation Pilot Plant |
| GCR | Geological Characterization Report |
| HEPA | high-efficiency particulate air |
| HRCQ | highway route-controlled quantity |
| IART | Incident/Accident Response Team |
| ICRP | International Commission on Radiological Protection |
| IDB | Integrated Data Base |
| IDLH | immediately dangerous to life or health |
| INEEL | Idaho National Engineering and Environmental Laboratory |
| IRIS | Integrated Risk Information System |
| LANL | Los Alamos National Laboratory |
| LCF | latent cancer fatality |
| LDR | land disposal restriction |
| LET | linear energy transfer |
| LLNL | Lawrence Livermore National Laboratory |
| LWA | Land Withdrawal Act |
| MEI | maximally exposed individual |
| MOU | Memorandum of Understanding |
| NAS | National Academy of Sciences |
| NCRP | National Council on Radiation Protection and Measurements |

| | |
|---|---|
| NEPA | National Environmental Policy Act |
| NESHAP | National Emissions Standards for Hazardous Air Pollutants |
| NIOSH | National Institute of Occupational Safety and Health |
| NOI | Notice of Intent |
| NRC | U.S. Nuclear Regulatory Commission |
| NTS | Nevada Test Site |
| ORNL | Oak Ridge National Laboratory |
| ORR | Oak Ridge Reservation |
| OSHA | Occupational Safety and Health Administration |
| PCB | polychlorinated biphenyl |
| PE-Ci | plutonium-239 equivalent curies |
| PEL | Permissible Exposure Limit |
| ppm | parts per million |
| RBE | relative biological effectiveness |
| RCRA | Resource Conservation and Recovery Act |
| RFETS | Rocky Flats Environmental Technology Site |
| RH | remote-handled |
| ROD | Record of Decision |
| ROI | Region of Influence |
| SAR | safety analysis report |
| SEIS-I | Final Supplement Environmental Impact Statement for the Waste Isolation Pilot Plant |
| SEIS-II | Waste Isolation Pilot Plant Disposal Phase Supplemental Environmental Impact Statement |
| SNL | Sandia National Laboratories |
| SPDV | site and preliminary design validation |
| SRS | Savannah River Site |
| TI | transportation index |
| TRANSAX | Transportation Accident Exercise |
| TRANSCOM | Transportation Tracking and Communication System |
| TRU | transuranic |
| TRUCON | TRUPACT Content Code |
| TRUPACT-II | transuranic package transporter-II |
| WAC | planning-basis waste acceptance criteria |
| WIPP | Waste Isolation Pilot Plant |
| WIPPTREX | WIPP Transportation Exercise |
| WM PEIS | Waste Management Programmatic Environmental Impact Statement |

# INTRODUCTION

This comment response volume for the *Waste Isolation Pilot Plant* (WIPP) *Disposal Phase Final Supplemental Environmental Impact Statement* (SEIS-II) identifies and provides responses to public comments on the Draft SEIS-II. During the public comment period, which extended from November 29, 1996, to February 27, 1997, more than 3,800 comments were received from more than 550 individuals, agencies, and organizations. Comments were extracted from letters, electronic mail messages, facsimiles, or through the public hearing process, including written and oral testimony, exhibits, and questions. This volume represents a broad spectrum of commenters, including federal, state, tribal, and local officials; public interest groups; and private citizens.

The comment entries are organized according to comment categories, as listed in the Table of Contents. Each entry consists of three parts: (1) a list showing each document/comment number, the commenter's name, and the organization (if applicable), (2) the comment or a comment summary, and (3) the response. Frequently, more than one commenter submitted identical or similar comments; in those cases, comments were grouped together, summarized, and given a single response.

The *SEIS-II Comment Response Supplement* contains electronically scanned reproductions of all public correspondence received during the SEIS-II comment period and all transcripts from the public hearings. The supplement is available at public reading rooms around the country. The supplement was not included for the Final SEIS-II because of the volume of comments received in response to the Draft SEIS-II.

In compliance with the provisions of the National Environmental Policy Act (NEPA) and Council on Environmental Quality regulations, public comments on the Draft SEIS-II were assessed both individually and collectively by DOE. Some comments resulted in changes or modifications to SEIS-II. Comments not requiring modifications to SEIS-II resulted in a response to correct readers' misinterpretations, to explain or communicate government policy, to clarify the scope of SEIS-II, to explain the relationship of SEIS-II to other NEPA documents, to refer commenters to other information in SEIS-II, 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 the public comments on the Draft SEIS-II.

## How to Locate Responses

An index to comments has been included to assist the reader in locating DOE's response(s) to specific comment(s). To find a response, refer to the index and complete the following steps:

1. Locate your last name (or organization affiliation, if one was stated). All names have been listed in alphabetical order.

2. Locate the response section number(s) assigned to the comment; for example, the response section number 01.01 (01) refers to the first group of comments in the "General" subcategory in the "Alternatives" chapter.

3. Turn to the Table of Contents to locate the page on which the response section begins.

4. Turn to the response section number to find the response to your comment.

The index to comments also includes the document numbers (ALB1, C-100, etc.) that have been assigned to each public comment. Comment documents often contain multiple individual comments, and each corresponding response might fall under a different response section. Therefore, you may need to repeat steps 2, 3, and 4 to reference more than one response section number for each commenter.

Document numbers can be used to locate the original comment documents, which have been included in their entirety in the *SEIS-II Comment Response Supplement*.

### *ISSUES RAISED DURING THE SEIS-II PUBLIC COMMENT PERIOD*

During the public comment period that followed publication of the Draft SEIS-II in November 1996, stakeholders commented on a variety of issues, including the following:

- Several commenters expressed concern that the data, information, and computer codes used in SEIS-II are based on the Draft CCA and not the most current versions used in the CCA. The Draft SEIS-II used some near-final input from the CCA that underwent subsequent changes. The Final SEIS-II is consistent with the Final CCA.
- Several commenters questioned the validity of planning disposal operations for periods of time exceeding 100 years. In response, DOE has assessed the impacts of reducing the disposal periods.
- Some commenters said that SEIS-II documentation relied inappropriately on draft documents. (Many of these documents have since become final and are reflected in the Final SEIS-II.) The reliance on draft documents and the relationship between SEIS-II and other planning and compliance documents is discussed in Section 1.5 of SEIS-II and Chapter 11 of the SEIS-II *Comment Response Document*.
- Several commenters requested that the Additional Inventory (see the subsection titled "Inventories and Treatment" in the Summary) be included in the Proposed Action. The Department has not made decisions regarding the excavation of much of this waste and would do so only following Comprehensive Environmental Response, Compensation and Liability Act or RCRA investigations and possibly following additional NEPA review. The Additional Inventory, therefore, is not part of the Proposed Action. Nevertheless, the impacts of disposition of the Additional Inventory are discussed under four scenarios.
- Numerous commenters were concerned with the level of emergency response training to communities along the WIPP transportation corridors and felt that training for first responders and medical providers must be completed before shipments begin. The Department addresses these concerns in Chapter 19 of the SEIS-II *Comment Response Document*.
- Several commenters expressed concern about the impacts of accidents and incident-free exposures if TRU waste shipments traveled through Santa Fe along St. Francis Drive or along the Pojoaque corridor. Some commenters stated that shipment of waste should be delayed until the Santa Fe bypass is complete. SEIS-II compares the impacts of shipping TRU waste down St. Francis Drive with those of shipping using the Santa Fe bypass in a text box in Section 5.1.
- Many commenters expressed concern over several issues regarding performance assessment and waste isolation, including the accuracy of predictions over 10,000 years, potential contamination of the environment over long periods of time, the use of appropriate computer codes, the use of engineered barriers, gas generation, human intrusion, and pressurized brine reservoirs. DOE has addressed these and other performance assessment issues in Appendices H and I of SEIS-II and in Chapter 13 of the SEIS-II *Comment Response Document*.
- Many commenters favored long-term monitored retrievable storage in newly designed aboveground structures at the generator sites, instead of disposal at WIPP. Some commenters favored development of transmutation technologies, treatment to reduce toxicity, and other geologic repository alternatives. DOE addresses these concerns in Chapter 3 of SEIS-II and in Chapter 1 of the SEIS-II *Comment Response Document*.
- Many commenters questioned the accuracy of knowledge of waste drum contents and the ability to characterize the waste. Concerns raised included lack of techniques to characterize waste drums, minimal sampling carried out, a lack of records, and inadequate quality assurance requirements. DOE discusses waste characterization in Appendix A of SEIS-II and in Chapter 2 of the SEIS-II *Comment Response Document*.
- Many commenters questioned the honesty, integrity, and conduct of DOE and the federal government with regard to WIPP. Examples of concerns raised included alleged lies and misinformation about the safety of WIPP and waste transportation; spending of funds to overcome opposition to WIPP; a DOE record of avoiding cleanups, contaminating land, and conducting radiation experiments on workers and the public; and seemingly schedule-driven actions of DOE and its neglect of needed site characterization work. DOE has responded to these comments in Chapter 3 of the SEIS-II *Comment Response Document*.
- Many commenters expressed concerns about the post-1970 TRU waste disposal mission of WIPP, including the possibility of expanding the mission to accommodate other types of nuclear waste or other types and amounts of TRU waste beyond current legal limits. WIPP's mission is discussed in Chapter 1 of SEIS-II and in Chapter 10 of the SEIS-II *Comment Response Document*.

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## LINKS TO RESPONSES

# C

| Name | Group Number |
|---|---|
| Carde, Margret | 01.09 (01), 02.02 (01), 02.03 (01), 02.04 (28), 02.05 (01), 02.05 (03), 02.06 (10), 02.06 (12), 02.07 (06), 03.01 (02), 05.03 (01), 07.01 (06), 07.01 (27), 09.01 (37), 10.03 (03), 10.05 (01), 10.05 (02), 11.03 (01), 13.02 (07), 13.02 (08), 13.03 (02), 13.04 (01), 13.07 (01), 13.07 (02), 14.01 (01), 14.01 (10), 15.01 (01), 15.01 (02), 15.01 (12), 16.05 (06), 16.06 (01), 18.02 (03), 19.03 (01), 19.04 (01), 19.06 (06), 19.07 (04), 19.08 (01), 19.10 (01) |
| | 03.01 (01), 11.03 (01), 11.03 (02), 11.03 (08), 11.05 (03), 13.10 (04), 19.01 (16), 19.06 (02), 19.08 (01), 19.10 (01), 19.10 (02) |
| | 01.03 (04), 01.09 (01), 02.02 (01), 02.04 (28), 02.06 (10), 05.03 (01), 11.03 (01), 11.03 (26), 14.01 (01), 19.10 (01) |
| Carter-Long, Lawrence | 02.02 (01), 03.01 (01), 05.04 (01), 09.01 (02), 09.01 (35), 11.03 (02), 11.03 (03), 13.01 (01), 13.01 (07), 13.06 (02), 13.07 (01), 13.08 (01), 14.01 (02), 16.06 (01), 18.01 (08), 18.01 (15), 19.04 (01) |
| Center, Laura | 05.03 (01) |
| Chandler, Chris | 05.02 (01), 11.03 (31) , 11.04 (01) |
| Chandler, George | 10.05 (04) |
| Ciarlo, James | 01.03 (04), 05.03 (01), 11.03 (02), 11.03 (05), 13.01 (02), 14.01 (02), 19.03 (03), 19.04 (01) |
| Cibas, Gedi | 02.03 (04), 04.01 (12), 09.01 (11), 09.01 (13), 11.03 (01), 11.06 (01), 15.01 (01), 19.08 (01) |
| Clark, Pat | 03.01 (01), 03.01 (08), 14.01 (02) |
| | 02.06 (11), 05.03 (01), 13.01 (07), 13.03 (02), 13.06 (02), 13.07 (01), 14.01 (01), 14.01 (02), 16.06 (01), 19.01 (12), 19.03 (01), 19.03 (04), 19.06 (06), 19.07 (01), 19.07 (16), 19.08 (01) |
| | 14.01 (01) |
| Clark, Richard | 03.01 (01), 14.01 (02) |
| Cliburn, Jill | 03.01 (01), 05.03 (01), 07.01 (06), 14.01 (02), 19.11 (02) |
| Clifton, Stephanie | 05.03 (01) |
| Cohen, Margaret | 01.03 (01), 05.03 (01), 10.02 (02), 19.04 (01), 19.04 (14) |
| Cole, Kayce | 05.03 (01) |
| Cole, Sam | 01.05 (02), 02.05 (01), 13.01 (01), 13.07 (01), 13.08 (01), 13.09 (01), 14.01 (01), 15.01 (12), 19.03 (03), 19.04 (01), 19.07 (13) |
| Collins, Michael | 02.02 (01), 03.01 (08), 05.03 (01), 07.01 (07), 08.01 (11), 10.05 (01), 10.05 (02), 11.04 (01), 13.01 (02), 13.08 (03), 14.01 (02), 14.01 (03), 15.01 (14), 19.03 (01), 19.06 (01), 19.07 (28), 19.08 (01), 19.10 (01), 19.11 (02) |
| Combs, Michael | 05.03 (01), 05.04 (01) |
| Commander, John | 05.02 (01), 10.05 (03), 19.07 (07) |
| Conroy, Barbara | 01.05 (01), 05.03 (01), 11.03 (02), 13.01 (01), 14.01 (08) |
| | 01.05 (01), 03.01 (01), 05.03 (01), 13.08 (02), 16.06 (01) |
| Cook, F.R. | 01.04 (06), 01.09 (01), 05.02 (01), 10.02 (01), 10.05 (01), 18.01 (06) |
| Cooke, Charlotte | 13.08 (02), 19.04 (01) |
| Cooke, Kerry | 03.01 (01), 09.03 (01), 11.03 (03), 11.03 (05), 14.01 (01) |
| Corazon, Virginia | 05.04 (01), 11.03 (05), 11.03 (15) |

| Name | Group Number |
|---|---|
| Corbett, Benjamin | 03.01 (01), 10.05 (01), 14.01 (01), 14.01 (02) |
| Cory, Wendy | 05.03 (01), 09.01 (03), 10.05 (02), 13.01 (01), 14.01 (02), 19.04 (08), 19.09 (01) |
| Cowan, Sarah | 13.01 (01), 13.02 (19), 13.10 (03), 18.01 (03) |
| Cowley, Jill M. | 01.03 (03), 05.03 (01) |
| Cox, Grady | 18.01 (14) |
| Craig, Larry | 05.02 (01), 10.05 (03) |
| Crapo, Mike | 05.02 (01), 10.03 (05), 10.05 (03), 11.01 (06), 11.02 (01), 14.01 (01) |
| Crawford, Todd | 02.04 (27), 05.02 (01), 10.05 (01), 10.05 (02), 11.05 (01), 15.01 (06) |
| Croes, John | 05.02 (01), 14.01 (02), 14.01 (13) |
| Cummings, Mark | 05.02 (01), 19.10 (01) |
| Currier, Mike | 05.02 (01) |
| Curry, Lawrence | 01.04 (07), 14.01 (02) |
| Curtis, Susan | 03.01 (01), 14.01 (02), 15.01 (12), 18.02 (03), 19.04 (01), 19.11 (02) |
| Curtis-Briley, Siona | 14.01 (02) |

# D

| Name | Group Number |
|---|---|
| Dant, Richard | 05.03 (01), 14.01 (02) |
| Dasburg, Ann | 02.05 (01), 14.01 (01), 18.02 (03) |
| Davis, Ted | 19.03 (01) |
| Deckert, Frank J. | 03.01 (04), 16.02 (01) |
| Degan, Janet | 03.01 (01), 05.03 (01), 11.03 (02), 11.04 (01), 14.01 (11), 19.04 (01) |
| Dempsey, Mike | 05.02 (01), 10.05 (01), 13.08 (06), 15.01 (07), 16.03 (01), 18.01 (02), 19.04 (03) |
| | 05.02 (01), 10.05 (01) |
| Dendahl, John | 05.02 (01), 11.03 (04), 11.03 (27), 19.10 (01) |
| Deyo, Richard | 05.03 (01), 08.01 (02) |
| Diane, Susan | 01.03 (01), 01.03 (03), 03.01 (05), 05.03 (01), 14.01 (01), 14.01 (02) |
| Dolan, Michael | 05.03 (01) |
| Dooley, Michael | 01.04 (01), 05.03 (01), 09.01 (02), 10.02 (01) |
| Downey, Nate | 05.03 (01), 05.04 (01) |
| Downey, Vicki | 05.03 (01), 14.01 (02) |
| Duffin, Tom | 05.02 (01), 19.03 (01), 19.06 (10) |
| Duncan, Ian | 05.03 (01), 11.03 (02), 14.01 (02), 19.10 (01) |

# E

| Name | Group Number |
|---|---|
| Eldredge, Maureen | 05.03 (01), 11.03 (02), 13.01 (02), 13.03 (02), 13.06 (02), 13.07 (01), 14.01 (01), 18.01 (15), 19.03 (01), 19.03 (04), 19.04 (01), 19.06 (06), 19.08 (01) |
| Elling, John | 05.02 (01) |
| Elliott, Erica | 14.01 (02), 19.10 (01) |
| Ellison, Brian V. | 05.03 (01), 13.01 (01) |
| Erb, Gary | 14.01 (02) |
| Ericson, Eric | 05.03 (01), 06.01 (02), 09.01 (38), 11.03 (02), 14.01 (02) |

| Name | Group Number |
|---|---|
| Gawarecki, Susan L. | 01.02 (01), 01.06 (01), 01.07 (01), 02.06 (11), 05.02 (01), 09.01 (36), 10.05 (03), 18.01 (06), 19.08 (01) |
| Gerber, Jerry L. | 05.03 (01), 13.08 (02), 13.09 (01), 14.01 (02), 18.01 (15), 19.03 (01), 19.04 (04), 19.07 (01), 19.08 (05) |
| Giglia, Jessica A. | 05.03 (01) |
| Gladstein, Miyabi | 11.03 (02) |
| Goad, Charles | 01.05 (01), 03.01 (08), 09.01 (30), 13.01 (06) |
| Gonzalez, Jimmy Joe | 05.02 (01), 19.10 (01) |
| Goodman, Lois | 19.04 (01), 19.09 (03), 19.10 (01) |
| Goodwill, Foster | 01.03 (04), 13.01 (20), 17.01 (10), 19.04 (01) |
| Gormley, Kent | 05.03 (01), 10.02 (01), 14.01 (01), 14.01 (02) |
| Gormley, Pere Barber | 01.03 (01), 05.03 (01) |
| Gould, Bill | 02.07 (06), 03.01 (01), 05.03 (01), 09.03 (01), 11.02 (01), 11.03 (02), 11.05 (02), 13.03 (01), 13.03 (02), 14.01 (01), 14.01 (02), 16.06 (01), 18.01 (15), 18.02 (03), 19.03 (01), 19.03 (04), 19.04 (01), 19.07 (25), 19.09 (03) |
| Granquist, David | 14.01 (02), 17.01 (01), 19.03 (01), 19.04 (01) |
| Graves, Glen | 05.02 (01), 11.03 (30) |
| Gray, Alice H. | 13.07 (06), 13.08 (01), 13.08 (03), 15.01 (12), 16.05 (04), 19.04 (01), 19.06 (01) |
| Gray, Don | 01.09 (01), 02.06 (10), 02.07 (09), 10.03 (02), 10.03 (05), 10.05 (01), 11.04 (01), 11.06 (01), 11.07 (01), 13.02 (01), 13.05 (02), 13.05 (03), 15.01 (01), 19.04 (07), 19.06 (06), 19.08 (01) |
| Greager, Tim M. | 05.02 (01) |
| Greenwald, Janet | 01.03 (04), 03.01 (01), 03.01 (03), 03.01 (09), 05.04 (01), 11.03 (12), 06.01 (02), 11.04 (01), 13.06 (02), 13.07 (03), 13.09 (01), 13.10 (04), 16.05 (05) |
| | 01.03 (04), 03.01 (01), 11.03 (05), 13.01 (02), 16.05 (06), 16.06 (01), 18.02 (03), 19.04 (22) |
| | 03.01 (14), 09.02 (01) |
| | 03.01 (01), 19.04 (01), 19.11 (02) |
| | 02.02 (05), 03.01 (01), 03.01 (08), 03.01 (14), 05.03 (01), 05.04 (01), 11.04 (04), 14.01 (02) |
| | 16.05 (02), 16.05 (06) |
| Groff, Richard | 05.02 (01) |
| Gudgell, Dallas | 02.06 (11), 05.03 (01), 05.04 (01), 11.07 (01) |
| Gunderson, Steven H. | 01.03 (03), 11.03 (04), 11.06 (01), 11.07 (02), 19.03 (01) |

# H

| Name | Group Number |
|---|---|
| Hadden, Blaine | 03.01 (04), 05.02 (01), 11.03 (04), 19.04 (03), 19.06 (10) |
| Hall, Mary | 09.01 (02), 11.03 (02) |
| Hall, Patricia | 05.03 (01), 14.01 (02) |
| | 03.01 (05), 05.04 (01), 10.02 (01), 11.02 (01), 11.04 (01), 13.02 (21), 13.07 (13) |
| Hamilton, Alan | 19.04 (01) |
| Hampson, W.L. | 05.02 (01) |
| | 05.02 (01), 11.03 (04) |
| Hancock, Don | 01.03 (03), 01.04 (07), 01.04 (09), 01.09 (01), 01.10 (01), 11.01 (22), 11.03 (01), 11.03 (13), 11.04 (01), 11.05 (06) |

| Name | Group Number |
|---|---|
| Hancock, Dan (continued) | 01.01 (01), 01.02 (01), 01.04 (09), 01.07 (02), 01.09 (01), 01.10 (01), 02.02 (01), 02.04 (10), 02.07 (10), 05.03 (01), 09.01 (06), 09.01 (14), 10.05 (02), 10.05 (11), 11.01 (02), 11.03 (01), 11.03 (13), 11.04 (01), 11.06 (01), 11.07 (01), 13.03 (06), 13.05 (01), 13.07 (02), 15.01 (02), 15.01 (04), 15.01 (12), 18.01 (01), 18.02 (03), 19.01 (03), 19.01 (10), 19.03 (01), 19.03 (03), 19.03 (04), 19.04 (01), 19.04 (06), 19.07 (02), 19.07 (08), 19.08 (11), 19.09 (01), 19.11 (01), 19.11 (02) |
| | 02.04 (30), 02.06 (05), 02.06 (09), 08.01 (09), 10.05 (02), 11.01 (23), 13.03 (02), 13.07 (01), 13.07 (02), 13.07 (03), 13.08 (01), 15.01 (01), 15.01 (02), 16.05 (02) |
| | 08.01 (12) |
| | 01.03 (04), 11.06 (01), 14.01 (01), 18.02 (03), 19.03 (04), 19.04 (05), 19.04 (13), 19.06 (12), 19.07 (19) |
| | 19.03 (03) |
| Hanley, Lorraine | 01.03 (01), 05.03 (01), 14.01 (02) |
| Hannan, Jim | 19.01 (09) |
| Hanscom, Andrew | 14.01 (02) |
| Hansen, Anna | 05.03 (01), 05.04 (01), 10.03 (03), 10.05 (01), 11.03 (02), 11.04 (01), 13.01 (01), 14.01 (01), 15.01 (12), 16.07 (01), 19.11 (01) |
| Harless, Jim | 05.02 (01) |
| Harris, Garland | 03.01 (01), 05.03 (01), 10.02 (01), 10.05 (01), 11.04 (08), 13.01 (02), 13.03 (01), 13.07 (01), 14.01 (01), 14.01 (02), 16.07 (01), 18.02 (03) |
| Harris, Sam | 03.01 (01) |
| Harrison, Susannah | 05.03 (01), 11.03 (02), 14.01 (02), 17.01 (01), 19.04 (01), 19.07 (16), 19.10 (01) |
| Hatfield, Scott | 01.03 (04), 01.04 (07), 01.10 (01), 05.03 (01), 13.08 (02), 14.01 (02), 17.01 (02) |
| Heaton, John | 02.02 (01), 02.07 (06), 05.02 (01), 10.05 (01), 18.01 (13), 19.01 (15), 19.06 (10), 19.11 (01) |
| | 01.02 (02), 05.02 (01), 10.05 (01) |
| Helburn, Nicholas | 05.03 (01), 19.04 (01), 19.07 (21) |
| Helean, Mick | 19.04 (14) |
| Henderson, Rebecca | 05.03 (01), 13.08 (02) |
| Hensel, David | 02.06 (11), 09.03 (01), 13.08 (02), 14.01 (01) |
| Herman, Sheldon | 05.03 (01), 13.01 (01), 13.08 (01), 14.01 (02) |
| Herman, Steven M. | 13.01 (02), 13.01 (16), 13.08 (02), 19.06 (09) |
| Herzl, Judy | 05.03 (01), 13.01 (02), 19.08 (01), 19.10 (01) |
| Hess, Louise | 03.01 (13), 11.03 (02) |
| Hibbard, Deborah | 05.03 (01) |

| Name | Group Number |
|---|---|
| Hibbs, Linda | 01.02 (01), 01.03 (01), 01.03 (04), 02.02 (01), 02.02 (07), 02.04 (28), 03.01 (01), 03.01 (03), 03.01 (05), 07.01 (06), 07.01 (08), 09.01 (16), 09.02 (02), 09.03 (01), 10.01 (02), 10.01 (09), 10.02 (01), 10.03 (04), 10.05 (01), 11.03 (02), 11.03 (03), 13.01 (02), 13.03 (01), 13.03 (02), 13.03 (19), 13.04 (01), 13.06 (02), 13.07 (01), 13.07 (02), 13.08 (01), 13.09 (01), 14.01 (02), 15.01 (02), 15.01 (12), 16.05 (06), 16.06 (01), 17.01 (05), 17.01 (09), 17.01 (10), 18.01 (02), 18.01 (03), 18.01 (15), 18.01 (16), 18.02 (03), 19.03 (03), 19.04 (01), 19.04 (12), 19.06 (02), 19.06 (03), 19.06 (06), 19.07 (06), 19.07 (20), 19.09 (03) |
| | 01.03 (01), 01.03 (04), 02.02 (01), 02.02 (05), 02.07 (06), 05.03 (01), 07.01 (06), 14.01 (01), 14.01 (02), 19.04 (01), 19.07 (20) |
| Hickerson, Al | 05.02 (01), 13.01 (17) |
| Higginbotham, Alexis | 05.03 (01) |
| Hill, Alethea L. | 05.02 (01) |
| Hilty, Alexis | 05.02 (01) |
| Hobson, Stan | 02.04 (07), 05.02 (01) |
| Hoeprich, Nena | 05.03 (01) |
| Hoff, Marilyn | 01.04 (07), 03.01 (01), 03.01 (08), 05.03 (01), 10.01 (09), 14.01 (02), 19.06 (02) |
| Hoffman, Michael | 01.05 (02), 09.03 (01), 17.01 (04), 17.01 (05), 17.01 (07), 19.04 (01), 19.06 (02) |
| Holeman, Tim | 01.03 (06), 02.06 (10), 05.02 (01), 11.03 (04), 19.09 (07) |
| Holm, Victor | 05.02 (01), 11.03 (31) |
| | 05.02 (01), 13.01 (01) |
| Homans, Dee | 01.03 (02), 14.01 (02) |
| Hookham, Valerie | 05.03 (01), 06.01 (02), 11.03 (02), 14.01 (02) |
| Hoover, Mark | 03.01 (04), 05.02 (01) |
| Hopkins, Steve | 05.03 (01), 13.01 (07), 13.07 (01), 14.01 (01), 18.01 (15), 19.03 (01) |
| Hosking, Chuck | 05.03 (01), 14.01 (02) |
| Huebner, Martin | 05.02 (01), 11.04 (01), 14.01 (11), 18.01 (15), 19.06 (01) |
| | 02.04 (25), 05.02 (01), 10.05 (03), 11.04 (01), 19.04 (01) |
| Hutchison, Ralph | 01.02 (05), 01.02 (06), 01.03 (02), 01.03 (03), 05.03 (01), 11.07 (01), 13.01 (01), 13.03 (10), 13.11 (01), 18.01 (15), 19.08 (01), 19.09 (06) |
| | 01.03 (02), 01.03 (03), 01.07 (01), 01.09 (01), 02.02 (01), 02.04 (30), 05.03 (01), 08.01 (03), 10.02 (01), 11.07 (01), 15.01 (12), 16.03 (01), 16.06 (01), 19.08 (01) |
| Hyder, Charles | 05.03 (01), 09.04 (01), 10.05 (01), 11.03 (14), 13.01 (02), 13.10 (02), 16.01 (02), 18.02 (03), 19.04 (01), 19.06 (01), 19.07 (10), 19.07 (13) |
| | 01.03 (02), 03.01 (01), 03.01 (03), 05.03 (01), 06.01 (01), 10.03 (05), 13.08 (01), 13.10 (02), 13.10 (06), 17.01 (09), 18.02 (03), 19.04 (01), 19.04 (04), 19.04 (11), 19.04 (14), 19.04 (15), 19.05 (01), 19.06 (01), 19.06 (02), 19.06 (06), 19.07 (32), 19.07 (33), 19.07 (34), 19.09 (03) |

| Name | Group Number |
|---|---|
| Kriho, Laura | 01.03 (04), 03.01 (01), 05.03 (01), 13.01 (01), 17.01 (02), 19.03 (01) |
| Kunko, Len and Jeanne | 10.05 (01), 11.01 (19) |

# L

| Name | Group Number |
|---|---|
| Lage, Katherine | 01.05 (02), 03.01 (01), 05.03 (01), 13.01 (02), 13.06 (02), 16.01 (02), 17.01 (04), 17.01 (05), 19.06 (02), 19.06 (11), 19.07 (13), 19.07 (16) |
| Lakshman, Jai | 01.03 (03), 03.01 (01), 05.03 (01), 05.04 (01), 11.03 (01), 11.03 (02), 11.03 (05), 11.04 (01), 13.01 (01), 13.07 (01), 13.08 (01), 13.11 (01), 14.01 (01), 15.01 (12), 18.01 (15), 19.03 (03), 19.04 (22), 19.08 (01), 19.10 (02) |
| Larragoite, Pat | 03.01 (01), 05.03 (01), 14.01 (01), 18.02 (03) |
| Larson, Linda | 03.01 (01), 03.01 (02), 05.03 (01), 06.01 (02), 18.01 (06), 19.04 (01) |
| Lassiter, Caroly Mae | 03.01 (01), 05.03 (01), 11.03 (05) |
| Laughlin, Robin | 05.03 (01) |
| Laurie, Sharon | 03.01 (01), 05.03 (01), 13.01 (01), 13.08 (01) |
| Lawless, Bill | 01.03 (02), 02.05 (01), 09.01 (05), 11.01 (13), 13.01 (21), 13.01 (32) |
| Lawrence, Mike | 10.05 (01) |
| Leahigh, John | 01.03 (04), 05.03 (01), 07.01 (06), 10.02 (01), 14.01 (02), 18.01 (03) |
| Leavell, Carroll | 05.02 (01), 13.01 (19), 19.06 (10), 19.11 (01) |
| LeBrun, Bruce | 05.02 (01), 14.01 (02) |
| | 05.02 (01) |
| Lee, Dennis | 01.04 (02), 03.01 (05) |
| | 01.04 (02) |
| Lee, Mark | 03.01 (01), 14.01 (02) |
| | 03.01 (02), 03.01 (08) |
| Lee, Peli | 03.01 (05), 05.03 (01), 05.04 (01), 19.10 (01) |
| Lee, Robert | 05.02 (01), 19.03 (01), 19.07 (16) |
| Leming, Earl | 01.02 (01), 01.06 (01), 02.01 (01), 02.04 (01), 02.05 (05), 04.01 (21), 08.01 (04), 11.03 (11), 11.07 (01), 15.01 (01), 15.01 (05), 18.01 (07) |
| Lenderman, Andy | 07.01 (11), 13.01 (02), 18.01 (03), 19.04 (01) |
| Lewis, Jim | 02.04 (28), 11.03 (01), 11.03 (31), 13.01 (01), 13.07 (01), 13.07 (02), 13.10 (03), 14.01 (02) |
| Libman, Elliott H. | 03.01 (01), 05.03 (01), 06.01 (02), 10.05 (02), 13.03 (01), 13.06 (02), 13.07 (01), 13.09 (01), 14.01 (02), 19.03 (01) |
| Light, Robert S. | 05.02 (01), 10.03 (06), 11.01 (12), 19.03 (01), 19.09 (01), 19.09 (03) |
| | 05.02 (01) |
| | 03.01 (04), 05.02 (01), 11.03 (04) |
| Likar, Vince | 02.06 (10), 05.02 (01), 11.03 (04), 16.01 (02), 18.01 (15) |
| Lipman, Ben | 03.01 (01), 05.03 (01), 09.03 (01), 14.01 (02), 16.05 (01), 16.05 (02), 19.04 (01) |
| Lockhardt, Glen | 05.02 (01), 05.04 (01), 11.01 (17), 11.04 (01), 18.01 (15), 19.03 (01) |

# M

| Name | Group Number |
|---|---|
| Marshall, Tom | 01.03 (02), 01.05 (02), 02.04 (02), 02.05 (01), 03.01 (01), 05.03 (01), 09.03 (01), 10.05 (01), 11.01 (01), 13.01 (02), 13.07 (01), 13.08 (02), 14.01 (06), 15.01 (12), 19.03 (01), 19.04 (13), 19.06 (01), 19.06 (02), 19.08 (01) |
| | 01.05 (01), 05.03 (01), 09.03 (01), 11.03 (02), 13.01 (02), 13.07 (01), 13.08 (01), 13.08 (03), 14.01 (01), 14.01 (06), 17.01 (10), 18.02 (03), 19.03 (03), 19.06 (02), 19.07 (13), 19.08 (01) |
| | 01.05 (02), 02.05 (01), 03.01 (01), 05.03 (01), 11.01 (01), 11.03 (02), 14.01 (01), 19.03 (01), 19.04 (01), 19.04 (13), 19.06 (02), 19.07 (13), 19.08 (01) |
| Martin, Craig | 05.02 (01) |
| Martin, Fay M. | 05.02 (01) |
| Massey, Steve | 05.02 (01) |
| | 05.02 (01) |
| Matthews, James | 05.02 (01) |
| Mattis, Marvin | 13.01 (01), 03.01 (05), 13.08 (01) |
| Mattis, Naomi | 05.03 (01), 18.01 (03) |
| Maughan, Ralph W. | 05.02 (01) |
| Mazeaud, Dominique | 01.03 (01), 01.03 (04), 05.03 (01), 13.01 (01), 14.01 (02), 19.04 (01) |
| McCall, John | 01.05 (01), 05.03 (01), 10.01 (05), 11.03 (05), 11.04 (05), 18.01 (02), 19.04 (01) |
| McCausland, Claude | 05.02 (01 |
| McCorkle, Wally | 05.02 (01), 11.01 (18), 11.03 (30), 11.04 (01), 18.01 (17) |
| McCune, Bonita | 02.02 (01), 02.05 (01), 02.06 (10), 02.07 (01), 08.01 (10), 09.03 (01), 11.02 (01), 11.03 (02), 12.01 (07), 13.01 (01), 13.01 (02), 13.01 (22), 13.06 (02), 13.07 (01), 13.08 (02), 13.08 (03), 13.10 (03), 16.05 (01), 16.05 (02), 16.05 (04), 17.01 (02), 18.02 (03), 19.03 (01), 19.04 (01), 19.04 (11), 19.06 (14), 19.07 (16), 19.08 (01), 19.09 (01), 19.10 (01) |
| McDonald, Melissa | 03.01 (01), 05.03 (01), 06.01 (02), 19.03 (01) |
| McEnaney, Robert | 13.01 (10), 13.07 (01) |
| | 05.03 (01), 13.01 (01), 14.01 (01), 19.04 (01), 19.04 (21) |
| McGrath, Jamal | 13.07 (01), 13.07 (02), 17.01 (09), 18.01 (02), 19.04 (01) |
| McMullen, Penelope | 01.03 (04), 03.01 (01), 05.03 (01), 13.04 (01), 13.11 (02), 14.01 (02), 14.01 (11), 19.03 (01), 19.04 (01) |
| Means, Dick | 05.02 (01), 08.01 (03), 19.04 (03) |
| Measom, David | 01.03 (01), 01.03 (04), 01.05 (01), 13.01 (02), 13.08 (02), 14.01 (02) |
| Mento, Jack | 05.03 (01), 14.01 (02) |
| Merrill, Carol | 01.05 (01), 05.03 (01), 13.01 (02), 13.10 (02) |
| Mesite, James F. | 05.02 (01), 10.05 (01) |
| Messick, Jerry | 03.01 (01), 18.01 (03), 19.03 (01) |
| | 03.01 (11), 10.02 (01), 19.03 (01), 19.03 (06) |
| Metcalf, Tom | 02.02 (01), 03.01 (01), 03.01 (02), 10.02 (01), 13.04 (01), 13.07 (01), 14.01 (02), 19.03 (01), 19.03 (04), 19.06 (02) |
| Michelle, Victoria | 05.03 (01), 11.03 (03), 17.01 (09), 19.04 (01), 19.04 (09), 19.06 (02) |
| Middleton, Dana | 05.03 (01) |
| Miller, Basia | 05.03 (01) |

| Name | Group Number |
|---|---|
| Navarro, Karen | 01.03 (01), 02.02 (01), 05.04 (01), 13.01 (36), 13.04 (01), 13.11 (01), 14.01 (02), 16.06 (01), 17.01 (04), 17.01 (07), 17.01 (10), 18.02 (03), 19.04 (01), 19.10 (01) |
| Nebelsick, Rebecca A. | 05.03 (01), 10.05 (02), 13.01 (08), 18.01 (15), 19.03 (01), 19.06 (01), 19.08 (01) |
| | 05.03 (01), 14.01 (02), 19.03 (01), 19.08 (01), 19.08 (11) |
| Neill, Robert H. | 01.05 (01), 01.07 (01), 01.09 (01), 02.07 (07), 04.01 (15), 05.02 (01), 10.03 (02), 10.03 (05), 10.05 (01), 11.04 (01), 11.07 (01), 13.02 (01), 13.02 (05), 13.05 (02), 13.05 (03), 15.01 (01), 15.01 (10), 19.04 (03), 19.06 (06), 19.08 (01) |
| | 01.01 (02), 01.02 (01), 01.03 (07), 01.04 (03), 01.07 (01), 01.09 (01), 02.01 (04), 02.01 (05), 02.01 (06), 02.01 (07), 02.01 (08), 02.01 (09), 02.01 (10), 02.01 (11), 02.02 (06), 02.04 (12), 02.04 (13), 02.04 (14), 02.04 (15), 02.04 (16), 02.04 (17), 02.04 (18), 02.04 (19), 02.04 (20), 02.04 (21), 02.04 (22), 02.04 (23), 02.04 (24), 02.04 (31), 02.06 (03), 02.06 (07), 02.06 (10), 02.06 (11), 02.07 (03), 02.07 (04), 02.07 (07), 02.07 (08), 04.01 (01), 04.01 (02), 04.01 (03), 04.01 (04), 04.01 (05), 04.01 (07), 04.01 (09), 04.01 (10), 04.01 (13), 04.01 (16), 04.01 (17), 04.01 (19), 04.01 (22), 04.01 (24), 04.01 (30), 04.01 (31), 04.01 (32), 04.01 (33), 04.01 (34), 04.01 (35), 04.01 (36), 07.01 (03), 07.01 (04), 07.01 (05), 07.01 (14), 07.01 (15), 07.01 (16), 07.01 (17), 07.01 (19), 07.01 (20), 07.01 (21), 07.01 (22), 07.01 (23), 07.01 (24), 07.01 (25), 09.01 (15), 09.01 (17), 09.01 (18), 09.01 (19), 09.01 (20), 09.01 (21), 09.01 (22), 09.01 (23), 09.01 (24), 09.01 (32), 09.01 (34), 09.03 (02), 09.05 (02), 10.01 (01), 10.03 (02), 10.03 (05), 10.03 (09), 10.04 (03), 10.05 (01), 10.05 (05), 11.01 (08), 11.01 (09), 11.01 (10), 11.01 (11), 11.01 (21), 11.03 (18), 11.03 (19), 11.03 (20), 11.03 (21), 11.03 (33), 11.04 (01), 11.07 (01), 13.01 (11), 13.01 (12), 13.01 (13), 13.01 (28), 13.01 (29), 13.01 (30), 13.01 (31), 13.01 (34), 13.01 (41), 13.02 (01), 13.02 (02), 13.02 (03), 13.02 (05), 13.02 (09), 13.02 (10), 13.02 (11), 13.02 (12), 13.02 (13), 13.02 (14), 13.02 (15), 13.02 (16), 13.02 (17), 13.02 (20), 13.03 (07), 13.03 (08), 13.03 (09), 13.05 (02), 13.05 (03), 13.06 (02), 13.07 (02), 13.07 (07), 13.07 (08), 13.07 (09), 13.07 (10), 13.07 (11), 13.08 (01), 13.08 (02), 13.10 (01), 15.01 (01), 15.01 (04), 15.01 (08), 15.01 (09), 15.01 (12), 16.05 (02), 16.07 (01), 17.01 (02), 18.01 (05), 18.01 (06), 18.01 (12), 19.01 (04), 19.01 (05), 19.01 (11), 19.01 (13), 19.02 (01), 19.04 (06), 19.04 (07), 19.04 (18), 19.06 (06), 19.07 (09), 19.07 (26), 19.07 (27), 19.07 (37), 19.08 (01), 19.08 (08), 19.08 (09), 19.08 (10), 19.08 (12), 19.09 (05), 19.09 (08) |
| | 02.04 (32), 11.03 (32), 13.01 (37), 13.01 (38), 13.01 (39), 13.02 (01), 13.07 (02), 13.04 (02), 13.04 (03), 13.06 (07), 19.11 (02) |

| Name | Group Number |
| --- | --- |
| Neill, Robert H. | 13.02 (02) |
| (continued) | 13.02 (01), 13.02 (02), 13.02 (05), 19.08 (01) |
| | 01.09 (01), 02.07 (07), 02.07 (09), 05.02 (01), 09.01 (06), 10.03 (02), 10.03 (05), 11.04 (01), 11.06 (01), 11.07 (01), 13.02 (01), 13.05 (02), 13.05 (03), 15.01 (01), 19.04 (07), 19.06 (06) |
| Newton, George | 05.02 (01), 14.01 (02) |
| Nichols, Jean | 01.03 (01), 03.01 (01), 05.03 (01), 05.04 (01), 08.01 (02), 14.01 (02) |
| Niles, Ken | 05.02 (01), 19.03 (02) |
| Nixon, Amy | 01.03 (01), 05.03 (01), 16.01 (02), 18.02 (01), 19.07 (17) |
| Novak, Jan and Judith | 05.02 (01) |
| Nuget, Christen | 02.02 (01), 05.02 (01), 10.05 (01), 19.04 (07), 19.06 (10) |

# O

| Name | Group Number |
| --- | --- |
| O'Connor, Mary Fran | 05.03 (01), 13.08 (01), 19.04 (01) |
| O'Neal, Lauren | 05.03 (01) |
| O'Neill, Catherine | 05.04 (01), 07.01 (06), 09.01 (02), 09.01 (28), 10.02 (01), 10.04 (01), 14.01 (02) |
| Obenshain, Dair | 01.09 (01), 02.02 (01), 03.01 (01), 05.03 (01), 11.03 (02), 13.01 (02), 13.07 (01), 13.09 (01), 16.01 (02) |
| Ohmstede, William | 05.02 (01) |
| Oliaro, Joseph | 05.04 (01), 11.03 (03), 13.01 (01), 13.08 (01), 14.01 (02), 16.05 (04), 18.01 (15), 19.04 (01), 19.06 (01) |
| Olson, Justin | 01.04 (02) |
| Olson, Mary | 05.03 (01), 19.01 (06), 19.03 (07), 19.04 (01), 19.04 (02), 19.07 (13) |
| Ortega, Debra | 19.09 (01) |
| Ortiz, Christine | 05.03 (01), 19.10 (01) |
| Ortiz, Marie | 05.03 (01) |
| Osborn, Jess | 01.03 (02), 01.04 (07), 14.01 (12) |
| Otter, John | 01.03 (01), 01.05 (02), 09.03 (01), 01.09 (01), 05.03 (01), 13.01 (25) |
| Owen, Robert | 05.02 (01) |

# P

| Name | Group Number |
| --- | --- |
| Pace, David | 01.03 (01), 01.03 (03), 02.02 (01), 03.01 (01), 05.03 (01), 07.01 (06), 13.01 (02), 13.04 (01), 13.06 (01), 13.07 (02), 13.07 (14), 13.08 (02), 13.09 (01), 13.11 (02), 14.01 (02), 16.05 (06), 16.06 (01), 17.01 (07), 17.01 (09), 19.06 (02), 19.06 (03), 19.07 (13), 19.07 (17) |
| Packie, Rick | 02.02 (01), 05.03 (01), 05.04 (01), 09.03 (01), 10.02 (01), 11.03 (03), 11.03 (05), 13.01 (01), 13.03 (01), 13.03 (02), 13.07 (04), 16.05 (06), 16.06 (01), 17.01 (07), 17.01 (10) |
| Pare, Diantha F. | 05.02 (01), 14.01 (09) |
| Parrill, Victoria | 01.03 (01), 01.04 (03), 05.03 (01), 09.01 (10), 13.01 (02), 14.01 (02), 19.04 (17) |
| Partain, William L. | 05.02 (01), 11.03 (22), 19.04 (03) |
| Paul, Liz | 05.03 (01) |

| Name | Group Number |
|---|---|
| Pecka, Jeffrey | 05.02 (01), 11.03 (09), 19.04 (01) |
| Peele, Bob | 05.02 (01), 10.05 (01), 19.08 (01) |
| Peretz, Fred | 05.02 (01) |
| Perin, Steve | 13.10 (03), 17.01 (02) |
| Perkowski, Gary | 05.02 (01) |
| Peterson, R.J. | 05.02 (01), 19.04 (01) |
| Phelps, James | 02.06 (06), 03.01 (03), 11.03 (25) |
| Phillips, Richard Hayes | 05.03 (01), 13.01 (01), 13.01 (02), 13.01 (14), 13.01 (15), 13.02 (04), 13.03 (11), 13.04 (01), 13.06 (02), 13.06 (04), 13.07 (01), 13.08 (01), 13.09 (03), 13.10 (03), 13.10 (05), 13.11 (02), 13.11 (05), 16.05 (02), 16.05 (03), 16.05 (04), 16.05 (06) |
| | 05.03 (01), 11.03 (02), 13.03 (02), 13.03 (11), 13.06 (02), 13.07 (01), 15.01 (12), 15.01 (15), 16.05 (06), 16.06 (01), 17.01 (01), 17.01 (09) |
| | 01.03 (04), 01.05 (01), 01.09 (01), 01.10 (01), 02.06 (08), 05.03 (01), 13.03 (01), 13.03 (02), 13.03 (10), 13.03 (12), 13.03 (13), 13.03 (14), 13.03 (15), 13.03 (16), 13.03 (17), 13.03 (18), 13.05 (03), 13.06 (02), 13.06 (05), 13.07 (01), 13.07 (02), 13.07 (03), 13.07 (12), 13.07 (15), 13.07 (16), 13.08 (01), 13.08 (02), 13.09 (04), 15.01 (12), 17.01 (07), 17.01 (09) |
| | 13.01 (02), 13.03 (02), 13.06 (02), 13.07 (01), 13.08 (01), 13.08 (02), 13.10 (03), 13.11 (02), 16.05 (01) |
| | 04.01 (20), 13.01 (40), 13.02 (04), 13.03 (02), 13.06 (02), 13.09 (01), 13.10 (02), 13.11 (02), 16.05 (06), 16.06 (01) |
| | 04.01 (20), 13.01 (01), 13.02 (04), 13.03 (02), 13.06 (02), 13.09 (01), 13.10 (02), 13.11 (02), 13.11 (06), 16.05 (04), 16.05 (06), 16.06 (01) |
| Phillips, Suzanne | 01.03 (04), 03.01 (01), 03.01 (02), 05.03 (01), 11.03 (02), 13.01 (23), 13.04 (01), 13.08 (02), 14.01 (02), 16.04 (01), 18.01 (15), 19.04 (01) |
| Pierson, Norah | 01.03 (01), 03.01 (01), 05.04 (01), 19.03 (03) |
| Pillay, K.K.S. | 01.04 (01), 10.02 (03), 10.04 (02), 10.05 (01) |
| Platts, Betty | 19.03 (03) |
| Poe, Lee | 02.04 (27) |
| | 01.02 (01), 02.04 (26), 02.04 (27), 02.06 (09), 04.01 (14), 05.02 (01), 10.05 (01), 13.01 (33) |
| Pohl, Lois | 05.02 (01) |
| Polanchyck, Scott | 05.03 (01), 11.03 (02) |
| Ponce, Eleanor | 01.05 (01), 03.01 (07), 05.03 (01), 08.01 (01), 09.04 (01), 10.05 (01), 11.01 (07), 13.01 (01), 13.08 (04), 14.01 (02) |
| | 01.05 (01), 03.01 (01), 13.01 (01), 14.01 (02), 19.04 (01) |
| Pongratz, Morris B. | 05.02 (01) |
| Potvin, Michael | 05.02 (01) |
| Pratt, Judy | 05.03 (01), 10.03 (10), 13.01 (02), 13.06 (02), 13.08 (02), 14.01 (01), 14.01 (02), 18.01 (02) |
| Preston, Ken | 05.02 (01) |
| Pribble, Lois | 03.01 (01), 05.03 (01), 09.01 (02), 10.05 (01), 13.01 (01), 14.01 (01), 14.01 (02) |
| Priest, Nova | 01.03 (01), 19.04 (01), 19.07 (13) |

| Name | Group Number |
|---|---|
| Rhodes, Jeri | 02.01 (03), 02.05 (01), 03.01 (01), 03.01 (02), 03.01 (08), 04.01 (06), 05.03 (01), 09.02 (01), 10.02 (01), 10.05 (01), 11.03 (02), 11.04 (02), 13.01 (01), 13.06 (02), 13.07 (01), 13.11 (02), 15.01 (01), 15.01 (02), 15.01 (12), 16.06 (01), 19.07 (15) |
| Rice, Charles | 02.04 (07), 04.01 (11), 05.02 (01), 10.05 (03), 18.01 (06), 19.07 (07) |
| Rice, Chuck | 02.04 (07), 10.05 (03), 18.01 (06), 19.07 (07) |
| Rich, Jeffrey | 01.03 (01), 03.01 (02), 05.03 (01), 08.01 (02), 14.01 (02), 15.01 (12) |
| Richards, Betty | 03.01 (01), 03.01 (08), 05.03 (01), 13.03 (01), 13.05 (04), 13.11 (02), 13.10 (04), 17.01 (07) |
| Richards, Robert | 05.02 (01) |
| Richardson, Nausika | 05.03 (01), 13.04 (01), 13.06 (01), 13.06 (02), 13.07 (01), 13.07 (02), 13.11 (03), 15.01 (12), 16.05 (01), 16.05 (06), 16.06 (01) |
| Rippeteau, Bruce | 05.02 (01) |
| Riseley, Mary | 01.03 (04), 05.03 (01), 13.08 (03), 19.04 (01) |
| Robins, Joan | 01.03 (01), 02.02 (01), 03.01 (01), 05.03 (01), 10.02 (01), 10.03 (03), 11.03 (03), 11.07 (01), 13.07 (01), 14.01 (02), 16.06 (01), 19.11 (02) |
| Rodriguez, Susan | 01.03 (04), 02.02 (01), 05.03 (01), 09.03 (01), 10.02 (01), 11.03 (03), 11.07 (01), 13.03 (01), 13.03 (02), 13.04 (01), 13.07 (01), 13.07 (02), 13.08 (02), 13.09 (01), 13.11 (01), 15.01 (12), 16.05 (06), 16.06 (01), 17.01 (05) |
| Romero, Emilio | 14.01 (01) |
| Roos, Alice | 01.03 (01), 11.03 (05) |
| Rose, Joe | 03.01 (04), 05.02 (01) |
| Rosen, Louis | 05.02 (01), 11.03 (04) |
| Rosen, Stan | 03.01 (01), 11.04 (01) |
| Rosser, Amy | 01.05 (02), 03.01 (01), 05.03 (01), 14.01 (02) |
| Rudd, Mark | 01.04 (03), 05.03 (01), 06.01 (02), 11.03 (02), 13.08 (01), 13.08 (03), 14.01 (02) |

# S

| Name | Group Number |
|---|---|
| Salisbury, Jennifer | 01.02 (03), 01.02 (04), 01.08 (01), 02.06 (09), 03.01 (04), 04.01 (13), 04.01 (29), 05.02 (01), 06.01 (04), 08.01 (02), 10.01 (10), 10.05 (01), 10.05 (03), 11.01 (20), 11.02 (02), 11.03 (31), 18.01 (01), 19.01 (02), 19.04 (16), 19.04 (23), 19.06 (05) |
| | 11.03 (31), 11.04 (01), 19.03 (05), 19.10 (01) |
| Salzmann, Karin | 05.03 (01), 05.04 (01), 13.01 (26), 14.01 (02) |
| Sanchez, Corrine | 01.09 (01), 01.10 (01), 03.01 (16), 05.03 (01), 05.04 (01), 19.03 (01), 19.04 (08) |
| Sanchez, J. Gilbert | 19.03 (01), 19.03 (03), 19.05 (01), 19.09 (02) |
| Sanchez, Kathy | 01.04 (05), 01.09 (01), 05.03 (01), 06.01 (01), 14.01 (02), 19.03 (01), 19.04 (01) |
| Sanchez, Paul E. | 05.02 (01) |
| Sandford, Tom | 05.02 (01), 11.03 (04) |

| Name | Group Number |
|---|---|
| Santelli, Maria | 05.03 (01), 13.07 (01), 14.01 (01), 14.01 (02), 16.06 (01), 19.04 (01) |
| Savignac, Noel | 05.02 (01), 14.01 (02) |
| Savorra, John | 05.03 (01) |
| Schaefer, William | 05.02 (01), 19.08 (01) |
| Schaller, Charmian | 11.04 (01), 11.04 (07), 19.03 (01) |
| Schinnerer, Mark | 02.05 (01), 05.02 (01), 19.03 (01), 19.06 (10), 19.07 (16) |
| Schmidt, Ray | 05.03 (01), 14.01 (01), 14.01 (02), |
| Schonbeck, Niels | 01.05 (01), 05.03 (01) |
| Schrader, Don | 03.01 (12), 05.03 (01), 10.01 (07), 13.01 (01), 17.01 (09) |
| Schroeder, Sandra | 06.01 (02), 14.01 (02), 19.04 (01) |
| Seaman, Magdalen | 03.01 (01), 05.03 (01), 14.01 (02), 19.04 (01) |
| Seese, Linda | 05.03 (01), 19.10 (01) |
| Seibel, Lety | 03.01 (01), 05.03 (01), 11.03 (05), 14.01 (02) |
| Seibel, Tom | 13.01 (01), 14.01 (02), 15.01 (12) |
| Seydel, Robin | 03.01 (01), 05.03 (01), 05.04 (01), 10.02 (01), 11.03 (02), 13.06 (01), 13.07 (01), 13.08 (02), 13.09 (01), 14.01 (01), 16.05 (04), 16.06 (01), 19.04 (01), 19.04 (04) |
| Seymour, Marion | 19.08 (01), 19.10 (01) |
| Shah, Subhas | 05.02 (01), 08.01 (01) |
| Shelton, Jay | 05.02 (01), 11.03 (04) |
| | 09.01 (39), 13.01 (24) |
| Shendall, Karl | 05.02 (01), 13.01 (01), 16.01 (02) |
| Shepard, Burleigh | 05.03 (01), 13.01 (01), 13.01 (02), 13.10 (04) |
| Shepard, David | 10.03 (07), 10.04 (01) |
| | 03.01 (01), 03.01 (08), 05.03 (01), 05.04 (01), 13.07 (01), 18.02 (03) |
| Shepherd, Les | 05.02 (01) |
| Shoup, George | 05.02 (01) |
| Shropshire, Richard | 05.02 (01) |
| Shuker, Scott | 01.04 (07), 03.01 (01), 11.03 (02), 11.03 (05), 13.08 (02), 14.01 (01) |
| Sica, Fred | 05.02 (01), 19.08 (01) |
| Sigal, Lorene | 05.02 (01) |
| Sigsredt, Shawn | 05.03 (01), 13.01 (01), 13.08 (01), 19.04 (01), 19.09 (01), 19.12 (02) |
| Simonov, Erica | 05.03 (01), 14.01 (02) |
| Skinner, Elliott | 01.03 (01), 05.03 (01), 10.05 (06), 11.03 (29), 11.04 (06), 14.01 (02), 18.02 (03), 19.10 (01), 19.11 (02) |
| | 05.04 (01), 19.06 (02) |
| Slay, Bob | 01.02 (01), 01.03 (03), 02.04 (27), 09.01 (05), 09.04 (01), 10.05 (01), 10.05 (02), 11.03 (17), 13.12 (02), 18.01 (10) |
| Smiley, Scott | 14.01 (02) |
| Snow, David T. | 10.03 (03), 11.03 (02), 13.01 (02), 13.02 (04), 13.02 (18), 13.11 (01), 16.05 (06), 16.06 (01) |
| Sol, Maria | 01.05 (01) |
| Sollitt, Shannyn | 01.03 (02), 01.04 (01), 03.01 (01), 05.03 (01) |
| Solomon, Ame | 03.01 (01), 13.01 (02), 13.08 (02), 17.01 (04) |
| Sommers, Shari | 11.03 (02), 17.01 (01), 19.04 (08) |
| Sougstad, Ruth | 01.03 (01), 05.03 (01), 19.04 (01), 19.11 (02) |

| Name | Group Number |
|---|---|
| Sparaco, Lisa | 01.03 (01), 01.03 (04), 02.02 (01), 09.01 (31), 09.03 (01), 10.02 (01), 11.03 (03), 13.01 (02), 13.03 (01), 13.04 (01), 13.07 (01), 14.01 (02), 15.01 (12), 16.05 (06), 16.06 (01), 19.03 (01), 19.06 (03), 19.07 (12), 19.08 (01) |
| Spencer, Sally | 05.03 (01), 13.08 (05), 14.01 (01) |
| Sperling, Linda | 05.03 (01), 19.03 (01), 19.04 (01), 19.04 (08), 19.09 (01), |
| Sprinkle, James K. | 05.02 (01) |
| St. John, Bill | 05.02 (01) |
| | 03.01 (04), 05.02 (01) |
| Stanley, Melinda | 05.02 (01), 16.05 (01), 19.04 (04) |
| Stayner, Diane | 01.04 (03), 05.03 (01), 19.04 (01) |
| Steele, Mary | 02.02 (01), 13.03 (01), 13.09 (01), 19.06 (01), 19.06 (02), 19.06 (03), 19.07 (16) |
| Stein, Ed | 05.02 (01), 10.03 (06) |
| Steinhoff, Monika | 05.03 (01), 14.01 (12), 19.07 (30) |
| Stix, Amy | 05.03 (01), 11.03 (02), 14.01 (01), 19.07 (13), 19.10 (01) |
| Stout, Sarah | 01.05 (01), 05.03 (01), 13.01 (02), 19.04 (01), |
| Stratton, William R. | 05.02 (01) |
| Stroud, Cliff | 05.02 (01), 10.03 (01), 10.05 (01), 19.08 (11) |
| | 03.01 (04), 05.02 (01) |
| Suderman, Carole J. | 05.03 (01), 11.03 (02), 14.01 (02) |
| Sullivan, Kathleen | 01.03 (04), 02.05 (01), 05.03 (01), 13.01 (02), 13.04 (01), 14.01 (02), 15.01 (03), 15.01 (12), 16.05 (01), 16.05 (02), 19.03 (01), 19.08 (01) |
| | 01.03 (04), 02.05 (01), 05.03 (01), 09.03 (01), 13.01 (02), 13.04 (01), 13.07 (01), 13.08 (02), 13.10 (04), 14.01 (01), 14.01 (02), 15.01 (12), 19.03 (03), 19.04 (01) |
| | 01.03 (04), 02.05 (01), 05.03 (01), 13.01 (02), 13.04 (01), 13.08 (02), 14.01 (02), 15.01 (03), 15.01 (12), 16.05 (01), 16.05 (02), 19.03 (01), 19.08 (01) |
| Sutherland, Julie R. | 05.03 (01), 11.03 (02), 12.01 (04), 13.03 (01), 14.01 (01), 19.04 (01) |
| | 05.03 (01) |
| Swanson, Sonja | 05.03 (01), 19.04 (01) |
| Swedlund, Cathy | 05.03 (01), 06.01 (02), 10.05 (01), 11.03 (01), 13.09 (01), 19.04 (01), 19.11 (02) |

# T

| Name | Group Number |
|---|---|
| Tadolini, Stephen C. | 05.02 (01) |
| Tashel, Carole | 01.03 (01), 01.09 (01), 02.01 (12), 05.03 (01), 11.03 (02), 14.01 (01), 17.01 (04), 17.01 (06), 17.01 (08), 19.10 (01) |
| Taylor, Willie R. | 19.03 (10) |
| Tenney, Debra | 03.01 (01), 05.03 (01), 07.01 (12), 09.04 (01), 10.05 (01), 18.02 (03), 19.03 (03), 19.04 (04), 19.04 (10), 19.05 (01), 19.06 (01), 19.07 (18), 19.08 (01), 19.08 (03), 19.11 (02) |
| Thomas-Weger, Jon | 01.03 (02), 05.03 (01), 11.03 (31), 13.01 (01), 14.01 (02), 19.03 (01), 19.04 (01) |
| Thompson, Don | 01.03 (01), 05.03 (01), 14.01 (01), 14.01 (02), 19.07 (14) |
| Thompson, Sally Alice | 05.03 (01), 14.01 (02), 19.04 (01) |
| Thrasher, Robert | 05.02 (01) |

# Y



# Z

# 1.0 ALTERNATIVES

## 01.01 General

### 01.01 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-131 | 7 | Don Hancock | Southwest Research and Information Center |
| C-131 | 13 | Don Hancock | Southwest Research and Information Center |

**Comment:**
One commenter stated that the U.S. Department of Energy (DOE) is fundamentally violating the National Environmental Policy Act (NEPA) because the *Waste Isolation Pilot Plant Disposal Phase Draft Supplemental Environmental Impact Statement* (SEIS-II) did not include all reasonable alternatives. He said that the alternatives section "is the heart of the environmental impact statement" (40 Code of Federal Regulations [CFR] Section 1502.14) and that agencies must "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" (40 CFR Section 1502.14 (a)). The commenter also said that all three SEIS-II action alternatives must be eliminated from the Final SEIS-II because they are not reasonable alternatives and they cannot be comparatively analyzed with the Proposed Action and the no action alternatives, as required by NEPA.

**Response:**
DOE considered many other methods of disposal during the development of the Proposed Action (see Section 3.3 of SEIS-II). SEIS-II is the third NEPA document in a staged review process for the Waste Isolation Pilot Plant (WIPP). Alternatives considered in both the 1980 *Final Environmental Impact Statement for the Waste Isolation Pilot Plant* (FEIS) and the 1990 *Final Supplement Environmental Impact Statement for the Waste Isolation Pilot Plant* (SEIS-I) that were not analyzed in detail included transmutation, subseabed disposal, deep borehole disposal, and geologic repositories other than the WIPP site. The alternatives considered since the FEIS that were not analyzed in detail included co-processing with high-level waste and vitrification, disposal in space, underground detonation, greater confinement (shallow borehole), and alternative engineered barriers. These alternatives were found to be unreasonable or not suitable based on current research. Through these three documents (FEIS, SEIS-I, and SEIS-II), DOE has considered all reasonable alternatives. In addition, the analyses in SEIS-II were conducted in a manner that would allow DOE to combine portions of the alternatives and document the incremental changes.

The Proposed Action is designed to be consistent with the FEIS, SEIS, and the Land Withdrawal Act (LWA) and provide for disposal of post-1970 transuranic (TRU) waste, while the action alternatives provide for disposal of all TRU waste. The analyses of the potential impacts for the Proposed Action (Basic Inventory) and the action alternatives (Additional Inventory) were arranged to allow a direct comparison between the different alternatives by calculating the incremental increases between the inventories. In addition, No Action Alternative 2 was developed to be directly comparable to the Proposed Action, and No Action Alternative 1 was developed to be directly comparable to the action alternatives.

**01.01 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 54 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Three of the Alternatives not considered (deep borehole disposal, greater confinement, and geologic repositories at sites other than WIPP) appear to be as reasonable as the ones chosen.

"The concept of making piece meal decisions on solving the TRU waste disposal problem is as reasonable as the Alternatives listed here. For example: (1) make the decision of how to dispose of those wastes that are authorized to come to WIPP; (2) then evaluate how all or a portion of the remaining TRU wastes will be disposed of. It may be better to evaluate these remaining wastes in more than one category (e.g. RH-TRU as one category and buried waste as another)."

**Response:**
The alternatives not considered by DOE pose significant disadvantages over disposal at the WIPP site. The Record of Decision (ROD) for the *Storage and Disposition of Weapons-Usable Fissile Materials Programmatic Environmental Impact Statement* discusses reasons deep borehole disposal was ruled out, including substantial technical challenges in characterizing the geological conditions at the depth of interest. At many DOE sites, the greater confinement alternative would result in waste interacting with groundwater and could eventually pose environmental and human health hazards. Geological repositories within geologic media such as igneous and argillaceous rocks have been considered; however, salt is considered the most favorable disposal medium due to its thermal and physical properties. These and other alternatives to salt repositories are discussed in Section 3.3 of SEIS-II. (Locations for a salt repository other than the WIPP site were discussed in the 1980 FEIS.)

DOE believes it would be much more efficient to address disposal for the entire TRU waste inventory, as was done under the action alternatives in SEIS-II, than to find separate solutions for the TRU waste inventory currently authorized for disposal at the WIPP site (Basic Inventory) and the inventory that is currently excluded (Additional Inventory). The potential impacts of the Basic Inventory and the Additional Inventory have been compared among alternatives in Chapter 5.

## 01.02 Proposed Action and Action Alternatives

**01.02 (01)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-010 | 12 | Earl Leming | State of Tennessee Department of Environment and Conservation |
| A-010 | 18 | Earl Leming | State of Tennessee Department of Environment and Conservation |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-010 | 19 | Earl Leming | State of Tennessee Department of Environment and Conservation |
| C-104 | 7 | Bob Slay | Savannah River Site Citizens Advisory Board |
| C-125 | 9 | Barbara H. Johnson | The Rio Grande Chapter of the Sierra Club |
| C-130 | 4 | Susan L. Gawarecki | Oak Ridge Reservation Local Oversight Committee |
| C-130 | 6 | Susan L. Gawarecki | Oak Ridge Reservation Local Oversight Committee |
| C-130 | 10 | Susan L. Gawarecki | Oak Ridge Reservation Local Oversight Committee |
| C-131 | 9 | Don Hancock | Southwest Research and Information Center |
| C-135 | 2 | William Fulkerson | Friends of Oak Ridge National Laboratory |
| C-152 | 85 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 149 | Robert H. Neill | Environmental Evaluation Group |
| C-163E | 21 | No name provided | Citizens for Alternatives to Radioactive Dumping |
| E-056 | 53 | Linda Hibbs | |
| NA2 | 3 | Lee Poe | |
| NA2 | 4 | Lee Poe | |
| NA2 | 7 | Lee Poe | |
| NA2 | 12 | Lee Poe | |
| SF4 | 58 | Deborah Reade | |

**Comment:**
Many commenters objected to the structure of the Proposed Action, which allows for the Additional Inventory and excess remote-handled (RH) TRU waste to be left in its current condition at the sites where it is located. Commenters asked that the analysis of the Proposed Action include the Additional Inventory so that all alternatives could be compared. Some commenters urged that all TRU waste be transported directly to and disposed of at the WIPP site.

**Response:**
DOE's Proposed Action is to continue phased development and operation of WIPP and to emplace 175,600 cubic meters (6.2 million cubic feet) of TRU waste, the maximum currently allowed by law. Present legal restrictions would prevent DOE from completely disposing of all TRU waste at the WIPP repository. TRU waste such as nondefense TRU and environmental restoration TRU waste would continue to be safely managed at some of the current storage sites and would continue to require effective management to reduce risks to human health and the environment. There is no technical barrier to expanding WIPP to accept more waste, however; Congress would need to amend the LWA to allow DOE to emplace more waste (to the extent allowed by law) at WIPP than is currently authorized. The actual consolidation process to be used by DOE would be based on the ROD for the *Waste Management Programmatic Environmental Impact Statement* (WM PEIS) (the ROD is not yet published).

SEIS-II was organized to allow comparison between the waste types, waste volumes, consolidation and treatment locations, treatments, modes of transportation, disposal operations, and WIPP operations under each alternative. Therefore, the reader may compare the Basic Inventory under the Proposed Action with the Basic Inventory under all of the other alternatives. To assist in making comparisons, the impacts of leaving the Additional Inventory in place have been included in the Proposed Action (see the text box in Section 3.1).

**01.02 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF4 | 12 | John Heaton | |

**Comment:**
"Alternative proposals suggesting heat treatment are extremely naive in believing that this society can politically, or will politically, license an incinerator today or even in the future."

**Response:**
DOE considers the use of heat (thermal) treatment for TRU waste to be a reasonable form of treatment that has been used and is currently planned.

**01.02 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-013 | 13 | Jennifer Salisbury | New Mexico Radioactive Waste Consultation Task Force |

**Comment:**
"Page 3-2: Under the Proposed Action, DOE states that all waste in the Basic Inventory '...would first be treated at the 20 sites as necessary to meet planning-basis WAC, and then consolidated at the 10 largest generator-storage sites to await shipment by truck to WIPP for disposal.' DOE officials have indicated to us in recent months that the National Transuranic Waste Program is re-considering such waste consolidation at the 10 major generator-storage facilities and may ship wastes from most small quantity sites (SQS) directly to WIPP. The analyses in the SEIS-II should reflect DOE's current plans with respect to SQS shipments."

**Response:**
The analyses in SEIS-II reflect DOE's current plans for consolidation of TRU waste. The environmental impacts of any change in the consolidation plans would be expected to be very small.

Transportation would be the greatest concern if shipments were made directly to WIPP from the smaller sites. However, since transportation impacts depend on the number of miles traveled, there would be little difference in impacts because the overall number of miles would change by only a few percent. There could be a small increase in life-cycle costs for the smaller sites to conduct such shipments.

**01.02 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-013 | 14 | Jennifer Salisbury | New Mexico Radioactive Waste Consultation Task Force |

**Comment:**
"Page 3-5: In this section (Activities at the Generator-Storage Sites), the following statement is made: 'The 20 generator-storage sites would ship CH-TRU waste to the 10 generator-storage sites for consolidation and subsequent shipment to WIPP.' However, half of those 20 generator-storage sites are the 10 major sites referred to here. Only 8 SQS sites would ship CH-TRU waste to major DOE sites under the Proposed Action. Similarly, only 3 SQS sites would ship RH-TRU to major sites. This should be clarified and corrected in the final."

**Response:**
This sentence has been revised to accurately reflect the number of sites that would consolidate their contact-handled (CH) TRU waste.

**01.02 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-156 | 5 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |

**Comment:**
"DOE has acknowledged that health and safety are not driving this decision. In previous documents and meetings, DOE has asserted that all Oak Ridge Remote Handled TRU waste (RH-TRU) would be shipped to WIPP. This is the hottest of the hot stuff. Now, in this DSEIS, the majority of RH-TRU waste in Oak Ridge is suddenly *not* going to be shipped to WIPP; in fact, DOE has no plan to do anything with this waste other than leave it where it is. Clearly, if health and safety were a driver, this waste would still need to be moved."

**Response:**
DOE has considered many issues in selecting the Proposed Action as its Preferred Alternative, with health and safety being of primary performance. Under current law, DOE would not be able to dispose of the entire Proposed Action RH-TRU waste inventory, as reported in the *Transuranic Waste Baseline Inventory Report*, Revision 3, (BIR-3) and analyzed in SEIS-II. Because of this, it is necessary that DOE analyze the impacts of storage of a portion of the RH-TRU waste inventory at its sites. However, Table J-2 shows that, based on more recent estimates, DOE could dispose of all currently stored waste and all newly generated RH-TRU waste through the year 2033, excluding any pre-1970 buried RH-TRU waste. This volume of waste, approximately 4,800 cubic meters (170,000 cubic feet) as identified in the *National Transuranic Waste Management Plan*, could only be disposed of with modification to the current design of Panels 9 and 10.

**01.02 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-156 | 7 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |

**Comment:**
"The DSEIS plans to ship unknown wastes to Oak Ridge, for unknown treatment in a not-yet-existing facility, and to store this waste for an unknown time period. The material DOE proposes to ship to Oak Ridge from Battelle, Columbus has leaped from 70 cubic meters to 580 cubic meters in a period of six months. This is an accurate indicator of DOE's level of knowledge about this material. No credible NEPA document can claim to analyze the environmental impact of an action without a complete understanding of the amounts and character of the contaminants being analyzed, the treatments proposed and the locations of proposed treatments, and the interim and final disposition of the materials. We will not permit the DSEIS to attempt to provide NEPA coverage for bringing unknown materials to Oak Ridge. If DOE proposed to bring TRU wastes from other sites to Oak Ridge, it must first complete a Programmatic Environmental Impact Statement on the proposed action, including in the P-EIS a thorough analysis of the site-specific impacts in Oak Ridge."

**Response:**
Although the volume of TRU waste at Battelle Columbus Laboratories has increased (largely due to decommissioning and decontamination activities), DOE does have adequate characterization of the TRU waste to allow impact analysis of handling, treatment, transportation, and disposal and to support a decision for disposal. Under DOE's Preferred Alternative, there would be no consolidation of TRU waste at Oak Ridge National Laboratory (ORNL) or any other site, with a few exceptions. One of these exceptions would allow CH-TRU waste from ORNL to be transported to the Savannah River Site (SRS) for consolidation, and conversely, RH-TRU waste from SRS would be consolidated at ORNL. This consolidation scheme has been analyzed in the Final WM PEIS.

## 01.03 No Action Alternatives and Other Disposal

**01.03 (01)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 48 | Lisa Sparaco | |
| ALB3 | 94 | Karen Navarro | |
| ALB3 | 101 | Jeffrey Rich | |
| ALB4 | 19 | Don Thompson | |
| ALB5 | 85 | Pere Barber Gormley | |
| ALB6 | 37 | Joan Robins | |
| ALB6 | 70 | David Pace | |
| ALB6 | 135 | Amy Nixon | |
| C-022 | 2 | Pam Lytle | |
| C-039 | 2 | Jim Lysne | |
| C-049 | 3 | Lorraine Hanley | |
| C-088 | 5 | Victoria Parrill | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| CA1 | 112 | Don Kidd | |
| DE1 | 32 | David Measom | |
| E-056 | 63 | Linda Hibbs | |
| SF1 | 57 | Dr. Alice Roos | |
| SF2 | 43 | Elliott Skinner | |
| SF3 | 105 | Anhara Lovato | |
| SF5 | 38 | Louise Baum | |
| SF7 | 9 | Carole Tashel | |
| SF7 | 65 | Margaret Cohen | |
| SF7 | 67 | Margaret Cohen | |
| SF7 | 83 | Bonnie Bonneau | Legions of Living Light |
| SF7 | 92 | Linda Hibbs | |
| SF7 | 117 | Bren Bacon | |
| SF7 | 132 | Lee Lysne | |
| SF7 | 137 | Dominique Mazeaud | |
| SF7 | 151 | Nova Priest | |
| SF7 | 154 | Norah Pierson | |
| SF8 | 9 | Susan Diane | |
| SF8 | 21 | Jean Nichols | |
| SF8 | 30 | Ruth Sougstad | |
| SF8 | 39 | John Otter | |

**Comment:**
Many commenters favored aboveground storage, such as that analyzed under No Action Alternative 2, until a long-term disposal solution other than WIPP could be found. Commenters also favored the treatment of newly generated waste. Most said that DOE should continue pursuing new technologies that could provide a safer or better disposal solution than WIPP, often referring to this effort as a “Manhattan Project.” Some commenters requested that DOE stop generating TRU waste and stop bomb production.

**Response:**
DOE has analyzed two no action alternatives which provide for treatment and indefinite on-site storage of TRU waste until other alternatives for disposal are determined (see Section 3.2.5, 3.2.6, 5.5, and 5.6 in SEIS-II). DOE can decide to implement either of the no action alternatives or one (or a combination of) the other action alternatives in SEIS-II and, at the same time, allow the pursuit of technologies that are not available at this time.

DOE supports research that may eventually result in alternative treatment to the disposal of TRU waste, and much research has already been done on treatment and disposal technologies in the United States and other countries. At this time, DOE is unaware of any proven physical or chemical process that will change TRU waste into a nonradioactive form (see response to comments in 01.04 (02)). A “Manhattan Project” level of effort will not guarantee a better solution than the alternatives analyzed in SEIS-II, which have been under study for many years.

Meanwhile, DOE would continue to store TRU waste aboveground in monitored, retrievable storage at DOE facilities that are capable of managing this type of waste on a temporary basis. Such a Manhattan Project is not sufficiently defined to be a reasonable alternative for DOE to (1) determine at this time the potential locations, equipment, facilities, and activities that might be required or (2) analyze the environmental impacts and estimate the costs of such an effort. Finally, the DOE national defense mission set forth by Congress that has resulted in the production of TRU wastes is not within the scope of SEIS-II.

**01.03 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-008 | 13 | Tom Udall | Attorney General of New Mexico |
| ALB4 | 101 | Merida Wexler | |
| ALB4 | 105 | Merida Wexler | |
| ALB4 | 126 | Jon Thomas-Weger | |
| BO1 | 105 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| C-065 | 1 | Dee Homans and Andrew Davis | |
| C-103 | 3 | Judith Babka | |
| C-156 | 4 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |
| C-159 | 17 | Susan Maret | Sierra Club National Nuclear Waste Task Force |
| DE1 | 178 | Kathryn Becker | |
| E-012 | 28 | Charles Hyder | |
| E-084 | 5 | Bill Lawless | Savannah River Site Citizens Advisory Board |
| OR1 | 26 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |
| SF1 | 105 | Tom Udall | Attorney General of New Mexico |
| SF3 | 98 | Anhara Lovato | |
| SF3 | 127 | Shannyn Sollitt | |
| SF8 | 71 | Jess Osborn | |

**Comment:**
Many commenters endorsed the use of aboveground storage as a means of keeping the waste accessible, retrievable, and easily monitored, until a beneficial use or another solution is discovered. Some commenters wanted to know what assumptions DOE used in developing the no action alternatives and why repackaging every 20 years was necessary. One commenter requested information on the state of TRU waste currently in storage. One commenter stated that DOE should fully characterize the TRU inventory.

**Response:**
No Action Alternative 1 evaluates the storage of TRU waste in monitored, retrievable storage facilities, and No Action Alternative 2 evaluates storage of TRU waste at the generator sites under current storage practices. DOE expects to make a decision based on the analyses in SEIS-II, economic factors, technical feasibility, regulatory compliance (e.g., long-term storage would be in violation of consent orders and agreements) and other relevant factors. DOE understands that each of the alternatives presents different levels of risk to the public and the environment, but such a full range of risk is needed to evaluate the full range of alternatives.

The no action alternatives were developed under the following assumptions: (1) WIPP would be closed and dismantled over a 10-year period, (2) waste would be consolidated, treated, and stored indefinitely in suitable aboveground structures at consolidation sites or at the sites where it was generated, and (3) CH-TRU waste would be overpacked every 20 years under No Action

Alternative 1. The assumption to overpack CH-TRU waste every 20 years is based on the current expected lifetime of steel containers. RH-TRU waste containers were assumed to last 100 years because the RH-72B container is specially designed; thus, overpacking was not assumed.

The exact configuration of the waste does not significantly affect the analysis, because it is the loss of institutional control after 135 years of storage that would make the waste available to the environment.

To fully characterize the waste would present an undue health risk to workers and would provide minimal benefit to the analysis of impacts. DOE has used partial sampling and knowledge of the processes that produce waste to build its inventory. The sites have characterized their waste and will continue to update their information based on more detailed characterization.

All data presented in the *Transuranic Waste Baseline Inventory Report*, Revision 2 (BIR-2) and BIR-3 have been used in the impacts analysis in SEIS-II. Before TRU waste would be shipped to WIPP, it must be certified as meeting the requirements in the planning-basis Waste Acceptance Criteria (WAC) that involve limits on waste content, such as fissile gram equivalents, gas generation, and curies.

**01.03 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-005 | 5 | Steven H. Gunderson | State of Colorado Department of Public Health and Environment |
| ALB2 | 9 | Don Hancock | Southwest Research and Information Center |
| ALB3 | 52 | David Mitchell | |
| ALB6 | 69 | David Pace | |
| C-098 | 2 | Jill M. Cowley | |
| C-104 | 1 | Bob Slay | Savannah River Site Citizens Advisory Board |
| C-156 | 12 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |
| C-159 | 1 | Susan Maret | Sierra Club National Nuclear Waste Task Force |
| OR1 | 8 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |
| OR1 | 36 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |
| SF3 | 49 | Jai Lakshman | SEVA Foundation |
| SF8 | 8 | Susan Diane | |

**Comment:**
Commenters questioned the general structure and logic of both no action alternatives and asked why No Action Alternative 1 is considered “no action.” Some commenters supported the implementation of No Action Alternative 2. Some commenters said that the exclusion of the Additional Inventory and treatment as necessary from No Action Alternative 2 was inappropriate. Another commenter stated that the SEIS-II analysis did not sufficiently analyze the risks of no action to support disposal at the WIPP site. Finally, one commenter asked if there were any dramatic risks identified for No Action Alternative 2.

**Response:**
Given that DOE has proposed the operation of the WIPP repository, a no action alternative would include the closure of the WIPP facility and the continuation of storage. No Action Alternative 1 was developed in response to the public request for an alternative means of storing TRU waste. Although some action does take place under the no action alternatives, there would be no action at WIPP other than dismantlement.

SEIS-II has been revised to explain that under No Action Alternative 2, there would be Resource Conservation and Recovery Act (RCRA) issues that would require thermal treatment of TRU mixed waste before DOE could store waste at the generator sites. These sites would likely provide some form of treatment, but there is currently no treatment that could alter the radionuclide inventory. With the assumed loss of institutional control, the radionuclide inventory would still be available for release to the environment under both no action alternatives, which is the prime consideration when estimating health impacts.

SEIS-II has been revised to include discussions of the Additional Inventory as part of the Proposed Action and No Action Alternative 2 (see the text box in Section 3.1). Existing RH-TRU waste in the Basic Inventory that exceeds the amount allowable by current laws and agreements is identified as "excess waste." It was assumed for the purpose of analysis that the excess RH-TRU waste, which amounts to approximately 43,000 cubic meters (1.5 million cubic feet), would be located at the Hanford and ORNL sites and would remain in storage at these sites for an indefinite number of years following treatment. (The impacts associated with the Additional Inventory are also shown under the action alternatives).

The aggregate radiological impact from the combined inventories (Basic and Additional) at the seven sites over 10,000 years was estimated to be about 800 latent cancer fatalities (LCFs), with about 97 percent of these LCFs in the populations around Rocky Flats Environmental Technology Site (RFETS) (see Section 5.6). As noted in Section 5.6.12 of the Draft SEIS-II, the long-term impacts were estimated using existing population quantities and distributions. However, Section 5.6.12 did note that the potential for additional impacts at the storage sites could be considerably higher, by an order of magnitude or more, if encroachment of populations onto former DOE sites in the future was considered. The potential for higher impacts would likely be greater in areas of higher population for sites such as RFETS, ORNL, and SRS. The potential for intrusion would also likely be higher at these sites, with potential for several deaths per generation per site. Section 5.6.12 of SEIS-II has been revised to discuss the impacts of encroachment and intrusion at DOE sites in greater detail.

**01.03 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 31 | Eric James | |
| ALB1 | 44 | Janet Greenwald | |
| ALB1 | 48 | Lisa Sparaco | |
| ALB2 | 84 | Janet Greenwald | |
| ALB2 | 96 | John Leahigh | |
| ALB2 | 124 | Deborah Reade | |
| ALB3 | 78 | Jack Uhrich | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 82 | Maryann Fiske | |
| ALB3 | 126 | David Mitchell | |
| ALB5 | 25 | Susan Rodriguez | |
| C-162 | 11 | Kathleen Sullivan | |
| C-163C | 48 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163E | 1 | No name provided | Citizens for Alternatives to Radioactive Dumping |
| C-163E | 22 | No name provided | Citizens for Alternatives to Radioactive Dumping |
| DE1 | 33 | David Measom | |
| DE1 | 49 | Kay Mack | |
| DE1 | 99 | Laura Kriho | |
| DE1 | 110 | Foster Goodwill | |
| DE1 | 123 | Judith Mohling | |
| DE1 | 128 | Kathleen Sullivan | |
| DE1 | 158 | James Ciarlo | |
| DE1 | 174 | Tor Mohling | |
| DE1 | 181 | Amy Marschak | |
| DE1 | 194 | Scott Hatfield | |
| E-056 | 64 | Linda Hibbs | |
| SF1 | 50 | Margret Carde | Concerned Citizens for Nuclear Safety |
| SF1 | 68 | Virginia Miller | |
| SF1 | 73 | Don Hancock | Southwest Research and Information Center |
| SF1 | 75 | Don Hancock | Southwest Research and Information Center |
| SF1 | 93 | Chris Moore | |
| SF2 | 16 | Kathleen Sullivan | |
| SF4 | 44 | Deborah Reade | |
| SF4 | 73 | Mary Riseley | |
| SF7 | 16 | Sister Penelope McMullen | |
| SF7 | 25 | Suzanne Phillips | |
| SF7 | 105 | Linda Hibbs | |
| SF7 | 129 | Lee Lysne | |
| SF7 | 138 | Dominique Mazeaud | |

**Comment:**
A number of commenters urged that TRU waste should be kept aboveground in monitored, retrievable, long-term storage, in reinforced structures at the generator-storage facilities. Many commenters suggested that this method would be cheaper and safer than transporting the waste to and burying it at the WIPP repository.

**Response:**
Aboveground storage, which has a life expectancy of about 25 years, is considered a temporary solution for TRU waste disposal. Even reinforced aboveground structures made of steel and concrete would begin to deteriorate within a relatively short period of time as compared to the WIPP repository's projected ability to isolate TRU waste. Using the same assumptions as the Proposed Action and the action alternatives in SEIS-II (i.e., the loss of institutional control),

TRU waste in an aboveground storage configuration would have the potential for a relatively significant release to the environment.

One reason for selecting a deep repository such as the WIPP site is that it would rely on geologic factors, rather than human control, for the isolation of TRU waste. Continual storage at the current sites would pose substantial risks because of the inability to ensure control of those sites for extended periods of time. SEIS-II shows that leaving waste at the sites where it is currently stored could cause approximately 800 deaths over a 10,000-year period, while disposal at the WIPP facility would isolate the waste and would likely result in no deaths over the same 10,000-year period. Even when the impacts of waste treatment and transportation are considered, disposal at WIPP would be a far safer solution than leaving waste where it is currently stored.

It is true that the 100-year storage cost of $2.5 billion is less than the WIPP disposal cost. However, if waste were stored for 100 more years, there is no assurance that we would have a better disposal solution than the WIPP repository at the end of that time period or that we would keep from incurring an additional $2.5 billion or more in disposal costs. DOE does not believe it is prudent to rely on institutional controls for the thousands of years over which storage would be required.

DOE has been following the recommendation of the National Academy of Sciences (NAS) Committee on Waste Management, which, in 1957, issued a report stating that the most promising method for the disposal of radioactive waste seemed to be in salt deposits. Nevertheless, SEIS-II considers two no action alternatives that involve storage of TRU waste at generator sites. Under No Action Alternative 1, DOE would treat all TRU waste by a thermal process to meet land disposal restrictions (LDRs) and store the waste in newly engineered facilities. Under No Action Alternative 2, DOE would treat newly generated TRU waste to the WAC and store the waste in either present or newly engineered facilities. Under all SEIS-II alternatives, generator-storage sites would maintain the capability to manage TRU waste generated in the future. Facilities could also have the capability to characterize TRU waste and treat it in a number of ways, including volume reduction, vitrification, and thermal treatment. These alternatives are described in Sections 3.2.5 and 3.2.6 of SEIS-II. Also, waste emplacement at WIPP would not preclude the application of new technologies developed during WIPP's projected active life to some or all of the waste emplaced in the facility.

**01.03 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF2 | 57 | Mary Barr | |

**Comment:**
"I'm not going to say that it's safer in the long run to put material at WIPP than it is to keep it at DOE sites for another hundred years until we come up with a better solution. I can't make that sort of decision. What I do know is that keeping material at the individual DOE sites is a very expensive proposition. It is also something that tends to keep a high-level of worker exposure and has, to my mind, a greater immediate public risk as opposed to long-term public risk."

**Response:**
SEIS-II analyses show that disposal in the WIPP repository would isolate the waste and provide significantly lower risk to the public compared to the no action alternatives. Also, the SEIS-II analyses estimated that disposal in the WIPP repository would cost $19 billion compared to $32.9 billion for No Action Alternative 1B. There would be minimal difference in impact to the involved worker for any of the alternatives, including the no action alternatives. The greater risk would be to the public under No Action Alternative 2 if waste were released.

**01.03 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| DE1 | 37 | Tim Holeman | |

**Comment:**
"We don't believe the no action alternative is an adequate alternative. Its cumulative impacts are pretty well laid out in the document, though we would encourage you to seek out additional information from the yet-to-be-released [RFETS] sitewide EIS--which the DOE has not released, and we have encouraged the DOE to release. The cumulative impacts are greater than what you have even articulated."

**Response:**
Where appropriate, DOE has incorporated additional information on generator site impacts to ensure that the SEIS-II analyses are comprehensive and accurate. However, the RFETS site-wide environmental impact statement (EIS) has met with delays and, thus, information from the EIS was not available for SEIS-II.

**01.03 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 55 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page S-16. It is noted that No Action Alternative 1, which would have thermally treated wastes, provides for overpacking of waste at 20-year intervals. No Action Alternative 2, which does not have treated wastes, has no plans for repackaging. This is an example of how the alternatives provide different levels of assurance that must be kept in mind when making decisions between alternatives."

**Response:**
The two no action alternatives are different and result in different impacts, which the decisionmaker can consider.

## 01.04 Other Alternatives

### 01.04 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 116 | Michael Dooley | |
| C-068 | 1 | Charles S. Federle | |
| C-093 | 2 | Hugo Bertini | |
| C-093 | 3 | Hugo Bertini | |
| C-095 | 2 | K. K. S. Pillay | |
| SF3 | 128 | Shannyn Sollitt | |

**Comment:**
A number of commenters suggested that DOE should keep TRU waste in storage for commercial uses, develop a way to use waste for healing purposes, or extract available energy or reusable plutonium from waste because it is a valuable resource.

**Response:**
In theory, assuming that plutonium was reasonably recoverable, the TRU metals in the waste proposed for disposal at WIPP could be used to provide fuel for commercial nuclear reactors. However, because of the dispersed form and relatively low concentration of plutonium metal in TRU waste, it is not technically or economically feasible to recover the TRU radionuclides (such as plutonium) contained in TRU waste (and thereby use that plutonium as fuel for nuclear reactors). Because it is not feasible to recover the plutonium contained in TRU waste, it is inappropriate to compare the energy being released by the radioactive decay of the TRU waste with the energy produced by nuclear reactors. Section 3.3 of the SEIS-II text has been modified to further explain why such alternatives are not reasonable.

### 01.04 (02)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB5 | 82 | Justin Olson | |
| ALB5 | 83 | Justin Olson | |
| NA1 | 9 | Wade Frazier | |
| NA1 | 10 | Wade Frazier | |
| NA1 | 11 | Dennis Lee | Better World Technologies |
| NA2 | 14 | Wade Frazier | |
| NA2 | 15 | Wade Frazier | |
| NA2 | 16 | Dennis Lee | Better World Technologies |

**Comment:**
Commenters urged DOE to consider using a treatment technology developed by Better World Technologies that would neutralize radioactive materials into nonradioactive and inert materials with an unspecified treatment technology using “Brown’s gas.”

**Response:**
Peer-reviewed scientific literature does not support the theory that radioactive materials can be neutralized by using “Brown’s gas” (a combination of hydrogen and oxygen). In addition, DOE contacted the Director of Research for Better World Technologies, Mr. Dennis Lee, by telephone on March 10, 1997, regarding the capabilities of the company to treat TRU waste. Mr. Lee was unable to provide details or otherwise substantiate the neutralization process. Should additional information regarding feasibility of this technology become available, DOE will consider its use.

**01.04 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 5 | Mark Rudd | |
| ALB3 | 122 | David Mitchell | |
| C-038 | 2 | Blanche Brody | |
| C-071 | 2 | Diane Stayner | |
| C-088 | 1 | Victoria Parrill | |
| C-152 | 111 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 113 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
Some commenters suggested using such approaches as acid digestion of TRU waste or using TRU waste (including plutonium) for medical purposes or as an energy source. Some commenters suggested extracting plutonium from TRU waste or plutonium residues for use in nuclear weapons, rather than creating new plutonium. Another commenter suggested that before any new component of a nuclear weapon can be replaced, five hundred barrels of retrievably stored waste must be inspected, repackaged if necessary, and the storage facility upgraded if necessary. One commenter asked DOE to analyze how to safely destroy the existing stockpile. Other commenters recommended that solar power be used as an energy source in order to avoid creating nuclear waste.

**Response:**
Acid digestion could be used under any general form of treatment evaluated in SEIS-II. The radioactive components of TRU waste, including plutonium, cannot be used for medical purposes, as fuel, or in nuclear weapons primarily because extraction of such components is not feasible for most waste types and is not economically feasible for all waste types. The comments regarding nuclear weapon component replacement, the safe destruction of the existing nuclear stockpile, and the use of solar power to avoid creating nuclear waste are not within the scope of SEIS-II.

**01.04 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-008 | 2 | Linda Whittenberg | |

**Comment:**
"I think the more we are all aware of the waste created by nuclear activities the better. I have long believed that it would be good to have a large pyramid constructed above ground where the waste could be stacked. While I can't say what kind of material the pyramid could be made of for it to protect viewers from radiation, I'm sure it could be done. The pyramid could be something like the Vietnam Memorial, a place where we could all go to remember the tragedies nuclear energy has produced and to remember we must never create this much poisonous waste again. The trouble with the Carlsbad site is that it is too easy to forget it, like trying to bury a transgression."

**Response:**
The use of a pyramid-shaped storage facility does not appear to provide any benefits over the storage facilities evaluated in the alternatives. A pyramid-shaped storage facility would still require routine maintenance and the waste would need repackaging, requiring the packages to be retrievable. Also, any structure would be subject to degradation, so release of contaminants to the environment over 10,000 years would still be expected.

Once waste was emplaced at WIPP and the facility scheduled for closure, permanent markers would delineate the site and highlight with symbols and in numerous languages that radioactive waste has been disposed of at the site. The markers would be designed to ensure that those near the WIPP site would be aware of the presence of the waste.

**01.04 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF4 | 104 | Kathy Sanchez | |

**Comment:**
"Alternatives should be well thought out and done on a smaller scale before ordering multibillion dollar projects to dispose of dangerous, treated or untreated radioactive waste into other people's back yards."

**Response:**
DOE considers the alternatives in SEIS-II to be well-developed and to possess potential solutions to many of the TRU waste management issues that exist today or that could exist under the action alternatives. This information has been developed over the years by DOE, the national laboratories, and private companies. Most of the potential impacts from these alternatives have been estimated from prior experience or calculated through mathematical models and do not require small-scale projects to demonstrate their impacts.

**01.04 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| RL1 | 13 | F.R. Cook | |

**Comment:**
"All potential show stoppers should be included in your decision and into your assessment under NEPA. Look at other alternatives and what not, so that we get that process accomplished."

**Response:**
DOE believes that SEIS-II examines the appropriate potential environmental and human health impacts and a proper range of alternatives for the management of TRU waste.

**01.04 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 7 | Don Hancock | Southwest Research and Information Center |
| ALB2 | 105 | Lawrence Curry | |
| ALB3 | 51 | David Mitchell | |
| DE1 | 197 | Scott Hatfield | |
| SF5 | 6 | Scott Shuker | |
| SF5 | 12 | Marilyn Hoff | |
| SF8 | 70 | Jess Osborn | |

**Comment:**
Several commenters said there should be alternatives other than sending waste to WIPP. Some commenters stated that DOE should consider sites other than WIPP. One of the commenters stated that DOE is going to open WIPP and is not considering any other alternatives, even though the majority of New Mexicans oppose the opening of the WIPP facility. Other commenters suggested shipping TRU waste to the moon or shooting it into the sun.

**Response:**
DOE considered alternative disposal sites and alternatives to geologic disposal in the 1980 FEIS and, in the ROD of 1981, chose to develop WIPP as the disposal site for defense TRU waste. DOE is not reconsidering the 1981 WIPP siting decision, and alternative disposal sites are not reasonable alternatives for analysis in SEIS-II. SEIS-II contains a discussion of alternatives considered and rejected, and includes a discussion of some alternatives considered and rejected in the context of prior NEPA decisions, but this was not intended to indicate that DOE meant to reexamine all decisions previously made within the context of SEIS-II. SEIS-II does, however, analyze the alternatives of no action (i.e., leaving the waste in storage and closing WIPP).

**01.04 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF5 | 46 | Elizabeth West | |
| SF5 | 47 | Elizabeth West | |

**Comment:**
One commenter suggested that the SEIS-II alternatives should be strongly considered by DOE.

**Response:**
DOE has not yet decided whether to use the WIPP facility for the disposal of TRU waste. SEIS-II considers two no action alternatives that examine impacts at both WIPP (from decommissioning) and at the generator-storage sites, some of which may be used for waste treatment. Under all alternatives, some facilities would have the capability to characterize TRU waste and treat it in a number of ways, including volume reduction, vitrification, and thermal treatment. The SEIS-II alternatives examine the impacts of three levels of treatment for TRU waste: minimal treatment to meet current WAC, treatment by a shred and grout process, and thermal treatment, which would destroy or immobilize the hazardous components of the waste.

**01.04 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB-2 | 8 | Don Hancock | Southwest Research and Information Center |
| C-131 | 8 | Don Hancock | Southwest Research and Information Center |

**Comment:**
"In the D-SEIS-II, DOE has failed to provide any analysis of at least three reasonable alternatives. One is to not use WIPP and to instead consider other alternative disposal sites, including emplacing INEL TRU waste in the first high-level waste repository, the Preferred Alternative in the FEIS (FEIS, p. 3-16). This alternative should include consideration of both existing wastes and those from future generation. A second reasonable alternative is to continue to store wastes at current locations, but to upgrade storage facilities to improve safety and environmental protection. Such an alternative is not included in the No Action Alternative 2 of the D-SEIS-II. The third alternative is to consider WIPP only for contact-handled (CH) waste because not enough information is known about remote-handled (RH) waste and because RH wastes will not be ready for emplacement at WIPP for many more years." This commenter also stated that DOE does not include the alternative of delaying WIPP until RH-TRU waste is ready for emplacement.

**Response:**
The 1981 WIPP ROD states that DOE has decided to proceed with the WIPP project at the Los Medaños site and that the WIPP facility will dispose of defense TRU waste stored retrievably at Idaho National Engineering and Environmental Laboratory (INEEL). Further consideration of disposing of TRU waste at the first high-level waste repository is not warranted. Storage of waste at the generator sites is bounded by the no action alternatives. Storage facilities would

be maintained, upgraded, or refurbished as necessary. The impacts are presented in Chapter 5. See the text box on criticality in Chapter 5 of SEIS-II for a discussion of the differences between CH-TRU and RH-TRU waste. The analyses in SEIS-II present the impacts for CH-TRU and RH-TRU waste separately. Thus, the DOE decisionmaker can make an informed decision for each segment of the inventory.

With respect to the alternative of delaying WIPP until RH-TRU waste is available for emplacement, DOE believes it is unreasonable to delay making a decision on part of the waste until all of the waste is ready for emplacement, considering the risk involved. In addition, Congress has expressed its desire to have WIPP open for TRU waste disposal by November 1997, or as soon thereafter as possible consistent with public health and safety concerns.

## 01.05 Treatment Research

### 01.05 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-008 | 14 | Tom Udall | Attorney General of New Mexico |
| ALB1 | 32 | Eric James | |
| ALB3 | 39 | Penny Mainz | |
| ALB4 | 1 | Charles Goad | |
| ALB5 | 53 | John McCall | |
| ALB5 | 59 | Robert H. Neill | Environmental Evaluation Group |
| ALB5 | 66 | John McCall | |
| C-012 | 3 | Eleanor Ponce | |
| C-024 | 2 | Barbara Conroy | |
| C-036 | 2 | Sarah Stout | |
| C-091 | 2 | Niels Schonbeck | |
| C-123 | 1 | Carol Merrill | |
| C-125 | 11 | Barbara H. Johnson | The Rio Grande Chapter of the Sierra Club |
| C-154 | 16 | Tom Marshall, Jack Mento, et al. | Rocky Mountain Peace and Justice Center |
| C-159 | 18 | Susan Maret | Sierra Club National Nuclear Waste Task Force |
| C-163C | 44 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| CA1 | 12 | Richard Boren | |
| DE1 | 32 | David Measom | |
| DE1 | 139 | Andrew Thurlow | |
| SF1 | 106 | Tom Udall | Attorney General of New Mexico |
| SF3 | 21 | Eleanor Ponce | |
| SF5 | 65 | Reno Myerson | |
| SF7 | 141 | Barbara Conroy | |
| SF8 | 31 | Maria Sol | |

**Comment:**
Many commenters said they support the development of future technologies in general or supported the development of technologies such as the transmutation of TRU waste and high-level waste. One commenter specified the need for an alternative to a "fear-based nuclear

'defense' system." Many stated that DOE should delay the opening of the WIPP repository or select a no action alternative to allow time for the development of an alternative such as transmutation. One commenter suggested that transmutation might be feasible for RH-TRU waste and high-level waste because the radionuclides were more highly concentrated. One commenter suggested that DOE should make use of the keen minds at Los Alamos National Laboratory (LANL) to help solve the TRU waste problem.

**Response:**
As discussed in Section 3.3 of SEIS-II, transmutation was considered as an alternative to the Proposed Action. However, transmutation was neither analyzed in detail nor included as a reasonable alternative in SEIS-II because the technology is still in the early stages of development at testing facilities such as those at LANL. There are too many unknown factors that make it difficult to analyze the impacts of using it on a production scale. The residual waste of the accelerator transmutation of waste (ATW) process would contain substances that would be highly radioactive but have a shorter half-life than the original actinides. Residual waste from any separation steps and from the ATW process would require responsible management, including a thorough evaluation of disposal alternatives.

DOE is not aware of any proven physical or chemical techniques that will neutralize or change the fundamental physical process of radioactive decay. In 1996, the National Research Council's Committee on Separations Technology and Transmutation Systems published an independent report that evaluated the relative effects, costs, and feasibility of employing separations and transmutation technologies in DOE programs for managing spent nuclear fuel for civilian power reactors and radioactive waste in tanks at selected existing defense production reactor sites. Based on this research, DOE does not believe that transmutation represents a technically achievable, cost-effective alternative for the elimination or disposal of TRU waste. Should such a technology be proven in the future, it could be used to treat and dispose of then-existing stockpiles of TRU waste and newly generated TRU waste.

**01.05 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| BO1 | 106 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| C-157 | 9 | Wendy Lynne Botwin | |
| C-159 | 18 | Susan Maret | Sierra Club National Nuclear Waste Task Force |
| C-159 | 21 | Susan Maret | Sierra Club National Nuclear Waste Task Force |
| DE1 | 15 | Michael Hoffman | |
| DE1 | 78 | Sam Cole | |
| DE1 | 117 | Amy Rosser | |
| DE1 | 171 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| SF8 | 37 | John Otter | |
| SF8 | 57 | Katherine Lage | |

**Comment:**
Commenters suggested that DOE leave the waste at the sites where it is currently stored and give more attention to research on forms of treatment that could reduce the toxicity of TRU waste or make it more safe.

**Response:**
Much research has already been conducted on treatment and disposal technologies. At this time, DOE is unaware of any proven physical or chemical process that will neutralize TRU waste (i.e., transform the waste into a nonradioactive form). Providing more money for research and development of technologies to neutralize TRU waste would not necessarily produce a better solution than the alternatives analyzed in SEIS-II.

DOE supports research that may eventually result in alternative treatment to the disposal of TRU waste, and much research has already been done on treatment and disposal technologies in the United States and other countries. Research that is currently in the conceptual stages for TRU waste would include transmutation. DOE did consider all of the alternatives proposed during the scoping process and public hearings, although some alternatives were not analyzed in detail. Section 3.3 of SEIS-II briefly discusses the alternatives considered by DOE and the rationale for the exclusion of alternatives such as transmutation, zircon technology, and alternative engineered barriers. DOE believes that no viable innovative technologies are currently available. DOE considers the risk of continued storage to outweigh potential advantages of a new technology, but DOE will continue to consider and investigate new technologies.

A beneficial use of the TRU waste that would be emplaced in the WIPP repository has not been demonstrated. Because the radioactive material in the waste is dispersed throughout the waste matrix and is of relatively low concentration, it would not be economically feasible to separate the radioactive materials from the waste matrix by chemical or physical means.

## 01.06 State Involvement

### 01.06 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-004 | 2 | George Voinovich | State of Ohio Office of the Governor |
| A-010 | 2 | Justin P. Wilson | State of Tennessee |
| A-010 | 21 | Earl Leming | State of Tennessee Department of Environment and Conservation |
| A-010 | 23 | Earl Leming | State of Tennessee Department of Environment and Conservation |
| C-130 | 3 | Susan L. Gawarecki | Oak Ridge Reservation Local Oversight Committee |
| OR2 | 15 | Barbara A. Walton | Oak Ridge Reservation Local Oversight Committee |

**Comment:**
Commenters said that any decisions made by DOE that involved transportation of more TRU waste to their states should involve discussions with representatives from the affected states. Some of the commenters were opposed to storage of TRU waste from other sites and were concerned that RH-TRU waste would remain in Tennessee instead of being disposed of at WIPP. One commenter said that adequate funding would be necessary to properly characterize, treat, and package TRU waste in a timely fashion to ensure disposal at WIPP.

**Response:**
While present legal restrictions would prevent DOE from completely disposing of all TRU waste under the Proposed Action, DOE is committed to honoring agreements with all host states and, at the same time, working with the states to manage and dispose of TRU waste. Decisions regarding the transportation of TRU waste to sites for management prior to disposal at WIPP would be made based in part on the WM PEIS. Also, the preferred alternative of the WM PEIS, upon which the consolidation configuration would be based, was identified after discussion with state officials from all affected states. (See related discussions in the new SEIS-II Appendix J for information on recent changes in DOE's TRU waste management program). If DOE decides to open WIPP and consolidate waste at any site, necessary funds wold be provided to allow a site to fulfill its obligations.

## 01.07 Disposal Operations Duration

### 01.07 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-008 | 9 | Tom Udall | Attorney General of New Mexico |
| ALB2 | 125 | Deborah Reade | |
| ALB5 | 4 | Robert H. Neill | Environmental Evaluation Group |
| C-130 | 8 | Susan L. Gawarecki | Oak Ridge Reservation Local Oversight Committee |
| C-135 | 6 | William Fulkerson | Friends of Oak Ridge National Laboratory |
| C-152 | 53 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 105 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 106 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 110 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 146 | Robert H. Neill | Environmental Evaluation Group |
| OR1 | 14 | Stanley Reel | Oak Ridge Regional Planning Commission |
| OR1 | 27 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |
| OR2 | 17 | Alfred Brooks | |
| SF1 | 101 | Tom Udall | Attorney General of New Mexico |

**Comment:**
Many commenters questioned the validity of planning disposal operations for an extended period of time (e.g., 190 years) under the action alternatives. One commenter asked if the basic configuration of the WIPP repository would change, require a second disposal shaft and replacement of surface facilities, and cause operational and institutional problems. Some

commenters said more information on lag storage and on ways to shorten the time periods is needed.

**Response:**
The operational timeframe of 150 to 190 years for the action alternatives provided a baseline to which DOE could compare the impacts of all the SEIS-II alternatives. However, it would be possible and more cost-effective for DOE to excavate additional shafts, construct additional surface facilities, and increase the excavation rate at WIPP in order to shorten the operational timeframe to within, for example, 70 years (see Chapters 3 and 5 of SEIS-II). A shorter operational period would also allow DOE a greater probability of maintaining institutional control.

Lag storage sites were assumed to be in a monitored condition and no releases to the environment were anticipated, unless under accidental conditions (see Chapter 5 of SEIS-II). Human health impacts at the storage sites have been evaluated and are presented throughout Chapter 5.

### 01.07 (02)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-131 | 12 | Don Hancock | Southwest Research and Information Center |

**Comment:**
"The D-SEIS-II also contains no adequate analysis of the environmental impacts of continued operations of the storage/generator facilities over the timeframes included in the action alternatives."

**Response:**
DOE believes it has adequately analyzed the impacts of storage and treatment of TRU waste and the cumulative impacts at each site.

## 01.08 Disposal Panels

### 01.08 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-013 | 17 | Jennifer Salisbury | New Mexico Radioactive Waste Consultation Task Force |
| C-132 | 11 | Keith Tinno | Shoshone-Bannock Tribes |
| E-052 | 1 | Dr. Stanley E. Logan | |

**Comment:**
Commenters questioned why it would take 150 years to excavate 75 panels, when work rates have been higher than the assumed two years per panel. They also wondered why Action Alternative 2 requires seven and one-half times the disposal panels, yet disposes of only

two-thirds of the waste volume that is handled by the Proposed Action. One of the commenters stated that the operational timeframes for the action alternatives were too long.

**Response:**
Under Action Alternative 2, the amount of RH-TRU waste is two and three-quarters times greater than under the Proposed Action. As noted in Section 3.2.3.3, thermal treatment results in an overall volume reduction of 65 percent. The same quantity of radionuclides would now be present in 35 percent of the original volume; therefore, radionuclide concentration and thermal power generation would increase by a factor of approximately three. Because of the increased thermal power output, RH-TRU waste would need to be placed in separate panels to meet the WIPP design specifications for thermal power (10,000 watts per surface acre).

The estimate of two years is based on an excavation rate of one shift per day, five days per week. Among the activities to be performed during the one shift would be salt excavation, salt hoisting, maintenance, and outfitting. The *WIPP Panel One Utilization Plan* highlights the distinction between the time required to excavate the site and preliminary design validation (SPDV) rooms and current projections for excavating another panel. When SPDV rooms were originally excavated, activities occurred during all three shifts and often seven days a week.

The operational timeframe of 150 to 190 years for the action alternatives provided a baseline to which DOE could compare the impacts of all the SEIS-II alternatives. However, it would be possible and more cost-effective for DOE to excavate additional shafts and increase the emplacement and excavation rates at WIPP in order to shorten the operational timeframe to about 70 years (see Chapters 3 and 5 of SEIS-II).

## 01.09 Compliance with NEPA Regulations

### 01.09 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-008 | 8 | Tom Udall | Attorney General of New Mexico |
| A-008 | 10 | Tom Udall | Attorney General of New Mexico |
| A-008 | 11 | Tom Udall | Attorney General of New Mexico |
| ALB2 | 6 | Don Hancock | Southwest Research and Information Center |
| ALB2 | 10 | Don Hancock | Southwest Research and Information Center |
| ALB3 | 46 | David Mitchell | |
| ALB5 | 3 | Robert H. Neill | Environmental Evaluation Group |
| ALB6 | 111 | Dair Obenshain | |
| C-125 | 8 | Barbara H. Johnson | The Rio Grande Chapter of the Sierra Club |
| C-131 | 10 | Don Hancock | Southwest Research and Information Center |
| C-131 | 15 | Don Hancock | Southwest Research and Information Center |
| C-141 | 15 | Margret Carde | Concerned Citizens for Nuclear Safety |
| C-152 | 4 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 16 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 104 | Robert H. Neill | Environmental Evaluation Group |
| C-163C | 43 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| CA1 | 10 | Richard Boren | |
| CA1 | 20 | Don Gray | |
| OR1 | 11 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |
| OR1 | 25 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |
| RL1 | 11 | F.R. Cook | |
| SF1 | 6 | Robert Neill | Environmental Evaluation Group |
| SF1 | 42 | Margret Carde | Concerned Citizens for Nuclear Safety |
| SF1 | 50 | Margret Carde | Concerned Citizens for Nuclear Safety |
| SF1 | 100 | Tom Udall | Attorney General of New Mexico |
| SF1 | 102 | Tom Udall | Attorney General of New Mexico |
| SF1 | 115 | Peggy Prince | |
| SF4 | 103 | Kathy Sanchez | |
| SF4 | 119 | Corrine Sanchez | |
| SF7 | 6 | Carole Tashel | |
| SF7 | 34 | Amy Bunting | |
| SF8 | 40 | John Otter | |

**Comment:**
A number of commenters stated that SEIS-II does not present realistic, viable, or sufficient alternatives, both for the WIPP facility and the generator-storage sites, and that the alternatives involving the Total Inventory are illegal. Some commenters said that the alternatives should assume more than 35 years of waste generation, should not assume facilities will last for 190 years, and should not assume the loss of institutional control after 100 years. Some commenters said they wanted independently reviewed transportation alternatives.

**Response:**
The 1980 FEIS addressed several disposal options, including geologic repositories other than at the WIPP site. With the 1981 ROD, the decision to construct a geologic repository at the WIPP site, using phased development, was made; therefore, alternative locations to the WIPP site are not the subject of SEIS-II. The purpose of SEIS-II has been to examine the environmental impacts associated with the operation of the WIPP repository, including analyses of the different types and amounts of waste, forms of waste treatment, and modes of TRU waste transportation. DOE could analyze an unlimited number of alternatives using these variables. However, Council on Environmental Quality (CEQ) regulations do not require an analysis of every possible alternative but only a reasonable range of alternatives that must be analyzed and compared in the EIS. By using multiple variables in the alternatives, SEIS-II analyzes the full spectrum of alternatives. These alternatives were expanded from those listed in the Notice of Intent (NOI), based on public comments received at the scoping meetings. In Section 3.3 of SEIS-II, DOE provides a discussion of the alternatives that were considered but not analyzed in detail. The impacts for all of the analyzed alternatives are presented in Section 3.4 and in Chapter 5.

The action alternatives examine the potential impacts to both the repository and to generator-storage sites from shipping TRU waste to the WIPP site. The no action alternatives examine the impacts at the generator-storage sites, some of which may be used for waste treatment, and from decommissioning at WIPP. DOE uses current descriptions of proposed waste treatment technology and accepted scientific methods to analyze the potential impacts of waste treatment. Prior to the construction and operation of any waste treatment facility, an appropriate site-specific NEPA review would be completed.

Under all of the SEIS-II alternatives, some facilities would have the capability to characterize TRU waste and treat it in a number of ways, including volume reduction, vitrification, and thermal treatment. The SEIS-II alternatives examine the impacts of three levels of treatment for TRU waste: minimal treatment to meet current WAC, treatment by a shred and grout process, and thermal treatment, which would destroy or immobilize the hazardous components of the waste. Treatment by a shred and grout process and thermal treatment methods are in use or development at this time. These treatment methods are discussed in Section 2.2 of SEIS-II.

DOE separately analyzed the impacts attributable to the Basic Inventory (waste eligible for disposal at WIPP) and the Additional Inventory (which includes waste not currently eligible for disposal at WIPP) under each alternative. This comparison allowed DOE to examine the impacts of each alternative, based on inventories, to that of the Proposed Action. The analyses were also conducted separately for RH-TRU and CH-TRU waste by transportation option and inventory type (Basic and Additional). Thus, it is also possible to discuss the impacts of the same inventory used in the Proposed Action for each alternative.

CEQ regulations and guidance require federal agencies to consider reasonable alternatives, even if those alternatives are outside the scope of the agency's legal authority. DOE needs to dispose of all TRU waste in a manner that protects human health and the environment, and it is reasonable to consider alternatives that would provide for the disposal of all TRU waste.

Monitored storage facilities designed for waste management and retrieval at the consolidation sites are considered under No Action Alternatives 1 and 2 and are described in Sections 3.2.5 and 3.2.6 of SEIS-II. The Proposed Action and action alternatives each consider construction of new storage facilities for excess RH-TRU waste and lag storage, respectively. The costs associated with the construction of treatment facilities under the Proposed Action and action alternatives are included in Appendix D of SEIS-II.

DOE acknowledges that TRU waste may be generated after the year 2033. The Department's complex-wide projections for TRU waste generation do not go beyond 35 years, and, for that reason, SEIS-II does not have numerical estimates beyond those projections. The operational timeframe of 150 to 190 years for the action alternatives provides a baseline to which DOE can compare the impacts of all the SEIS-II alternatives. It would be possible to excavate additional shafts and increase the excavation rate at WIPP in order to shorten the operational timeframe to about 70 years. The assumption of the loss of institutional control after 100 years of active control reflects the requirements of 40 CFR Parts 191 and 194. It is possible, and perhaps even probable, that institutional control would extend beyond 100 years.

The economic impact analysis assumed complete reconstruction of lag storage facilities every 30 years. The cost of maintaining the WIPP facilities over the operations period was included in the estimated WIPP annual operating budget. Repository disposal areas would be excavated as needed. Walls and ceilings of operating areas would be monitored to ensure a low risk of wall collapse. These areas would need to be periodically widened to account for salt creep. DOE has added discussions of the actions that could be taken to significantly reduce operating periods under Action Alternatives 1, 2, and 3 in Chapters 3 and 5 of SEIS-II.

Transportation issues have been independently evaluated by several organizations, including the NAS and the Environmental Evaluation Group (EEG). The transportation options in SEIS-II reflect the options (truck, maximum rail) developed and evaluated in the 1980 FEIS, SEIS-I, and now in SEIS-II, with each document having undergone review by the public and by various organizations and agencies.

## 01.10 NEPA Consideration of Alternatives

### 01.10 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 6 | Don Hancock | Southwest Research and Information Center |
| C-131 | 15 | Don Hancock | Southwest Research and Information Center |
| C-163C | 43 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |
| CA1 | 10 | Richard Boren | |
| DE1 | 195 | Scott Hatfield | |
| SF4 | 119 | Corrine Sanchez | |

**Comment:**
Some commenters suggested that nongeologic and other geologic disposal alternatives have not been fairly considered in the SEIS-II and that this is in direct violation of NEPA.

**Response:**
DOE considered alternatives to geologic disposal and alternative sites to the Los Medaños site in the 1980 FEIS and, in the 1981 ROD, chose to develop WIPP as the disposal site for defense TRU waste. SEIS-II contains a discussion of alternatives considered and rejected in the context of prior NEPA decisions. SEIS-II is intended to evaluate the decision of whether to dispose of TRU waste at the WIPP site and other related decisions.

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# 2.0 TRU WASTE

## 02.01 General

### 02.01 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-010 | 15 | Earl Leming | State of Tennessee Department of Environment and Conservation |

**Comment:**
"Page S-6, Table S-1 Explain the order by which the sites have been listed. It seems that they have been ranked based on the projected total of both the contact handled (CH) and remote handled (RH) transuranic (TRU) waste through the year 2033. However, considering the unreliability and speculative nature of projections, it may be more appropriate to use the current inventory. In this case, the Oak Ridge Reservation (ORR) would place fifth."

**Response:**
The order by which sites were given in Table S-1 has no significance other than to allow the reader to see the differences in volumes with ease. The 10 major generator sites are listed first (in order of decreasing TRU waste volumes), followed by sites with relatively small volumes. The intent of the table is to identify the waste volumes for the Basic Inventory at each site.

### 02.01 (02)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 53 | David Mitchell | |

**Comment:**
"The amount of gas, this is on sheet [A-7] : the amount of gas generated [is] a function of the amount of heat produced from the radioactive decay and the amount of plastic material present in TRU waste.

"The amount of gas generated is a function in the amount of heat in the radioactive material, I'm assuming, and the amount of plastic material present in the TRU waste.

"I do have a question about how this volume expansion in the drums is calculated using this equation here. The volume expansion is proportional to a factor based on watts per cubic meter of heat that's generated, divided by the watts per cubic meter, that establishes some arbitrary limit in something called TRUCON.

"I'm not sure I understand how there is a direct correlation between a ratio of the wattage and energy that's being dissipated, and a volume change. This is on sheet A-12, this calculation."

**Response:**
The gas generation limit is expressed as the amount of heat produced per cubic meter of waste. If the waste form generates heat at a higher rate than the limit, then the waste must be diluted. Consider a waste stream whose volume expansion factor is three. The amount of waste that would have fit in one drum without considering the gas generation limit would now have to be split between three drums to keep the heat generated within each drum down to the limit. The three drums would each be one-third full, but each one would be counted as a complete drum (0.208 cubic meters [7.35 cubic feet]) of emplaced waste for SEIS-II analyses, for a total waste emplacement of 0.624 cubic meters (22 cubic feet).

**02.01 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB4 | 26 | Jeri Rhodes | |
| ALB4 | 30 | Jeri Rhodes | |

**Comment:**
One commenter said that high-level, low-level, and TRU waste has nothing to do in labeling with the category associated with radiation. The commenter said the process by which these kinds of waste are generated gives rise to these categories. The commenter said TRU waste really should be labeled plutonium waste.

**Response:**
SEIS-II uses the definition of TRU waste found in the LWA, Public Law 102-579. This definition is also given in SEIS-II. Even though the waste was generated primarily from activities associated with the production and use of plutonium, tables in Appendix A of SEIS-II listing radionuclide inventories for stored CH-TRU and RH-TRU waste show that this waste contains amounts of other nuclides, both heavier and lighter than plutonium.

**02.01 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 67 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 1-1. Box entitled TRANSURANIC WASTE. Since the description of TRU waste includes the maximum dose rate for CH-TRU waste, the description of TRU wastes should also include the maximum dose rate for RH-TRU waste, which is 1,000 rem/hour."

**Response:**
The maximum dose rate for RH-TRU waste mentioned in this comment applies only to RH-TRU waste that may be disposed of in WIPP based on provisions of the LWA. The discussion in the text box of Section 1.1 is not limited to TRU waste eligible for disposal in WIPP. The text of the document reflects the 1,000 rem/hour limit.

**02.01 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 69 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 1-1. Section 1.2 OVERVIEW. Since the SEIS describes the history of TRU waste disposal, it should include the history of the unilateral decision by the DOE to redefine the threshold of TRU from 10 nCi/g to 100 nCi/g."

**Response:**
SEIS-II uses the definition of TRU waste found in the WIPP LWA, Public Law 102-579. This definition is also given on page 1-1 in SEIS-II. It is not useful, in terms of understanding the possible environmental impacts of disposing of waste at WIPP, to discuss the history of the definition of TRU waste.

**02.01 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 71 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 1-7. Footnote. Statement: 'Overpacking involves placing the 55-gallon drums inside another container and essentially provides double containment of the TRU waste.' The statement is incorrect. Overpacking does not provide 'double containment' of a Type A drum in the context of the NRC packaging regulations 10 CFR Part 71."

**Response:**
The statement in SEIS-II has been corrected.

**02.01 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 168 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page A-6. Lines 22 through 25. Statement: 'Some heat is generated by TRU waste due to the interaction of alpha radiation, emitted in the radioactive decay of plutonium isotopes, with the walls of the waste container.' The heat is not generated in the wall of the waste containers. It is generated in the waste. The alpha particle range is too short to reach the walls of the waste containers."

**Response:**
The amount of heat generated from radioactive processes is a function of the amount of decay energy from the different isotopes. The statement has been revised in the text.

**02.01 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 169 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page A-7. Lines 2 and 3. Statement: 'The amount of gas generated is a function of the amount of heat produced from radioactive decay and the amount of plastic material present in the TRU waste.' The amount of gas generated is not a function of the amount of heat produced from radioactive decay. The amount of hydrogen gas generated is a function of the amount of energy deposited by ionizing radiation in the hydrogenous material present in the TRU waste and from anoxic corrosion of the drums."

**Response:**
The amount of hydrogen gas generated from radioactive processes is a function of the amount of energy deposited by ionizing radiation in the hydrogenous material present in the TRU waste. A thermal power level, expressed in terms of watts per waste drum, has been developed in the TRUPACT Content Codes (TRUCON) as a surrogate for direct calculation of the ionizing energy deposition. The statement has been revised in the text.

**02.01 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 176 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 179 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
It was not clear to one commenter how numbers and weights of drums were used to determine the number of shipments. The commenter said that not all of the assumptions were presented in the description of waste shipment calculations and that Table A-2 should contain additional data.

**Response:**
A detailed example calculation for the shipments for LANL CH-TRU waste has been added to the end of Section A.3.9 in Appendix A. Table A-2 has been revised to more clearly indicate the number of drums allowable per shipment, given ranges of weights per drum.

**02.01 (10)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 180 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page A-23. Table A-14. The use of the term 'Newly Generated Waste' for waste that doesn't exist is misleading. Use 'To be-Generated Waste.'"

**Response:**
The term "newly generated waste" is used in BIR-3. For consistency, this term remains in SEIS-II.

**02.01 (11)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 210 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page F-17, last paragraph. The statement that only a small volume of waste would require packaging is perhaps misleading. 'Repackaging' is intended, not 'packaging.' As mentioned under page A-12 comments, about 14% of wastes exceed thermal limits even with bagless posting and a significant percentage of existing wastes are believed to contain bags. Also note that the Draft SAR Appendix A states that DOE plans to repackage or process 88% of the existing CH-TRU waste."

**Response:**
The paragraph the commenter described discusses the waste characteristics and some packaging considerations relative to determining the external dose rate for involved workers. The last sentence concerning the volume of waste was somewhat ambiguous and has been deleted. DOE has reflected the *Final WIPP Safety Analysis Report* (SAR) where appropriate throughout the Final SEIS-II.

**02.01 (12)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF7 | 2 | Carole Tashel | |

**Comment:**
"The rest of it [TRU waste] continues, as before, to contaminate the land in and around various nuclear weapons facilities, so WIPP will contaminate yet another spot. This needs to stop."

**Response:**
In the 1980 FEIS and the 1990 SEIS-I, DOE examined alternatives to deep geologic disposal of radioactive waste. The decision was made to continue with the phased development of WIPP.

## 02.02 Characterization

### 02.02 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 59 | Lisa Sparaco | |
| ALB2 | 17 | Sean Asghar | |
| ALB2 | 34 | Virginia Kotler | |
| ALB2 | 99 | Lesley Weinstock | |
| ALB2 | 128 | Deborah Reade | |
| ALB2 | 131 | Deborah Reade | |
| ALB2 | 156 | Rick Packie | |
| ALB3 | 37 | Penny Mainz | |
| ALB3 | 89 | Karen Navarro | |
| ALB4 | 6 | Dory Bunting | |
| ALB4 | 56 | Lawrence Carter-Long | |
| ALB4 | 65 | Lawrence Carter-Long | |
| ALB4 | 107 | Mary Steele | |
| ALB5 | 28 | Susan Rodriguez | |
| ALB6 | 29 | Dan Kerlinsky | |
| ALB6 | 40 | Joan Robins | |
| ALB6 | 64 | David Pace | |
| ALB6 | 109 | Dair Obenshain | |
| ALB6 | 119 | Glenna Voigt | |
| ALB6 | 140 | Tom Metcalf | |
| C-131 | 33 | Don Hancock | Southwest Research and Information Center |
| C-131 | 35 | Don Hancock | Southwest Research and Information Center |
| C-141 | 17 | Margret Carde | Concerned Citizens for Nuclear Safety |
| C-163E | 4 | No name provided | Citizens for Alternatives to Radioactive Dumping |
| C-163E | 5 | No name provided | Citizens for Alternatives to Radioactive Dumping |
| CA1 | 39 | Christen Nuget | |
| CA1 | 77 | John Heaton | |
| E-056 | 7 | Linda Hibbs | |
| E-056 | 11 | Linda Hibbs | |
| OR1 | 29 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |
| SF1 | 48 | Margret Carde | Concerned Citizens for Nuclear Safety |
| SF3 | 99 | Anhara Lovato | |
| SF4 | 29 | Bonita McCune | |
| SF4 | 56 | Deborah Reade | |
| SF4 | 85 | Bonita McCune | |
| SF5 | 86 | Michael Collins | |
| SF5 | 87 | Michael Collins | |
| SF7 | 94 | Linda Hibbs | |

**Comment:**
Numerous commenters addressed the issue of the current knowledge of waste drum contents and the ability to characterize the waste. Most commenters said that the contents of the drums are not adequately known, and several said that DOE does not have the techniques and ability to characterize them. The sampling and analysis, reliance on process knowledge, lack of records of operations, and preliminary quality assurance requirements were inadequate and, thus, waste could not be characterized acceptably. Some commenters said waste from environmental restoration and decontamination and decommissioning activities are particularly poorly understood.

A few mentioned a waste characterization exercise in 1991 during which 58 percent of the drums surveyed were certified erroneously. Commenters stated that very little is known about the characteristics of RH-TRU waste; the lack of information on RH-TRU waste at Battelle Columbus Laboratories was cited as an example of this.

Several commenters stated that health risks and long-term impacts cannot be analyzed without adequate knowledge of the waste. One commenter stated that if cost or danger to workers prevents accurate determinations, then the real risk of implementing any of the alternatives is impossible to assess. Another said that a safeguard has been lost because DOE is no longer required to know the exact content of the containers.

**Response:**
DOE acknowledges that much of the existing waste destined for WIPP has not been characterized, but it does not agree that DOE has insufficient knowledge of the composition of this waste to do an impacts analysis. DOE does know what processes produced much of the waste and that knowledge, combined with other data (including data derived from the characterization that has been done) has been used to estimate radionuclide and hazardous chemical inventories. DOE believes it has made an extensive effort to obtain TRU waste characterization information; where this information is lacking, DOE has made conservative estimates based on reasonable scientific practices. It should be noted that completely or substantially characterizing the waste, as commenters suggest is necessary, would take at least the 35-year planned operational life of WIPP, would involve substantial expenditure of funds on characterization facilities, and would itself involve worker health impacts and require a DOE decision based on an EIS using the same information that the commenters claim is inadequate for the WIPP decision. DOE has used the best available information and adopted a conservative approach in its analysis to ensure that impacts are not understated, and DOE is confident that it has sufficient information to make an informed decision on TRU waste disposition. If, in the future, based on new information or changed circumstances bearing on the environmental impacts, DOE determines that the impacts of its action would be substantially different from those set forth in SEIS-II, it would prepare another supplemental EIS and revise the ROD as necessary based on that analysis.

The WAC give limits or restrictions for a number of physical characteristics of the waste that would be disposed of at WIPP. Estimates are that about 60 percent of the waste volume contains mixed waste. Even though much of the waste has not been characterized at this time, analyses were carried out assuming 100 percent of the waste volume contained mixed waste, thereby providing more severe results. DOE has also developed several estimates over the last few years of the volumes, radionuclide content, and chemical characteristics of the TRU waste.

These values were used in many aspects of the analyses. Where data were not available, an attempt was made to select values that would lead to more severe, rather than less severe, consequences.

SEIS-II examines the environmental impacts of disposing of waste that meets the WAC. It is not the intent of SEIS-II to determine how waste generation sites will certify the waste to the WAC. Revision 5 of the WAC contains information about inspection and certification procedures that have been developed to help ensure correct certification of the waste. DOE has funded development of estimates of the volumes, radionuclide content, and chemical characteristics of the TRU waste. Volume estimates for the different sites have changed with time as site missions have changed and more plans for cleanup and disposal are finalized. A new Appendix J has been added to SEIS-II to address changes in volume estimates since BIR-3 was published.

With regard to the “lost” safeguard, all TRU waste must be characterized and then certified to meet the WAC before being accepted at WIPP for disposal. The waste would be stabilized and put in approved containers. Some existing waste has already been characterized for radionuclide content and for hazardous chemicals that have WAC limits. DOE has also developed several different estimates of the waste volumes, radionuclide content, and chemical characteristics of TRU waste across the DOE complex. DOE is now working to consolidate these estimates. Human health impact analyses in SEIS-II used existing information on radionuclide and chemical content of waste. Where necessary, this information was used to extrapolate to areas where no information was available; for example, SEIS-II uses sampling data for chemicals in waste at INEEL and RFETS to extrapolate estimates for other sites where no data were available. In some cases (e.g., when estimating impacts of accidents involving relatively small quantities of waste), the chemicals and radionuclides were assumed to be present in quantities at the WAC limit or at the maximum sampled concentration. In other cases, average quantities were used. DOE believes that the intent of NEPA has been fulfilled by this approach by using the best available data in analyses.

SEIS-II used the latest data available for RH-TRU waste. The impacts of the RH-TRU waste were handled in SEIS-II by making two inventory assumptions for waste for which no inventory data are available. First, the radionuclide concentrations are assumed to be equal to the average radionuclide concentrations for all RH-TRU waste for which data are available (seven sites). Second, concentrations of volatile organic compounds are assumed to be the same as for CH-TRU waste. By volume, the RH-TRU waste makes up only a few percent of the total volume, so uncertainty in the RH-TRU waste data has a limited effect on the overall uncertainty. In addition, the RH-TRU waste is remote-handled mainly due to the presence of high-activity, but relatively short-lived, radionuclides. The RH-TRU waste inventory makes only a small contribution to the total amount of long-lived radionuclides at WIPP and therefore accounts for only a small fraction of the long-term impacts. With regard to the potential for criticality, see the text box in Section 5.1.10.1 of the Final SEIS-II.

**02.02 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 36 | Virginia Kotler | |

**Comment:**
"My concern is the extreme concentration and the extensive amount of waste materials intended to be emplaced in the salt beds."

**Response:**
Sections A.4 and A.5 in Appendix A of SEIS-II give detailed inventory estimates for radioactive materials, hazardous metals, and volatile organic compounds for the Proposed Action and all action alternatives. These values were used in the analyses to assess the potential impacts of the emplacement of this waste in WIPP. The long-term performance estimates are provided to assist in understanding the potential impacts for undisturbed performance and for the case where a drilling event intersects the waste in the repository at some future date.

**02.02 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 134 | Deborah Reade | |

**Comment:**
"They do not have full information on the solubility values for many of the actinides in the waste, crucial for determining how easy it would be for the waste to contaminate the accessible environment."

**Response:**
DOE has recognized the importance of actinide solubilities and has supported numerous studies and experimental work by a number of reputable scientists who have published their work in peer-reviewed journal publications. The results of these investigations reflect the state-of-the-art understanding of actinide behavior and mobility from TRU waste and provide the basis of actinide solubilities used in the *Title 40 CFR 91 Compliance Certification Application for the Waste Isolation Pilot Plant* (CCA) and SEIS-II.

**02.02 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB4 | 8 | Dory Bunting | |

**Comment:**
"The announcement of these meetings in the paper still describes the waste as, quote, primarily work items contaminated with plutonium."

**Response:**
To be eligible for disposal at WIPP, the waste must contain some plutonium or other transuranic elements. Newspaper announcements are intended to convey to the public a general sense of the nature of WIPP, rather than a precise technical definition. The reader is directed to Section 2.1.2 and Appendix A of SEIS-II for a more detailed description of TRU waste.

**02.02 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB5 | 92 | Janet Greenwald | |
| SF7 | 104 | Linda Hibbs | |

**Comment:**
Two commenters stated that it is not widely realized that WIPP waste is volatile, explosive, and combustible and that SEIS-II should address these concerns.

**Response:**
The physical characteristics of the TRU waste have been grouped into 11 different categories (see Table A-1 of SEIS-II). One of the categories is combustible material. From the data contained in Table A-16 of SEIS-II, one can determine that approximately 9 percent of stored CH-TRU waste is combustible waste, while less than 0.5 percent of RH-TRU waste is combustible waste. By definition, combustible waste includes materials (such as plastic, rubber, wood, paper, and cloth) that could burn given an adequate heat source for ignition.

In addition, some of the waste streams will contain volatile organic compounds that are flammable. Information on the inventory of volatile organic compounds is provided in Tables A-47 and A-48 of SEIS-II. A drum fire is also considered in the discussion of accidental release of contaminants (for example, see Table 5-15 of SEIS-II).

The WAC prohibit the disposal of highly corrosive materials at WIPP.

**02.02 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 171 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page A-8. Lines 27 through 33 and Page A-10. Table A-4. The volumes of previously disposed TRU wastes are based on manifests that were written before 1970. If the waste is excavated and repackaged, the volumes will be significantly different due to compaction and the inclusion of contaminated soils. A discussion of the uncertainty in these volumes should be included."

**Response:**
The SEIS-II analyses consider TRU waste to be generated in the future. The waste volumes considered were based on the stored volumes and the volume expected to be generated between the present and the year 2033 (see Section 2.1.3 of SEIS-II for the Basic Inventory and Additional Inventory waste volumes). The waste volumes for future waste are estimated on a site-by-site basis. Though the volume of waste to be excavated does not include adjustments for compaction and admixture of soil, DOE believes the estimates are conservative because the estimates assumed all buried waste would be excavated when, in fact, it is uncertain that all of the currently buried waste would need to be excavated when human health and environmental impacts are taken into account.

**02.02 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-056 | 10 | Linda Hibbs | |

**Comment:**
"They [DOE] do not know exactly what is in the drums of stored waste (CH-TRU waste).

"Some aspects of the waste that should be known, not assumed, are:

1. The levels of radioactivity in the waste which can have a large effect on the radioactive discharge from WIPP

2. The possibility that wastes could create a self-sustaining nuclear fission chain reaction (a criticality) either in the repository or in an aquifer

3. The solubility of various radioactive elements in unmodified waste forms should they come into contact with brine, and

4. The gas generation potential of the waste. Volatile organic compounds present in TRU mixed waste can vaporize after disposal. In addition, gases are generated from waste corrosion, microbial activity and radiolysis. These gases could

> pressurize the contaminated brine and push it through natural, or even created fractures out of the repository. Gas generation will also have an effect on the rate at which storage rooms close around the waste and the rate at which brine flows into and out of the rooms."

**Response:**
Even though not all of the TRU waste that would be shipped to WIPP has been characterized, much effort has gone into understanding the volume and characteristics of the waste. In addition, procedures such as preparation and review of waste stream profile forms, real-time X-ray analysis, and statistically based sampling of waste are designed to help ensure proper characterization of the waste. DOE has funded many efforts to understand the radionuclide concentration of TRU waste. The latest values available were used in the analyses in SEIS-II. Specific radionuclide inventories are presented in Appendix A.

The WAC address the possibility of a nuclear criticality in TRU waste and impose limits that would prevent a criticality. An overview of criticality concerns is presented in the "Criticality" text box in Section 5.1.10.1 of SEIS-II.

The latest solubility estimates available were used in the SEIS-II analyses. These estimates were based on DOE's design for WIPP that includes magnesium oxide additives around the waste packages. The solubilities used accounted for both elemental solubility and the possible generation of colloidal particles. Specific values by element are present in Table H-7 in Appendix H of SEIS-II.

Gases are generated through the processes of waste corrosion, microbial activity, and radiolysis. These gas generation processes were included in the models that calculated long-term consequence analyses. The gas generation potential is tied most strongly to the mass of metal and cellulose and plastics emplaced at WIPP. Even though the waste is not completely characterized, bounds on the amount of metal can be easily derived from the number of waste containers and the waste contents. BIR-3 contains information on the waste stream contents for many waste streams. Gas generation model parameters are presented in Table H-10 in Appendix H of SEIS-II.

## 02.03 Generation

### 02.03 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-141 | 3 | Margret Carde | Concerned Citizens for Nuclear Safety |

**Comment:**
"However, for every cubic meter shipped, new waste is projected for existing storage. Indeed the production numbers indicate that despite WIPP waste shipments, existing storage facilities will be inadequate, requiring new construction. The Ten Year Plan concludes with the prediction that nuclear waste production is expected to be ongoing."

**Response:**
One of the basic premises of SEIS-II is that TRU waste will continue to be generated, consistent with the Draft Ten Year Plan (Accelerated Cleanup: Focus on 2006). The projected Basic Inventory total (see Table 2-3) is more than twice the stored inventory. SEIS-II examines the environmental consequences of placing TRU waste in WIPP, but it does not address the scheduling and coordination between the sites required to make optimal use of existing storage facilities. DOE's 1996 *National TRU Waste Management Plan* does address scheduling concerns.

WIPP would be used for disposal of TRU waste that already exists and TRU waste yet to be generated. As the need arises, DOE would construct new storage facilities, following appropriate NEPA review.

**02.03 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-151 | 5 | Don Moniak | Serious Texans Against Nuclear Dumping |

**Comment:**
"A number of questions arise from the possibility of the storage-generated TRU waste exceeding estimates. Since the S&D PEIS states that TRU waste will be generated from 'damaged PCV's and contaminated glovebox panels, windows, and gaskets,' does this imply that the waste will be generated from small accidents? Is this waste within the context of normal operations? If normal operations assume some accidental waste, then what is the possibility of increased waste which exceed waste generated by normal operations? What is the possibility that more TRU waste will need to be transported than the S&D PEIS estimates?"

**Response:**
Materials associated with glovebox operations would be contaminated during normal operations. The TRU waste inventory estimates used for SEIS-II do not include estimates of waste that could be generated by accidents. As discussed in Section 3.1 and Appendix A of SEIS-II, TRU waste inventory estimates, as used in the analyses throughout SEIS-II, account for many conservative assumptions to ensure that maximum, reasonably foreseeable impacts are estimated. Every effort has been made to incorporate reasonably foreseeable TRU waste generating activities, and SEIS-II does include the *Storage and Disposition of Surplus Fissile Materials Programmatic Environmental Impact Statement* in the analyses of cumulative impacts in Chapter 5. However, there may be future, as of yet unknown TRU waste-generating activities for which appropriate NEPA review will be conducted.

**02.03 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB6 | 154 | James Bartosch | |

**Comment:**
"I would like the Department of Energy to consider bringing in some pollution prevention, waste minimization language regarding a discussion of the transuranic program and its pollution prevention, waste minimization efforts. I would also like to see some language from the Department of Energy regarding efforts to reduce the fuel consumption for the transportation of all this material."

**Response:**
The President issued Executive Order 12856, Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements, to ensure that federal agencies manage their facilities to meet the objectives of the Pollution Prevention Act and to develop goals to reduce releases of toxic chemicals and pollutants to the environment. In response, DOE established a Department-wide goal to reduce releases to the environment and off-site transfers by 50 percent by the year 2000. Further, each site, including WIPP, has prepared waste minimization and pollution prevention awareness plans that address minimizing waste generation. DOE currently implements fuel conservation techniques including using governors on trucks to ensure speed is limited to no greater than 65 miles per hour and, whenever possible, avoiding the shipment of partial loads. Section 1.4 has been modified to more fully discuss the WIPP waste minimization and pollution prevention efforts.

**02.03 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-002 | 1 | Gedi Cibas | New Mexico Environment Department |

**Comment:**
"The time frame for waste generation is inconsistent between the DSEIS and other documents produced by or for DOE. While the DSEIS assumes 35 years of waste generation, the documents used to support the inventory assumptions estimates projected waste volumes until the year 2022, or for only 25 years into the future (Table S-1). Likewise, the RCRA Part B Permit Application describes operations at WIPP as lasting for 25 years, followed by an 8- to 10-year closure period. DOE's assumption of 35 years for waste generation (and therefore facility operation under the Proposed Action) is inadequately justified in the DSEIS."

**Response:**
SEIS-II uses BIR-3 data, which contain waste generation estimates for 25 years. These generation rates were extrapolated another 10 years to a total of 35 years. The decision to consider a 35-year waste generation period was made after the RCRA Part B Permit Application was drafted. The *National TRU Waste Management Plan* also uses a 35-year generation period. The 35-year period is an assumption that sets the basis for estimating

environmental consequences and costs. A 25-year assumption would have led to fewer consequences and lower costs.

## 02.04 Inventory

### 02.04 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-010 | 14 | Earl Leming | State of Tennessee Department of Environment and Conservation |

**Comment:**
"Page S-4, The last bullet, second sentence, at bottom 'SEIS-II includes analysis of CH-TRU waste, RH-TRU waste, post-1970 defense TRU waste, nondefense TRU waste, commercial TRU waste, pre-1970 buried TRU waste, and PCB-commingled TRU waste.' Several DOE ORNL TRU waste documents mention 'Special Case TRU (SC-TRU)' waste stored and/or disposed of at SWSA 5 North and SWSA 5 South trenches at ORNL. There is no mention of SC-TRU wastes in the SEIS-II document. Are SC-TRU wastes of no concern/significance as ORNL TRU wastes? Are SC-TRU wastes 'lumped' into another category, i.e., CH-TRU? Also, SC-TRU is omitted from discussion of Transuranic waste on pages 1-1 and 1-2 (Chapter 1 -- Introduction)."

**Response:**
The "special-case" TRU waste is included in the SEIS-II inventory as CH-TRU waste.

### 02.04 (02)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| BO1 | 4 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| C-159 | 11 | Susan Maret | Sierra Club National Nuclear Waste Task Force |

**Comment:**
Two commenters asked how plutonium residue waste from RFETS and INEEL would be considered and accommodated at WIPP.

**Response:**
The TRU waste plutonium residues at RFETS are included in the SEIS-II analyses (separately discussed in Appendix A) and are being analyzed in the *Management of Certain Plutonium Residues and Scrub Alloy Stored at the Rocky Flats Environmental Technology Site Environmental Impact Statement*, which is referenced in Chapter 1 of the Final SEIS-II. In addition, the plutonium residues from INEEL and other sites that were included in BIR-3 are included in SEIS-II analyses.

**02.04 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-028 | 3 | C. M. Wood | Centers for Disease Control |

**Comment:**
"During [1995 to 2033], the inventory of INEL remains 28,000 and 220 cubic feet for CH and RH-TRU. Most of the national laboratories contain multiple facilities managed by different Operations Offices around the country. Why is the INEL the only laboratory that lists one facility of its facilities, ANL-W, as a separate entity? Do the projected inventories for the other DOE weapons facilities account for all the transuranics located at those sites? (Table 3-1 on page 3-3 shows different values.)"

**Response:**
INEEL and Argonne National Laboratory-West (ANL-W) are separate facilities. The INEEL and ANL-W inventories are combined in SEIS-II to be consistent with the precedent set by the WM PEIS. ANL-W is physically located so close to INEEL that the waste inventory information was combined for these two sites in the WM PEIS.

**02.04 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-132 | 8 | Keith Tinno | Shoshone-Bannock Tribes |

**Comment:**
"Footnote (a) on pg 3-3 states that Basic Inventory volumes take into account potential thermal treatment at some sites, however, 'The thermal treatment does not necessarily include PCB-commingled waste.' Accordingly, the [Shoshone-Bannock] Tribes question whether PCB waste will be included in the Basic Inventory."

**Response:**
The footnote has been rewritten to clarify that waste exceeding 50 parts per million (ppm) polychlorinated biphenyls (PCBs) cannot be part of the Basic Inventory. Some site waste streams currently contain PCB levels above 50 ppm that may be treated to remove PCBs and could become part of the Basic Inventory. Other waste streams contain PCBs, but the sites have not indicated that treatment will remove the PCBs. The volumes of this PCB-commingled waste are identified in Table 2-3 in Section 2.1.3 of SEIS-II.

**02.04 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF3 | 16 | Myla Reason | |

**Comment:**
"It's my understanding that the waste from LANL that would go to WIPP would be waste that is yet to be generated through plutonium pit production up at the lab, and that it would be waste that's already contained in barrels, not the waste that's just thrown out in the ruins."

**Response:**
The waste volumes at LANL considered in SEIS-II are summarized in Tables 2-2 and 2-3. For CH-TRU waste, approximately 11,000 cubic meters (390,000 cubic feet) exist in storage and an additional 10,000 cubic meters (350,000 cubic feet) would be generated by the year 2033 (called the Basic Inventory). Approximately 14,000 cubic meters (500,000 cubic feet) of CH-TRU waste at LANL are considered previously disposed of prior to 1970 (called the Additional Inventory). Analyses are presented that consider the impacts of disposing of both the Basic Inventory and the Additional Inventory from LANL.

LANL currently does not produce plutonium pits. However, LANL does maintain facilities that would enable pit production in the future if needed. Reestablishment of pit production capability at LANL was analyzed in the *Stockpile Stewardship and Management Environmental Impact Statement* and is being analyzed in the *Los Alamos National Laboratory Sitewide Environmental Impact Statement*, which is currently being prepared.

**02.04 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-001 | 3 | Michael Jansky | United States Environmental Protection Agency Region 6 |

**Comment:**
"The proposed action specifies shipment to WIPP of only post-1970 transuranic waste volumes, consistent with the waste volume limitations of the Land Withdrawal Act. It is not clear, however, why the proposed action should be limited to post-1970 TRU when there are 'additional inventories' (including TRU from remedial actions) that will also need disposition. The 'additional waste' volumes are similar to the 'basic inventory' volumes (for contact-handled waste). The FSEIS may want to discuss what consideration has been given to these additional volumes of TRU waste at each site and address what flexibility exists to prioritize which TRU (post-1970, or 'additional inventory' or some combination) to send to WIPP. Discussion on this matter should be provided in the Final SEIS."

**Response:**
The Proposed Action has been limited to the disposal of post-1970 defense TRU waste on the basis of the previous NEPA reviews conducted in 1980 and 1990; however, pre-1970 buried

TRU waste would become post-1970, newly generated waste upon excavation and would be included in the Proposed Action. DOE intends to maintain sufficient flexibility to allow both buried TRU waste (depending on when it may be excavated) and TRU waste currently stored aboveground to be disposed of at WIPP.

**02.04 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-012 | 3 | Kathleen E. Trever | State of Idaho Oversight Program |
| A-012 | 7 | Kathleen E. Trever | State of Idaho Oversight Program |
| BO1 | 9 | Governor Phillip Batt | |
| BO1 | 44 | Charles Rice | Citizens Advisory Board Idaho National Engineering and Environmental Laboratory |
| BO1 | 50 | Charles Rice | Citizens Advisory Board Idaho National Engineering and Environmental Laboratory |
| BO1 | 59 | George Freund | |
| BO1 | 69 | Stan Hobson | |
| BO1 | 110 | Michele Kresge | |
| C-087 | 4 | Charles Rice | Citizens Advisory Board Idaho National Engineering and Environmental Laboratory |
| C-087 | 8 | Charles Rice | Citizens Advisory Board Idaho National Engineering and Environmental Laboratory |
| C-159 | 20 | Susan Maret | Sierra Club National Nuclear Waste Task Force |

**Comment:**
Several commenters questioned the INEEL inventory estimates used in SEIS-II, stating that the volumes for the Proposed Action appear to underestimate the waste available for disposal and are different from those in the WM PEIS. Commenters also said that separating out the buried and stored alpha low-level waste from TRU waste would be virtually impossible and stated that alpha low-level waste was not included in the SEIS-II. Commenters also stated that the SEIS-II volumes do not conform to the negotiated agreement between DOE and the State of Idaho. Some commenters said that discussions of different inventories should be more consistent to avoid confusion in comparing different time periods.

**Response:**
TRU waste volume projections continue to be refined and updated. Updates have occurred since the time of the 1995 Idaho agreement, the Draft WM PEIS, and the Draft SEIS-II. Since completion of the Draft SEIS-II, DOE has continued to update and improve the estimates of existing and newly generated TRU waste volumes at the various generator sites. Appendix J addresses new inventory estimates and associated environmental impacts. Both SEIS-II and the Final WM PEIS analyses include information from BIR-2 and BIR-3. The waste volumes are different because SEIS-II includes a longer period of future TRU waste generation and environmental restoration waste, among other things. Appendix B in the Final SEIS-II explains these differences in more detail.

DOE intends to meet the commitments it made in the October 1995 agreement with the State of Idaho, which requires the Department to ship “all transuranic waste now located at [INEEL], currently estimated at 65,000 cubic meters." Appendix J includes the entire volume of TRU waste addressed in the Idaho agreement.

Some of the buried waste at INEEL may be alpha low-level waste under current definitions. Such waste is addressed in the cumulative impacts section in Chapter 5 of SEIS-II.

**02.04 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-012 | 8 | Kathleen E. Trever | State of Idaho Oversight Program |

**Comment:**
"Pages S-9 to S-11, 3-49 and 3-50 The waste volumes on the bar graphs (figures S-2 and S-3; 3-9 and 3-10) for No Action Alternative 2 appear to be inconsistent with those in the associated tables (for example, table S-3). Differences should be explained or corrected."

**Response:**
These inconsistencies have been corrected.

**02.04 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-001 | 1 | Vernon J. Brechin | |

**Comment:**
"Final WIPP SEIS should contain two new tables that would be labeled:

- Table A-23b: Radionuclide Inventories (grams) for Stored CH-TRU Waste in 1995;
- Table A-24b: Radionuclide Inventories (grams) for Stored RH-TRU Waste in 1995.

"Since the tables and text that describe the hazardous components of waste categories express these quantities in terms of their mass, it would be useful to have the radionuclide quantities expressed in terms of the mass."

**Response:**
The regulations governing WIPP and the performance measures and calculations used in SEIS-II all use the activity of the radionuclides, rather than the mass. Providing the information in activity as curies rather than mass allows easier comparisons with the regulations. However, SEIS-II has been revised to incorporate this information.

**02.04 (10)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-131 | 36 | Don Hancock | Southwest Research and Information Center |

**Comment:**
"The final SEIS-II should discuss how much of such RH-TRU waste [with an external dose rate greater than 1,000 rem per hour] exists, in what locations, how that waste is stored and would be disposed, and the environmental impacts of storage, treatment, and disposal."

**Response:**
The LWA prohibits receipt of such RH-TRU waste at WIPP. The Department is not proposing to dispose of this type of RH-TRU waste at WIPP.

**02.04 (11)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-132 | 9 | Keith Tinno | Shoshone-Bannock Tribes |

**Comment:**
"In the box on pg. 3-19 it is stated that 'the waste volumes to be disposed of under the action alternatives would be much greater than the Proposed Action.' The data dispute that assertion."

**Response:**
There are 143,000 cubic meters (5 million cubic feet) of CH-TRU waste associated with the Proposed Action. The analysis scales this amount to 168,500 cubic meters (5.9 million cubic feet) for the consequence analysis. There are 50,000 cubic meters (1.8 million cubic feet) of RH-TRU waste associated with the Proposed Action; however, it is assumed that only 7,080 cubic meters (250,000 cubic feet) would be disposed of under the Proposed Action. These data are presented in Table 3-1. Tables 3-2 through 3-11 show that the action alternatives would dispose of approximately twice the amount of CH-TRU waste and seven times the RH-TRU waste than under the Proposed Action.

**02.04 (12)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 51 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page S-9. Emplacement Volumes. The text and various tables give different values for emplaced volumes of waste in No Action Alternative 2. Table S-3 says 135,000 $m^3$ CH, 35,000 RH (32,000 being treated). The text (page S-16) says 170,000 $m^3$ total. Table 3-16 and the text (on page 3-42) say 135,000 $m^3$ CH and 35,000 $m^3$ RH. It is unclear what becomes

of the additional 15,000 $m^3$ of RH-TRU in NAA 2 (which is included in the Proposed Action as excess RH-TRU). This is confusing and needs to be clarified."

**Response:**
The values in Table S-3 are correct. The 170,000-cubic-meter (6-million-cubic-foot) total given in the text on page S-16 of the Draft SEIS-II is correct because it combines both the CH-TRU and RH-TRU waste volumes into a total TRU volume. Table 3-16 contained some data entry errors and has been revised. The text on page 3-42 also incorrectly identified the Basic Inventory as containing 50,000 cubic meters (1.8 million cubic feet) of RH-TRU waste volumes rather than 35,000 cubic meters (1.2 million cubic feet).

**02.04 (13)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 86 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Proposed Action. Page 3-2. While there is a clear understanding of the Proposed Action, the description includes activities not in the Proposed Action described in the SEIS. The RH-TRU waste increased considerably, from 7,000 $m^3$ to 35,000 $m^3$, and the volume projections show thermal treatment of the waste reduces the volume. These are not included in the Proposed Action submitted by DOE to EPA in the 10/28/96 Compliance Certification Application. Revise this section on the Proposed Action to only include items that are in the Proposed Action."

**Response:**
The inventory tables for the Proposed Action and the alternatives were prepared to acknowledge the full inventory contained in BIR-3. The Agreement for Consultation and Cooperation (C&C Agreement) limits the disposal of RH-TRU waste to 7,080 cubic meters (250,000 cubic feet). As explained in SEIS-II on page 3-2, the larger volume refers to the entire Basic Inventory. However, as the text makes clear, the Proposed Action assumes disposal of RH-TRU waste up to the limit provided in the C&C Agreement; the remaining RH-TRU waste is excess waste that would remain in storage.

**02.04 (14)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 87 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 3-2. Paragraph 2. The text indicates that the proposed volume of RH-TRU is much less than that allowed by the WIPP Land Withdrawal Act. Not so. While the expected number of curies in RH-TRU are less than the LWA permits, the volume of RH-TRU is considerably greater and the WIPP repository's current design will not accommodate the greater volume."

**Response:**
With reference to the second paragraph on page 3-2 of SEIS-II, the RH-TRU waste volume used in analyzing impacts for the Proposed Action is set to the 7,080-cubic-meter (250,000-cubic-foot) limit allowed by the C&C Agreement. Indeed, the 35,000 cubic meters (1.2 million cubic feet) of RH-TRU waste in the Basic Inventory (see Table 3-1) greatly exceeds the allowable volume and current design capacity of WIPP.

**02.04 (15)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 47 | David Mitchell | |
| C-152 | 83 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 89 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 90 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 167 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
Two commenters said that uncertainties in the TRU waste inventory figures should be incorporated in SEIS-II for all alternatives and that uncertainty in the inventory over the past 18 years should be discussed. One of the commenters said it is more accurate to consider the inventory as uncertain, rather than overestimated (assuming larger inventory figures through overestimation would permit larger releases under 40 CFR Part 191).

One commenter disputed DOE's claim of conservatism of TRU waste inventory estimates. The commenter said the SEIS-II assumption that 100 percent of the waste was TRU mixed waste rather than the database estimate of 60 percent TRU mixed waste is not conservative, particularly for volume reduction under thermal treatment.

A commenter stated that the discussion on criticality (text box on page 5-34) contains fissile-gram equivalent information that is inconsistent with the source inventory in BIR-3. The commenter stated that BIR-3 indicates an average of 218 fissile-gram equivalents per drum, but the limit is 200 fissile-gram equivalents per drum. Furthermore, the commenter said BIR-3 indicates that some waste at INEEL, SRS, and Hanford exceed the limit of 200 fissile-gram equivalents.

**Response:**
The inventory tables were prepared to acknowledge the full inventory contained in the BIR-3 and the 1994 *Integrated Data Base Report*. Both of these sources were developed by DOE-funded programs that solicited inputs from all of the generator sites when preparing the estimates. Volume estimates for the different sites have changed with time, and as site missions and cleanup and disposal plans have changed. A new Appendix J has been added to SEIS-II to address changes in volume estimates since BIR-3 was published. Based on the later data call, the volumes in BIR-3 appear to be larger than current estimates, especially for RH-TRU waste. Therefore, the volumes of waste used in SEIS-II analyses appear to be larger than the volumes that may actually be emplaced.

However, it does not appear possible to quantify uncertainties in waste volumes with any accuracy. The inability to quantify uncertainties was one of the reasons why the analyses for the Proposed Action assumed that enough waste was available to fill WIPP to the maximum capacity allowed under the LWA.

Emplacing more waste does allow more releases when one considers the requirements of 40 CFR Part 191. However, the risks presented in SEIS-II were dose-based risks using the entire emplaced inventory and did not make use of the release limits set by 40 CFR Part 191.

The assumption of 100 percent TRU mixed waste is conservative for waste treated to WAC and for waste treated by a shred and grout process, where hazardous constituents remain in the waste. Most hazardous constituents would be destroyed by thermal treatment, and the remaining hazardous constituents would be concentrated into a smaller volume.

Regarding fissile-gram equivalents, SEIS-II assumes that when the activity of a waste stream exceeds 200 fissile-gram equivalents, the waste is repackaged until it meets the limits. The waste would then be shipped to WIPP and disposed of. This explanation has been added to Appendix A.2.1.4.

**02.04 (16)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 91 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Second bullet. The Additional Inventory includes TRU waste burial prior to 1970 when the definition of the threshold was 10 nCi/g rather than the current 100 nCi/g. Although DOE indicates that 80,000 $m^3$ would be excavated from the 141,000 $m^3$ that was previously disposed, no indication is provided whether it is the higher or lower concentration waste. Logically it would be the higher, making the calculation less conservative. No explanation is provided why 80,000 $m^3$ of buried waste would be exhumed and 60,000 $m^3$ of other buried waste left in place."

**Response:**
The calculations are conservative in that all 141,000 cubic meters (5 million cubic feet) of buried waste was used in SEIS-II analyses rather than just 80,000 cubic meters (2.8 million cubic feet). In addition, it was assumed that all 141,000 cubic meters (5 million cubic feet) of the waste had radionuclide concentrations over the threshold of 100 nanocuries per gram. The radionuclide concentration assigned to the buried waste was the average concentration of all of the stored CH-TRU waste (the RFETS residues were not included in the average concentration calculation).

**02.04 (17)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 133 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 5-34. The text box on criticality contains information on the amount of Fissile Gram Equivalents present in WIPP waste streams that is inconsistent with Table 1, Appendix B2 of the Baseline Inventory Report, Revision 3. This table shows there are 2,800 $m^3$ of RFETS residue waste with an average concentration per 0.208 $m^3$ drum of 13.7 Ci $^{239}Pu$ and 53.6 Ci of $^{241}Pu$. This is an average of 218 FGE per 0.208 $m^3$ (55-gallon) drum. The permissible limit is 200 FGE/55-gallon drum. Furthermore, Table 1 indicates there are about l51 $m^3$ of waste at SRS INEL and Hanford that have average concentrations that exceed 200 FGE/55-gallon drum. This discrepancy needs to be reconciled and the Final SEIS-II should use the values published in the latest BIR. Also, the final disposition of wastes that exceed 200 FGE/drum should be stated."

**Response:**
SEIS-II assumes that when the activity of a waste stream exceeds 200 fissile-gram equivalents, the waste is diluted (using partially empty drums) until it meets the limit. The waste would then be shipped to WIPP and emplaced with other CH-TRU waste. The discussion of plutonium-239 equivalent curies (PE-Ci) calculations given in Section A.2.1.3 has been expanded in the new Section A.2.1.4 to explain this more clearly.

The RFETS residues have some waste streams that will exceed the fissile-gram equivalent limits. Special studies are being conducted to examine packaging and shipping options for this waste. The U.S. Nuclear Regulatory Commission (NRC) recently has approved the use of pipe overpacks in the transuranic package transporter-II (TRUPACT-II) shipping container, allowing each overpack to contain 200 fissile-gram equivalents (2,800 for the TRUPACT-II).

**02.04 (18)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 170 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page A-8. Lines 9 through 14. The estimated values for $V_{site}$ could also be expressed as: $V_{site} = V_{stored} + (38/28\ [V_{projected} - V_{stored}])$. In this form the writing of equation A-1 is consistent with the writing of equation A-7 and A8. Also, to be consistent $V_{stored}$ should be defined as TRU waste volume stored at the generator storage site through 1995. The use of 'in 1995' is ambiguous."

**Response:**
The equation presented above is mathematically equivalent to equation A-1, so the choice between the two is one merely of preference. Previous reviewers chose the expression given in equation A-1 over the form presented in this comment. The term "through 1995" has been incorporated in the text.

**02.04 (19)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 173 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page A-12. Lines 8 through 17. The calculation of $V_{Expansion}$ is discussed. The calculation of $V_{Expansion}$ cannot readily be followed since the input data are contained in other documents such as TRUCON. Tables of adjustment factors similar to those provided in Tables B-2 and B-3 of Appendix B should be provided."

**Response:**
Converted watt limit values are given in Table A-16 in the column titled "Thermal Power Limit Bagless." A footnote has been added to indicate where the converted values can be found.

**02.04 (20)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 174 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page A-12. Lines 19 through 24. The statement is made that some of SRS waste would be processed to become RH-TRU. There is no evidence in the SEIS-II or other documents reviewed that there will be any RH-TRU at SRS."

**Response:**
Page C-22 of BIR-3 reports activities of RH-TRU waste at SRS.

SEIS-II has been modified (Section A.4.1) to explain that four sites (the Nevada Test Site [NTS], Argonne National Laboratory–East [ANL-E], SRS, and Sandia National Laboratories [SNL]) provided RH-TRU waste radionuclide inventories in the Integrated Data Base (IDB) and BIR-3; however, these sites did not identify any RH-TRU waste volumes and hence none has been used for most of the SEIS-II analyses. SEIS-II has also been modified to explain that small amounts of RH-TRU waste may be generated at SRS, consistent with the WM PEIS and *Mixed Waste Inventory Summary Report 1995*.

**02.04 (21)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 177 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page A-16. Table A-8. The values for INEL and total in the columns labeled Post-Treatment Disposal Volume are in error. The values for INEL should be 10,000, 20,000, 30,000, instead of 10,000, 31,000, 41,000. The values for total at the bottom of the page should be 47,000, 49,000, 96,000 in Tables A-8, A-9, and A-10."

**Response:**
The volumes presented in Table A-8 of SEIS-II are consistent with the BIR-3 data as adjusted for gas generation rates. An explanation of the impact of gas generation on waste disposal volumes is given in Section A.3.3 of SEIS-II. Note also that INEEL is a consolidation site for these action alternatives.

Volume estimates for the different sites have changed with time as more plans for cleanup and disposal are finalized. A new Appendix J has been added to SEIS-II to address changes in volume estimates since BIR-3 was published.

**02.04 (22)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 178 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page A-20. Table A-12. The values for RFETS Total in the columns labeled Post-Treatment Disposal Volume are in error. The values for RFETS should be 13,000, ---, and 13,000 instead of and 19,000, ---, 19,000, and the values for Total at the bottom of the page should be 162,000, 166,000 and 329,000."

**Response:**
The volumes presented in Table A-12 are consistent with the BIR-3 data as adjusted for gas generation rates. An explanation of the impact of gas generation on waste disposal volumes is given in Section A.3.3.

**02.04 (23)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 182 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"The method described here for scaling up radionuclide inventories is said to rely heavily on the Baseline Inventory Report, Revision 2 and the 1995 Integrated Data Base. Yet the results are different from those presented in the CCA and BIR Revision 3. Values are also different for Pu-241, Am-241, Pu-240, Co-137 and Sr-90. We were not able to reproduce the volume factors reported in Table A-25 for the Proposed Action. Our values were about 3.5% higher for CH-TRU at LANL and SRS when using $V_{IDB}$ values from the 1994 IDB in equation A-8. This Appendix did not specify what volumes were used or how the inventory was scaled to a full repository. More importantly, we do not see any reason for SEIS-II to derive a different disposal inventory for the Proposed Action. The Final SEIS-II should use the same values as the CCA."

**Response:**
The disposal inventory for the CCA is slightly different from the inventory given in SEIS-II. Both started with the data in the inventory report and the 1995 IDB . However, the scaling factors used in SEIS-II used volume projections on a site-by-site basis rather than generating one overall scaling factor for future generated waste. Both calculations treated the RFETS residue data as a special case that was not representative of the other CH-TRU waste. The general approaches were as follows:

- CCA: Calculate an average radionuclide concentration for all stored data, calculate the total stored volume, and then use the average concentration to adjust for the difference between the stored volume and WIPP capacity.

- SEIS-II: Calculate an average concentration for a site, then use that average concentration to adjust for future waste generation at that site. Once all sites have been adjusted for future waste generation, scale the total curies by the factor (stored + generated volumes)/(WIPP capacity).

These two approaches lead to slightly different radionuclide inventory estimates; however, differences in the estimated impacts are negligible.

**02.04 (24)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 253 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page I-12. Lines 23 through 25. Statement: 'These relative quantities were multiplied by the total TRU waste volumes for the site (see Appendix A) to determine final site volumes for each

TRU waste form category. Volumes are also reported in Table I-2.' It is not possible to obtain the waste volumes reported in Table I-2 (columns 3 and 4) by multiplying the waste volumes of Table A-14 by the relative quantities given in Table I-2 (columns 1 and 2)."

**Response:**
The volumes given in Table I-2 were derived from the combined CH-TRU and RH-TRU waste identified in Table A-14 in the column titled "Site Volume Through 2033." When the combined waste is considered, the values in Table I-2 can be obtained (within rounding error considerations) by multiplying the relative quantities in Table I-2 and the volumes given in Table A-14. The values for ANL-W must be added to the values for INEEL from Table A-14. Two corrections have been made in Table I-2 in the Final SEIS-II: the volumes for ORNL are 3,610 for Soil/Debris and 1,140 for cement, and the RFETS Soil/Debris volume is 8,430. Additional clarification has been added to Table I.2.

**02.04 (25)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-153 | 3 | Martin Huebner | Federation of Western Outdoor Clubs |

**Comment:**
"The SEIS-II should be revised so that projections of the amount of TRU-waste storage space in the WIPP are consistent not only with current TRU-waste inventories, but of those anticipated to meet the nation's defense needs (and perhaps energy needs, also)."

**Response:**
Volume estimates for the different sites have changed with time as more plans for cleanup and disposal are finalized. A new Appendix J has been added to SEIS-II to address changes in volume estimates since Revision 3 of the BIR was published. The volume estimates are related to defense needs.

**02.04 (26)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| NA2 | 11 | Lee Poe | |

**Comment:**
"When we begin to regionalize the material, as I believe was indicated in the Waste Management PEIS, you bring a lot of waste to this region of the country, to Savannah River, for treatment. It turns out that's about 35 percent of the total waste that's currently stored here at SRS. You need to look at those things to be sure that they are correct."

**Response:**
Under Action Alternatives 2A, 2B, and 3, CH-TRU waste is consolidated at SRS for treatment before shipment to WIPP. This leads to a pretreated waste volume increase at SRS of something less than 20 percent (see Table 3-10, for example) over the total of stored and

projected volumes, less than the 35 percent estimated by the commenter. However, in the Final SEIS-II, DOE has identified the Proposed Action, not Action Alternative 2 or 3, as its Preferred Alternative.

**02.04 (27)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-104 | 4 | Bob Slay | Savannah River Site Citizens Advisory Board |
| E-083 | 1 | Lee Poe | |
| NA1 | 3 | Todd Crawford | |
| NA1 | 5 | Todd Crawford | |
| NA2 | 9 | Lee Poe | |
| NA2 | 10 | Lee Poe | |

**Comment:**
Several commenters stated that SEIS-II focuses its analyses on the volume of TRU waste rather than on the activity of the waste. These commenters cited the higher activity and heat content of plutonium-238, relative to plutonium-239, in waste at the SRS. The commenters also questioned SRS Basic Inventory volumes reported for each alternative given the adjustments based on the WM PEIS inventory, the proposed TRU waste consolidation, and the projected volumes when considering the historical rates (1970 through 1995) when many more facilities were in operation. Commenters also said the SRS inventory reported in SEIS-II should be validated by appropriate site personnel.

**Response:**
SEIS-II analyses consider both volumes and activities. The volumes are important for some calculations (e.g., the number of shipments and the size of the mined area), and the activity is important for other calculations (e.g., involved worker dose and long-term performance estimates).

The activity and heat loading calculations were all done on an isotope-specific basis. Therefore, differences in the properties of plutonium-238 and plutonium-239 were accounted for. For example, the thermal power loading values identified in Table A-16 for each of the aggregate waste streams were developed using isotope-specific properties. These power loading values were used when considering the gas generation limits imposed by shipping criteria.

The waste volumes identified in Table S-1 are consistent with volume estimates provided for BIR-3 by SRS. Volume estimates for the different sites have changed with time as more plans for cleanup and disposal are finalized. A new Appendix J has been added to SEIS-II to address changes in volume estimates by SRS and other sites since BIR-3 was published. Newer estimates have SRS with 9,160 cubic meters (323,000 cubic feet) of stored CH-TRU waste and 3,770 cubic meters (133,000 cubic feet) of CH-TRU waste yet to be generated.

**02.04 (28)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 67 | Jim Lewis | |
| ALB2 | 130 | Deborah Reade | |
| BO1 | 91 | Beatrice Brailsford | |
| C-141 | 16 | Margret Carde | Concerned Citizens for Nuclear Safety |
| E-056 | 6 | Linda Hibbs | |
| E-056 | 9 | Linda Hibbs | |
| SF1 | 45 | Margret Carde | Concerned Citizens for Nuclear Safety |

**Comment:**
Several commenters referenced changes and document-to-document variations in DOE's reported TRU waste inventory. Commenters stated that CH-TRU and RH-TRU waste storage volumes and activities are unknown or uncertain, and that discrepancies exist between published DOE documents such as SEIS-II, the *National TRU Waste Management Plan*, and the WM PEIS. More specifically, a commenter provided a comparison between the CH-TRU waste volume estimates for LANL that showed a discrepancy of more than 3,000 cubic meters (100,000 cubic feet) between SEIS-II and the *National TRU Waste Management Plan*.

**Response:**
Appendix A of SEIS-II contains detailed information on the steps used to make volume and inventory estimates for each of the alternatives. The basic data for waste volumes, grouped by waste category, are provided in Tables A-16 through A-20, A-22, and A-23. The radionuclide basis for all calculations are provided in Tables A-24 and A-25.

SEIS-II impact analyses used the most recent information on radionuclide and chemical content of waste. Where necessary, this information was used to extrapolate where full information was not available.

Volume estimates for the different sites have changed with time as site missions have changed and more plans for cleanup and disposal are finalized. A new Appendix J has been added to SEIS-II to address changes in volume estimates since BIR-3 was published. The recent estimates indicate that the WIPP capacity would be sufficient for disposal of the RH-TRU waste.

**02.04 (29)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-009 | 9 | Sally Rakow | California Energy Commission |

**Comment:**
"The State needs accurate projections of the quantities and types of shipments to be made in California in order to appropriately prepare for these shipments. The WIPP SEIS-II provides estimates of the radionuclide inventory and number of shipment anticipated for LLNL, ETEC, and LBL. The recent Integrated Data Base Report-1995 (DOE/RW-0006, Rev. 12) shows

transuranic waste stored at General Electric at Vallecitos in California. However, the WIPP SEIS-II does not provide information on the characteristics and plans for shipments from this facility.

"DOE should provide accurate and updated projections of TRU shipments in California, including total alpha curies per shipment (including bounding or maximum alpha-curie levels feasible). Plans for transuranic waste shipments from GE Vallecitos should be included in the final WIPP SEIS-II."

**Response:**
Even though TRU waste is stored at General Electric at Vallecitos, California, it was not included in BIR-3; thus, it was not included in the Draft SEIS-II. This waste was also identified in DOE's 1996 *National Transuranic Waste Management Plan*. A new Appendix J has been included in the Final SEIS-II that addresses the changes in the estimated impacts of the waste volumes from that plan. The volume of waste at General Electric at Vallecitos is discussed in the new appendix, and the number of shipments required to transport the waste is estimated.

**02.04 (30)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| OR1 | 3 | Don Hancock | Southwest Research and Information Center |
| OR1 | 28 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |

**Comment:**
Two commenters questioned the reported inventory for Battelle Columbus Laboratories. One wondered why volume and curies were not reported and the other said he was concerned about the purported change from 71 cubic meters (2,500 cubic feet) to 580 cubic meters (20,500 cubic feet) in less than three years.

**Response:**
The volume of TRU waste at Battelle Columbus Laboratories increased because of decontamination and decommissioning activities. Battelle Columbus Laboratories has not provided radionuclide inventory information to DOE for this waste, so RH-TRU waste at this site was assumed to have the average radionuclide inventory of RH-TRU waste in the IDB.

**02.04 (31)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 107 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 3-15 and A-14. Tables 3-2 and A-6. The total volume for column 2, Additional Inventory, should be 139,000 not 136,000."

**Response:**
The table entries have been corrected.

**02.04 (32)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-167 | 8 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page A-28. Table A-17. The PE-Ci/$m^3$ values for RFETS residues in Table A-17 are incorrect. From the inventory in Table A-23 it is apparent that the concentration should be about 17.3 PE-Ci per 55-gallon drum or 83.7 PE-Ci/$m^3$."

**Response:**
The value has been corrected.

## 02.05 Storage

**02.05 (01)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 45 | David Mitchell | |
| ALB4 | 29 | Jeri Rhodes | |
| BO1 | 96 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| C-129 | 11 | Richard A. Kenney | Coalition 21 |
| C-141 | 9 | Margret Carde | Concerned Citizens for Nuclear Safety |
| C-162 | 8 | Kathleen Sullivan | |
| CA1 | 103 | Mark Schinnerer | |
| DE1 | 72 | Sam Cole | |
| DE1 | 120 | Kathleen Sullivan | |
| DE1 | 162 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| E-084 | 6 | Bill Lawless | Savannah River Site Citizens Advisory Board |
| SF2 | 13 | Kathleen Sullivan | |
| SF4 | 84 | Bonita McCune | |
| SF6 | 3 | Ann Dasburg | |

**Comment:**
A few commenters stated that TRU waste should be stored at the generator sites using engineered, improved facilities to overcome current deficiencies. Other commenters said that aboveground storage was not appropriate, because drums can corrode when exposed to the elements (some are already leaking), and concrete storage facilities will degrade. Many commenters said that storage conditions are poor (RFETS was most frequently mentioned) due to the fact that the sites are waiting for WIPP to open and that there have been many delays. Alternatively, a commenter said that the waste has been carefully stored, but the waste should be taken to WIPP and no more money should be spent on upgraded storage conditions.

**Response:**
DOE considered alternatives to geologic disposal in the 1980 FEIS and, in the 1981 ROD, chose to develop WIPP as the disposal site for defense TRU waste. In SEIS-II, two no action alternatives have been assessed that provide for storage of the waste, instead of disposal.

The analysis in SEIS-II shows that the opening of WIPP would result in the reduction of long-term risk associated with the continued storage of TRU waste at the sites. In the interim, and even during disposal operations when storage would be required, the sites are required, by federal and state law and DOE orders, to maintain TRU waste in safe and secure storage. Thus, facilities would be maintained, upgraded, or replaced as necessary.

**02.05 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| BO1 | 28 | Robin Blaisdell | Snake River Alliance Education Fund |

**Comment:**
“INEL’s WIPP waste (65,000 cubic meters according to the Governor’s [Settlement] Agreement; 28,000 cubic meters according to the DOE) is containerized and stored above ground. It is not this waste that most directly imperils the Snake River Aquifer.”

**Response:**
Volume estimates for the different sites have changed as plans for cleanup and disposal have changed. A new Appendix J has been added to SEIS-II to address changes in volume estimates since BIR-3 was published. The CH-TRU waste volume for INEEL in Appendix J is 65,200 cubic meters (2.3 million cubic feet), which is consistent with the volume identified in the settlement agreement between DOE and the State of Idaho. Shipments, impacts, and costs associated with this waste are also addressed in Appendix J.

The WIPP facility has been proposed for the disposal of defense-related TRU waste. DOE recognizes the existence of radioactive waste in other categories such as low-level waste and high-level waste. Disposal of TRU waste at WIPP would not completely solve, and was never intended to solve, all radioactive waste disposal problems around the country.

**02.05 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-141 | 4 | Margret Carde | Concerned Citizens for Nuclear Safety |

**Comment:**
“According to the Ten Year Plan, New Mexicans can expect ongoing storage of waste at LANL throughout WIPP's 35-year operational lifetime, and continued nuclear waste disposal at LANL beyond WIPP's life. In other words, New Mexicans can expect two permanent nuclear waste disposal facilities, not one. Instead of alleviating waste disposal sites, WIPP would only seem to add one more site to existing sites.”

**Response:**
Area G at LANL is a low-level waste disposal site and LANL is one of six possible regional disposal sites under the preferred alternative identified in the WM PEIS. Continued disposal at Area G will be addressed in the *Los Alamos National Laboratory Sitewide Environmental Impact Statement*. If WIPP opens, then New Mexico would have two permanent nuclear waste disposal facilities.

**02.05 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 48 | David Mitchell | |
| ALB3 | 49 | David Mitchell | |

**Comment:**
One commenter said that the Proposed Action was described as not requiring lag storage, yet some of the waste would wait 35 years for emplacement. In addition, the commenter said text in the Summary and Section 1.2 states that storage at the generator sites poses potential health problems.

**Response:**
The commenter is correct that lag storage for 35 years would occur for some waste under the Proposed Action. The impacts of this storage are analyzed in SEIS-II.

**02.05 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-010 | 27 | Earl Leming | State of Tennessee Department of Environment and Conservation |
| C-135 | 4 | William Fulkerson | Friends of Oak Ridge National Laboratory |

**Comment:**
Commenters stated that SEIS-II should provide an estimate of the volume of CH-TRU and RH-TRU waste that would remain in storage at ORNL under the Proposed Action and the no action alternatives. One commenter also requested that the costs for waste treatment and storage be included in SEIS-II.

**Response:**
As explained in SEIS-II Appendix J, more recent estimates show that all RH-TRU and CH-TRU waste currently stored and to be generated could be emplaced at WIPP under the Proposed Action, and thus would not remain in storage at ORNL. Costs for all SEIS-II alternatives consider treatment and storage and are reported, by alternative, in Chapter 5.

## 02.06 Treatment

### 02.06 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-118 | 14 | David Proctor | |

**Comment:**
"If the integrity [of the repository] cannot be assured for untreated waste emplacement in ordinary 55-gallon drums, more robust containers and waste treatment may be needed."

**Response:**
One of the desirable features of a salt repository is the ability of the salt to creep inward and encapsulate the waste. As such, the repository isolation performance is based on the capacity of the salt to immobilize the waste rather than on the ability to develop a long-lived waste container. The performance analyses of SEIS-II and those of the CCA indicate that the performance of the repository is sufficient to meet regulatory guidelines using the 55-gallon drum, storage waste box, and other disposal canisters.

### 02.06 (02)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-132 | 10 | Keith Tinno | Shoshone-Bannock Tribes |

**Comment:**
"On pg 3-20 it is stated that it will take twelve years to design and construct a treatment facility for Action Alternative 2A. An Advanced Mixed Waste Treatment Facility has already been contracted at INEL."

**Response:**
The assumption is that treatment facilities would have to be designed and constructed at up to 10 locations. The 12 years is an estimate of the time it would take to make the decisions to build the plants, choose building locations, and then design and construct the facilities. Even though INEEL has started the process, other sites have not.

### 02.06 (03)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 93 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"[Page 3-6 text box] Fifth bullet. The assumption that 100% of the TRU waste would be treated as TRU mixed waste is no longer true."

**Response:**
The bullet dealing with TRU mixed waste has been deleted. Treating all of the waste, rather than just 60 percent of the waste, reduces the volume, but it does not necessarily lead to lower risk when one considers the combined impacts of treatment, handling, transportation, and disposal. However, SEIS-II did make the assumption in Action Alternatives 2A, 2B, 2C and No Action Alternative 1 that 100 percent of the waste would be treated.

**02.06 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-159 | 19 | Susan Maret | Sierra Club National Nuclear Waste Task Force |

**Comment:**
"In the absence of specific data in the SEIS, the following questions remain regarding the viability of WIPP:

"1. Is there a possibility that TRU waste levels would DECREASE if onsite 'treatment' occurred?

2. What types of P2 programs are in effect at DOE facilities that would encourage decreases in future waste destined for WIPP?

3. What amount of TRU waste would remain after 'treatment?'

"Consequently, if TRU waste would be significantly reduced by an environmentally safe technology, could this reduced amount of waste be stored indefinitely until technologies are developed that would totally treat this type of waste, preferably onsite, and with acceptance by the community?"

**Response:**
Thermal treatment technologies typically result in the greatest reduction in waste volumes. For Action Alternative 2, in which waste would be treated thermally, SEIS-II assumed that the treated volume would be about 35 percent of the untreated volume of TRU waste (see Appendix A.3.5). This reduced volume, however, would still contain essentially the same amount of radioactivity (measured in curies) as before treatment.

The President issued Executive Order 12856, Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements, to ensure that federal agencies manage their facilities to meet the objectives of the Pollution Prevention Act and to develop goals to reduce releases of toxic chemicals and pollutants to the environment. In response, DOE established a Department-wide goal to reduce releases to the environment and off-site transfers by 50 percent by the year 2000. Each site has prepared waste minimization and pollution prevention awareness plans that address minimizing TRU waste generation, as well as other waste types. Section 1.4 has been modified to more fully discuss the WIPP waste minimization and pollution prevention efforts.

Under No Action Alternative 1 (Section 3.2.5), DOE would consolidate and thermally treat TRU waste, which would then be managed indefinitely in newly engineered and constructed monitored storage facilities at the consolidation sites. About 107,000 cubic meters (3.8 million cubic feet) of CH-TRU waste and 19,000 cubic meters (671,000 cubic feet) of RH-TRU waste would remain at the sites after treatment.

**02.06 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| OR1 | 2 | Don Hancock | Southwest Research and Information Center |

**Comment:**
"Is it possible that there would be Remote-Handled (RH) Transuranic (TRU) waste that could not be put in a form suitable for disposal at WIPP?"

**Response:**
RH-TRU waste within the scope of SEIS-II could, without regard to cost considerations or other factors, be diluted, packaged, or shielded to meet WAC.

**02.06 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| OR1 | 46 | James Phelps | |

**Comment:**
"How well are the wastes of strontium-90, which is one of the more dangerous ones that you should be concerned with, bound up either using good vaulting, or classification systems, or other technologies so that these things can't escape into the environment through disaster, terrorist actions, asteroids, floods, earthquakes, et cetera, et cetera?"

**Response:**
SEIS-II analyzes the impacts of storage accidents, including a potential accident triggered by an earthquake or other natural phenomenon. The impacts include those associated with a release of radionuclides present in the waste, including strontium-90. If WIPP were to open, TRU waste, including that containing stronium-90, would be permanently isolated from the environment, even in the event of natural disasters or terrorist action, as demonstrated by the SEIS-II analyses.

**02.06 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 251 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page I-12. Line 3. The effective lifetime of 500 years for cemented TRU waste forms in this analysis may not be conservative."

**Response:**
In analyzing the near-surface disposal of low-level waste, the NRC has used 500 years as a reasonable lifetime for cement waste. The NRC value formed the basis for choosing 500 years. If the lifetime of cement is significantly less than 500 years, the waste form could release mobile contaminants with short half-lives that would not have yet decayed, thereby increasing the estimated health impacts. If the cement lifetime is significantly longer than 500 years, then doses would be expected to decrease from those reported.

**02.06 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163C | 45 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**
"DOE rejected vitrification because of the large volume of CH-TRU, again failing to address the feasibility of the process for RH-TRU and HLW. DOE argued that a vitrification program would delay TRU waste disposal, skewing the decision-making process in favor of geologic disposal."

**Response:**
Vitrification is described in Chapter 2, Section 2.2.3 of SEIS-II as one of the potential thermal treatment processes. DOE will select a level of treatment for TRU waste that is necessary to satisfy disposal and storage criteria. Thermal treatment, possibly including vitrification, could be implemented, particularly at certain sites. Under Action Alternative 2 (Section 3.2.3 of SEIS-II), waste would be treated with a thermal process designed to meet the LDRs. Under No Action Alternative 1 described in Section 3.2.5, waste would be treated in the same way but would not be disposed of at WIPP. Therefore, these two alternatives include vitrification of TRU waste as a possible treatment option.

The WIPP site is proposed for disposal of CH-TRU and RH-TRU waste, but not high-level waste. The feasibility of vitrification for high-level waste is outside the scope of SEIS-II. However, vitrification of high-level waste is ongoing at DOE sites, including SRS and the West Valley Demonstration Project.

**02.06 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-013 | 10 | Jennifer Salisbury | New Mexico Radioactive Waste Consultation Task Force |
| A-013 | 11 | Jennifer Salisbury | New Mexico Radioactive Waste Consultation Task Force |
| NA2 | 8 | Lee Poe | |
| OR1 | 5 | Don Hancock | Southwest Research and Information Center |

**Comment:**
Commenters requested that the Final SEIS-II expand upon the waste treatment discussion. Specifically, the commenters asked DOE to identify existing or planned waste treatment facilities for the sites, elaborate upon treatment processes for planning-basis WAC, consider additional treatment technologies such as vitrification, and identify benefits (besides volume reduction) of treatment.

**Response:**
No specific treatment facilities or specific facility locations were assumed. In general, especially for purposes of developing costs, it was assumed that new facilities would be developed at the generator or consolidation sites. Information about existing and planned treatment facilities can be found in the *National TRU Waste Management Plan (*DOE proposals to construct and operate treatment facilities would be subject to appropriate NEPA review). Vitrification is described in Section 2.2.3 as one of the potential thermal treatment processes. Section 2.2 has been modified to elaborate upon treatment processes for planning-basis WAC and to identify the benefits of various treatment processes.

**02.06 (10)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-137 | 5 | Herbert Arthur | |
| C-141 | 10 | Margret Carde | Concerned Citizens for Nuclear Safety |
| C-141 | 36 | Margret Carde | Concerned Citizens for Nuclear Safety |
| C-141 | 38 | Margret Carde | Concerned Citizens for Nuclear Safety |
| C-152 | 9 | Robert H. Neill | Environmental Evaluation Group |
| CA1 | 27 | Don Gray | |
| DE1 | 39 | Tim Holeman | |
| DE1 | 52 | Vince Likar | |
| E-021 | 6 | Ruth Weiner | |
| E-021 | 9 | Ruth Weiner | |
| SF1 | 51 | Margret Carde | Concerned Citizens for Nuclear Safety |
| SF1 | 113 | Peggy Prince | |
| SF4 | 27 | Bonita McCune | |

**Comment:**
A number of commenters expressed various opinions about waste treatment processes considered by SEIS-II. A few said that waste treatment is not necessary and, if undertaken,

would only serve to provide additional jobs and to improve knowledge of treatment technologies. Other commenters stated that waste should be treated, suggesting that treatment would reduce volumes (allowing additional TRU waste to be disposed of) and would reduce the likelihood and consequences of exposure to radioactive, organic, and inorganic releases and spills during transport and disposal. Still other commenters promoted treatment, but only on a limited scale until health and safety standards for each treatment process are developed, stating that workers and the public are at risk until technologies are fully proven.

**Response:**
As discussed in Section 2.2, SEIS-II considers three types of treatment to reasonably bound the potential environmental impacts for other types of treatment that might be developed for future TRU waste application. Treatment requirements include provisions to ensure compliance with requirements established by law, regulations, and DOE internal orders that are designed to protect the safety and health of workers. One of the decisions that SEIS-II will support is which minimal level of treatment should be required in the WAC. Costs, impacts, and other factors also will be weighed in any decision regarding the extent of treatment required for waste to be disposed of at WIPP.

For each type of treatment considered in SEIS-II, the potential environmental consequences of storage, treatment, transportation, and disposal are estimated (see Chapter 5). These impacts vary; however, in general the long-term performance analyses indicate that TRU waste could be isolated from the environment with minimal treatment (i.e., treatment to meet planning-basis WAC).

**02.06 (11)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-012 | 4 | Kathleen E. Trever | State of Idaho Oversight Program |
| A-012 | 5 | Kathleen E. Trever | State of Idaho Oversight Program |
| BO1 | 30 | Robin Blaisdell | Snake River Alliance Education Fund |
| BO1 | 117 | Michele Kresge | |
| BO1 | 129 | Dallas Gudgell | |
| C-053 | 4 | David Hensel | |
| C-129 | 12 | Richard A. Kenney | Coalition 21 |
| C-129 | 13 | Richard A. Kenney | Coalition 21 |
| C-130 | 9 | Susan L. Gawarecki | Oak Ridge Reservation Local Oversight Committee |
| C-152 | 175 | Robert H. Neill | Environmental Evaluation Group |
| C-159 | 16 | Susan Maret | Sierra Club National Nuclear Waste Task Force |
| E-069 | 8 | Pat Clark | Snake River Alliance |
| SF4 | 59 | Deborah Reade | |
| SF4 | 126 | Juan Montes | |

**Comment:**
Several commenters focused on plans to use thermal treatment technologies, particularly plans at INEEL to thermally treat TRU and alpha-low-level waste. Some commenters stated that SEIS-II should consider the consequences from the potential treatment at INEEL of an

additional 120,000 cubic meters (4.2 million cubic feet). Others stated that the volumes of waste to be treated at INEEL and shipped to WIPP for disposal appear to violate the negotiated settlement between DOE and the State of Idaho Rules and Standards for Hazardous Waste. Other commenters said they were concerned about thermal treatment at INEEL, fearing the use of an incinerator and its potential adverse impacts on radon releases from accidents. Others indicated that SEIS-II stated that treatment at INEEL will either increase waste volumes or decrease waste volumes; one commenter requested justification for the assumed 65 percent volume reduction. Some of these commenters requested that DOE clearly indicate why thermal treatment at INEEL is necessary, while another commenter asked DOE to clarify that only waste at INEEL that cannot meet the WAC would be thermally treated.

**Response:**
An exact thermal treatment process was not identified in SEIS-II; however, potential thermal processes are discussed in a 1996 DOE publication titled *Alternatives to Incineration Technical Area Status Report*, DOE/MWIP-26. DOE assumed (see Section 2.2.3) that a thermal process would heat the TRU waste to at least 3,000°C (5,400°F). This process would destroy organic materials and transform the inorganic materials into either a glassy slag, a metal phase, or a consolidated waste form. The thermal process cannot eliminate the radioactivity in the waste, but it will change the physical characteristics of the waste. Merely converting the waste to a slag will eliminate much of the void space and increase the activity per unit volume.

Thermal processing does have the potential for releasing radioactive constituents into the air. The impacts of these releases were considered in SEIS-II. For example, Table 5-46 in Section 5.3.9.1 gives the estimated impact to members of the public for thermal processing of waste for Action Alternative 2.

The basis of the 65 percent reduction is discussed in the following reference:

> DOE (U.S. Department of Energy), 1995, *Engineered Alternative Cost/Benefit Study Final Report*, WIPP/WID-95-2135, September, Carlsbad, New Mexico.

Regarding thermal treatment at INEEL, the decision to begin planning to thermally process waste at INEEL was made through mechanisms other than SEIS-II. However, the impacts of thermal processing at the sites were considered in this document in the event that thermal processing was performed. For example, Table 5-46 in Section 5.3.9.1 discusses the impacts to members of the public for thermal processing of waste.

The assumption of treatment of the INEEL waste for the Proposed Action generally does not include thermal processing; hence, the treatment increases the volume slightly due to the imposition of PE-Ci limits on the filter waste. In addition, no thermal processing is assumed for Action Alternatives 1 and 3, again leading to a volume increase for the INEEL waste. However, the thermal processing assumptions in Action Alternatives 2A, 2B, and 2C lead to a significant volume reduction for INEEL waste. The assumption is a 65 percent volume reduction averaged over all of the waste forms at INEEL (35 percent of the volume remains after treatment). This assumption is discussed in Section A.3.5. Some waste forms, such as those composed of combustible materials, should have very high volume reduction. Other waste forms, such as solidified inorganics, may have very little volume reduction. No specific treatment facilities or specific facility locations were assumed in SEIS-II. Therefore, the Advanced Mixed Waste Treatment Facility at INEEL was not discussed.

Volume estimates for the different sites have changed with time as more plans for cleanup and disposal are finalized. A new Appendix J has been added to SEIS-II to address changes in volume estimates since BIR-3 was published. The CH-TRU waste volume for INEEL in Appendix J is 65,200 cubic meters (2.3 million cubic feet), which is consistent with the volume identified in the settlement agreement between DOE and the State of Idaho. Shipments, impacts, and costs associated with this waste are also addressed in Appendix J.

With respect to the comment concerning Idaho’s hazardous waste regulations, DOE’s Preferred Alternative is to dispose of TRU waste at WIPP, including mixed TRU waste from INEEL.

**02.06 (12)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB6 | 32 | Dan Kerlinsky | |
| C-141 | 39 | Margret Carde | Concerned Citizens for Nuclear Safety |

**Comment:**
Two commenters offered differing opinions about shred and grout treatment technology. One favored this type of treatment because its selection would drive technology development and because the treated waste would provide another layer of containment. The second commenter stated that this treatment was inadequate because it increases the volume of waste, increases transportation risks because of consolidation, has a high risk of fire because of the pyrophoric content of TRU waste, and results in emissions dangers to the public.

**Response:**
The primary benefit of shred and grout treatment would be to immobilize the waste and provide additional shielding for workers and the public. However, the cement matrix would likely fail over the course of 10,000 years. In addition, cement is porous and can be penetrated by water in much the same way a residential basement can be penetrated during a flood.

Regarding the risks of shred and grout, SEIS-II analyzes the impacts of disposal of TRU waste at WIPP under several treatment options. Table S-7 in the Summary summarizes the impacts to workers and members of the public under the different treatment options, which include shred and grout of the TRU waste. None of the treatment options is risk-free, and one must consider competing risks when developing the overall disposal strategy.

**02.06 (13)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-001 | 5 | Michael Jansky | United States Environmental Protection Agency Region 6 |

**Comment:**
"Action Alternative 2 includes thermal treatment to meet the Resource Conservation and Recovery Act (RCRA) land disposal restrictions (LDRs) and also has the effect of volume reduction. Clarification is needed in the Final SEIS to discuss whether simple treatment for volume reduction alone is a viable alternative to the proposed action. Volume reduction by a factor of 2 would mean that most of the 'previously disposed' TRU waste could be addressed under the waste volume limitations of the Land Withdrawal Act as well as the 'basic inventory.' Discussion of this matter should be included in the Final SEIS."

**Response:**
The waste streams are grouped into 11 separate categories (see Table 2-1 in Section 2.1.2 of SEIS-II). The waste forms are such that consolidation of some categories of waste could reduce the overall volume, while repackaging might increase the volume of other waste streams. The estimate of the overall volume change for treatment to planning-basis WAC, which is a minimal level of treatment that includes volume reduction, is an increase in waste volume (see Section 3.1 of SEIS-II).

**02.06 (14)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-048 | 2 | Ronald Forthofer | |

**Comment:**
"Other solutions that seem more reasonable include vitrifying the waste and storing it above the ground where it can be retrieved if new technology for disposing it becomes available."

**Response:**
Vitrification is described in Section 2.2.3 of SEIS-II as one of the potential thermal treatment processes. The no action alternatives examine the environmental consequences of continued storage in aboveground configurations, both in monitored and retrievable fashion and as stored under current practices. No Action Alternative 1 includes thermal treatment of TRU waste prior to storage. The potential environmental impacts from the no action alternatives can be found in Sections 5.5 and 5.6.

## 02.07 Waste Acceptance Criteria

### 02.07 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF4 | 28 | Bonita McCune | |

**Comment:**
"Packaging to meet WIPP's Waste Acceptance Criteria standards has not been completed."

**Response:**
Much of the waste to be placed in WIPP has not yet been generated, let alone packaged at this time (see Table 2-2 for the TRU waste volumes for the Basic Inventory). However, prior to shipment to WIPP, the waste would be packaged to meet WAC.

### 02.07 (02)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-028 | 6 | C. M. Wood | Centers for Disease Control |

**Comment:**
"The Waste Acceptance Criteria in Appendix A do not prohibit liquid or gaseous waste. Are these waste forms prohibited?"

**Response:**
The planning-basis WAC for WIPP limit free liquids to 1 percent of the disposal volume. Gaseous waste forms are not permitted. Only the portions of the WAC considered to be the most important in developing and explaining projected waste inventories are reproduced in Appendix A of SEIS-II.

### 02.07 (03)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 81 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 2-5. 1800 PE-Ci/Drum. It is correct that the WAC allows 1800 PE-Ci CH-TRU drums if the waste is overpacked or solidified. EEG has expressed some reservations about this limit. Also, an 1800 PE-Ci drum could not be shipped in TRUPACT-II because the drum would exceed the 40 watt thermal limit."

**Response:**
The list of waste package requirements given in Section 2.1.2 comes from the WAC and addresses a number of separate criteria. SEIS-II considered all the criteria when considering

waste transportation and disposal. Indeed, an 1,800 PE-Ci drum would exceed the 40-watt thermal limit per CH-TRU waste drum. However, the disposal volumes and number of shipments were calculated using the more restrictive of the 40-watt or 1,800 PE-Ci limits.

**02.07 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 172 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page A-12. Lines 5-7. The statement is made that 'only a few waste forms need packaging to meet thermal power limits, provided that plastic wrap is not used when the drums are filled (bagless posting).' Table A-16 indicates that average concentrations in about 19,400 $m^3$ (about 14%) of stored plus projected wastes do exceed the thermal power limits for bagless posting. Furthermore, our understanding is that the majority of presently stored wastes containers use bags. Please comment. Does DOE plan to repackage wastes to remove bags? The plans to repackage and treat stored waste in order to meet the WIPP WAC limits should be explicitly addressed in detail in the SEIS-II."

**Response:**
SEIS-II assumed that all waste would be packaged to meet the requirements of the WAC. Indeed, waste cannot be accepted at WIPP unless it meets the requirements of the WAC. It is correct that a significant portion of the waste volumes identified in Table A-16 would not meet the gas generation limits for the transportation requirements in the WAC. In SEIS-II, it is assumed that the waste is diluted (by using partially full drums) until it does meet the gas generation limits. The volume expansion associated with this action is explained in Section A.3.3. The text has been revised to clarify that less than 4 percent of the stored CH-TRU waste (other than the RFETS residues) requires volume expansion when bagless posting is assumed. When the residue waste is added, this total climbs to nearly 9 percent.

**02.07 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| NA2 | 1 | Ed Moore | |

**Comment:**
"There is very little reference to criticality. The one reference I could find was that there would be 325 grams in a TRUPACT and that there would be no more than two Rocky Flat drums located in that TRUPACT going to WIPP.

"Currently, the baseline plans at Rocky Flats are seeking approval for a limit of 2.8 kg's per TRUPACT, or essentially 200 grams in a drum. And my question is: Has that been addressed in the environmental impact and in the various supporting safety analysis documents for WIPP? And if not, how will it be addressed and how will that impact affect us?"

**Response:**
The NRC recently has approved the use of pipe overpacks in the TRUPACT-II shipping container, allowing each overpack to contain 200 fissile-gram equivalents (2,800 for the TRUPACT-II). Appendix A.2.1.4 has been modified to address this change and provide information relative to the resulting change in the number of shipments. Criticality is addressed in a text box in Section 5.1.10.1.

**02.07 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-141 | 37 | Margret Carde | Concerned Citizens for Nuclear Safety |
| CA1 | 81 | John Heaton | |
| SF2 | 56 | Mary Barr | |
| SF3 | 67 | Bill Gould | |
| SF7 | 103 | Linda Hibbs | |

**Comment:**
Commenters stated that the WAC (1) were not sufficiently restrictive because they allow the use of the HALFPACK and (2) were not adequate because they do not provide for appropriate waste characterization. One commenter said that the WAC do not encompass transportation requirements, while another commenter said that the WAC were sufficient as currently developed.

**Response:**
The WAC establish conditions that govern the physical, radiological, chemical composition, and packaging requirements for TRU waste. WAC Revision 5 provides all of the requirements for TRU waste packaging, transportation, and disposal. The WAC, although not requiring specific waste characterization activities, nonetheless require characterization sufficient to demonstrate that the subject waste can be certified as having met the WAC. Also, the WAC do not identify specific packages but rather provide the relevant provisions from the Certificate of Compliance for the TRUPACT-II as issued by NRC; when NRC issues Certificates of Compliance for the HALFPACK and the RH-72B, additional relevant provisions would be added to the WAC. The WAC have been used in the SEIS-II analyses, which demonstrate that the packaging, transportation, and disposal of TRU waste would be protective of human health and the environment.

**02.07 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB5 | 7 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 77 | Robert H. Neill | Environmental Evaluation Group |
| SF1 | 8 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
One commenter stated that SEIS-II should discuss the history of the development of the WAC, starting with the issuance of the first set of WAC in 1979.

**Response:**
SEIS-II references the most current WAC for WIPP, Revision 5, which was published by DOE in 1996. Revision 5 of the WAC contains requirements that are a result of many years of effort on the part of DOE and several other entities. SEIS-II does not attempt to survey and summarize the historical development of the WAC.

**02.07 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 76 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 88 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
One commenter said SEIS-II was incorrect in stating that compliance with the planning-basis WAC requires treatment.

**Response:**
There are no requirements in the WAC to treat waste, but some waste forms, such as those containing more than 1 percent free liquids, would require treatment to meet the planning-basis WAC. The statement referred to in the comment has been revised.

**02.07 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| CA1 | 26 | Don Gray | |
| SF1 | 12 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
Two commenters stated that the WAC have been changed, eliminating the 20-year longevity requirement for drums in contrast to the NRC-required 300-year design life for high-level waste containers or waste forms. These commenters also stated that the limitations on the amounts of respirable forms have been eliminated from previous versions of the WAC.

**Response:**
The analyses in SEIS-II use the assumption that all waste is packaged in appropriate containers and are certified as meeting the WAC. The drums would be inspected at the shipping facility and again at WIPP to ensure that they are intact. Once they were emplaced in WIPP and the emplacement room closed, reliance would be placed on the ability of the salt to control waste movement, rather than relying on a long-lived waste container. The long-term analyses for WIPP assumed that containers failed soon after emplacement. Even with this assumption, the

analyses did not show the need for a long-lived waste package in order to reduce the environmental impacts from WIPP.

**02.07 (10)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-131 | 34 | Don Hancock | Southwest Research and Information Center |

**Comment:**
"It also does not adequately discuss what measures would be taken to ensure that future wastes generated conform to prescribed waste acceptance criteria."

**Response:**
Under any of the alternatives, the TRU waste sites would maintain the capability to manage TRU waste generated in the future. In general, management facilities would vary by site, depending on the waste streams and volumes generated, and would have the capability to (1) safely store TRU waste, (2) characterize waste, (3) treat and certify waste to meet planning-basis WAC, and (4) package and load TRU waste containers. Additional information can be found in Section 2.1.3 of SEIS-II.

To ensure that newly generated (and stored) waste meets the WAC, DOE has developed a certification program that provides the procedures, protocols, and quality assurance requirements that would enable each site to certify its waste. Details of the certification program are included in DOE's RCRA Part B Permit Application and its CCA, which are undergoing review by the State of New Mexico and the U.S. Environmental Protection Agency (EPA), respectively.

# 3.0 DOE CREDIBILITY

## 03.01 General

### 03.01 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 77 | Janet Greenwald | |
| ALB2 | 61 | Jeff Radford | Business People Concerned about WIPP |
| ALB2 | 144 | Janet Greenwald | |
| ALB2 | 147 | Janet Greenwald | |
| ALB3 | 16 | Bruce Trigg | New Mexico Public Health Association |
| ALB3 | 33 | Robin Seydel | |
| ALB3 | 43 | Harry Willson | |
| ALB3 | 77 | Jack Uhrich | |
| ALB3 | 108 | Lois Pribble | |
| ALB4 | 42 | Jeri Rhodes | |
| ALB4 | 46 | Jeri Rhodes | |
| ALB4 | 66 | Lawrence Carter-Long | |
| ALB4 | 70 | Richard Clark | |
| ALB4 | 94 | Jerry Messick | Local 1199NM/AFSCME |
| ALB4 | 118 | Janet Greenwald | |
| ALB5 | 86 | David Shepard | |
| ALB5 | 93 | Janet Greenwald | |
| ALB6 | 45 | Joan Robins | |
| ALB6 | 46 | Joan Robins | |
| ALB6 | 48 | David Pace | |
| ALB6 | 72 | Tsosie Tsinhnahjinnie | |
| ALB6 | 85 | Debra Tenney | |
| ALB6 | 101 | Sharon Williams | |
| ALB6 | 102 | Dair Obenshain | |
| ALB6 | 146 | Tom Metcalf | |
| BO1 | 38 | Pat Clark | Snake River Alliance |
| BO1 | 79 | Kerry Cooke | |
| BO1 | 94 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| C-086 | 5 | Shelley T. Buonaiuto | |
| C-163G | 10 | Jeff Radford | Business People Concerned about WIPP |
| C-166 | 9 | Elliott H. Libman | |
| CA1 | 59 | Betty Richards | |
| DE1 | 57 | Margret Carde | Concerned Citizens for Nuclear Safety |
| DE1 | 83 | Benjamin Corbett | |
| DE1 | 89 | Ben Lipman | |
| DE1 | 100 | Laura Kriho | |
| DE1 | 101 | Robert Kinsey | |
| DE1 | 114 | Amy Rosser | |
| DE1 | 138 | Andrew Thurlow | |
| DE1 | 146 | Magdalen Seaman | |
| DE1 | 160 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| E-005 | 1 | Maurice Weisberg | |
| E-012 | 13 | Charles Hyder | |
| E-056 | 61 | Linda Hibbs | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF1 | 34 | Lety Seibel | |
| SF1 | 65 | Virginia Miller | |
| SF1 | 71 | Mark Lee | |
| SF1 | 121 | Stan Rosen | |
| SF2 | 19 | Tai Bixby | |
| SF2 | 37 | Sam Harris | |
| SF2 | 59 | Mary Barr | |
| SF3 | 13 | Myla Reason | |
| SF3 | 17 | Myla Reason | |
| SF3 | 22 | Eleanor Ponce | |
| SF3 | 31 | Jai Lakshman | SEVA Foundation |
| SF3 | 37 | Jai Lakshman | SEVA Foundation |
| SF3 | 50 | Jai Lakshman | SEVA Foundation |
| SF3 | 51 | Michael Motley | |
| SF3 | 52 | Michael Motley | |
| SF3 | 72 | Bill Gould | |
| SF3 | 77 | Sasha Pyle | Religious Society of Friends |
| SF3 | 80 | Sasha Pyle | Religious Society of Friends |
| SF3 | 90 | Sasha Pyle | Religious Society of Friends |
| SF3 | 121 | Anna Katherine | |
| SF3 | 124 | Shannyn Sollitt | |
| SF4 | 60 | Deborah Reade | |
| SF4 | 125 | Juan Montes | |
| SF4 | 134 | Pat Larragoite | |
| SF5 | 2 | Scott Shuker | |
| SF5 | 10 | Marilyn Hoff | |
| SF5 | 26 | Susan Curtis | |
| SF5 | 52 | Jeff Berg | |
| SF5 | 67 | Sharon Laurie | |
| SF5 | 92 | Peggy Prince | |
| SF5 | 97 | Caroly Mae Lassiter | |
| SF6 | 36 | Pamela Baumgertel | |
| SF6 | 49 | Janet Degan | |
| SF6 | 68 | Garland Harris | |
| SF7 | 18 | Sister Penelope McMullen | |
| SF7 | 22 | Suzanne Phillips | |
| SF7 | 38 | Rosemary Lowe | |
| SF7 | 71 | Melissa McDonald | |
| SF7 | 76 | Bonnie Bonneau | Legions of Living Light |
| SF7 | 77 | Bonnie Bonneau | Legions of Living Light |
| SF7 | 102 | Linda Larson | |
| SF7 | 109 | Jill Cliburn | |
| SF7 | 139 | Barbara Conroy | |
| SF7 | 153 | Norah Pierson | |
| SF8 | 16 | Carl Tsosie | Picuris Pueblo Tribal Council |
| SF8 | 20 | Jean Nichols | |
| SF8 | 36 | Ame Solomon | |
| SF8 | 50 | Katherine Lage | |
| SF8 | 76 | Willem Malten | |

**Comment:**
Many commenters questioned the honesty, integrity, and conduct of DOE and the federal government in general and with regard to WIPP specifically. Examples of concerns were that (1) DOE and industry lie and provide misinformation about the safety of WIPP and waste transportation, (2) DOE spends funds just to overcome opposition to WIPP, (3) the public cannot trust DOE because of its track record in avoiding cleanups, contaminating lands, providing unsafe working conditions, and conducting radiation experiments on workers and members of the public, and (4) DOE actions were schedule-driven to support opening WIPP, neglecting needed site characterization work because it did not meet the schedule. Other commenters stated that DOE was ignoring safety concerns and technical information on WIPP and its related operations if that information was contrary to DOE's objective of opening WIPP for disposal of TRU waste. The commenters said that DOE shows callous disregard for citizen health and welfare and is endangering the lives of New Mexico residents.

**Response:**
For the last several years, DOE has implemented many programs designed to improve the public's confidence in the way it conducts its operations. Comprehensive stakeholder involvement activities, such as site advisory boards, have served to more fully engage the interested public in DOE's decisionmaking activities. The involvement of external oversight organizations and the regulation of many DOE activities by external agencies such as the EPA provide assurance to the public that DOE is conducting its activities in a safe and prudent manner. The continuing involvement of the NAS and independent, internationally recognized peer reviewers in the WIPP experimental and compliance programs provide further assurance of DOE's commitment to obtaining appropriate and sufficient information to comply with the regulations, and to manage TRU waste in an environmentally responsible manner. DOE is committed to following all safety, health, and environmental protection regulations and in many instances it has exceeded the regulations by incorporating additional suggestions provided by the public. For example, various stakeholders participated in the development of the System Prioritization Method, the formal decision method that enabled DOE to complete its performance analyses for WIPP.

DOE believes that operations and activities associated with WIPP to date are in full compliance with all applicable laws and regulations. The WIPP site would be eligible to open and receive TRU waste for disposal only after several additional conditions are met. These conditions include at least the following: (1) receipt of a RCRA Part B Permit from the State of New Mexico; (2) receipt of CCA certification from EPA pursuant to 40 CFR Parts 191 and 194; (3) completion of SEIS-II and issuance of a ROD; (4) completion of transportation emergency response and preparedness provisions of the LWA; and (5) completion of any other relevant operating requirements pursuant to DOE orders (e.g., operational readiness review).

DOE agrees with commenters that TRU waste should be disposed of in a manner that protects public health and the environment. In 1980, Congress recognized the need to dispose of TRU waste from defense programs and activities and, in response, DOE has studied the feasibility of disposing of TRU waste at WIPP for the last 20 years. During this time, DOE has undertaken an extensive site characterization and experimental program designed solely to demonstrate whether TRU waste can be isolated from the environment in compliance with the applicable regulations. The WIPP characterization and experimental program has been overseen by state and federal regulatory agencies, the EEG, the NAS, and others. Comprehensive stakeholder involvement activities have also served to more fully engage the interested public in DOE's decisionmaking activities. DOE believes that the WIPP repository would be the first step toward a solution to the nation's TRU waste disposal problem.

**03.01 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 71a | Jack Uhrich | |
| ALB3 | 97 | Jeffrey Rich | |
| ALB4 | 32 | Jeri Rhodes | |
| ALB6 | 147 | Tom Metcalf | |
| C-141 | 13 | Margret Carde | Concerned Citizens for Nuclear Safety |
| SF4 | 43 | Deborah Reade | |
| SF5 | 16 | Mark Lee | |
| SF5 | 63 | Reno Myerson | |
| SF7 | 22 | Suzanne Phillips | |
| SF7 | 102 | Linda Larson | |

**Comment:**
Several commenters stated that DOE was continuing to ignore public comments contrary to DOE's position that WIPP should be the site for TRU waste disposal. Two commenters noted the presence of pro-WIPP speakers in Albuquerque and Santa Fe, implying preferential treatment by DOE for those who support DOE positions.

**Response:**
DOE recognizes the importance of the public comment period and public hearings in the NEPA process and has not tried to limit the airing of dissenting opinions or comments. DOE assigned comment times on a first-come, first-served basis and did its best to accommodate all individuals who wished to speak either in favor of or in opposition to WIPP, regardless of whether or not they had signed up in advance. For instance, in Albuquerque and Santa Fe there was available time and space to accommodate many additional speakers wishing to provide oral testimony.

**03.01 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 73 | Janet Greenwald | |
| ALB1 | 74 | Janet Greenwald | |
| E-012 | 1 | Charles Hyder | |
| E-012 | 26 | Charles Hyder | |
| E-056 | 1 | Linda Hibbs | |
| OR1 | 47 | James Phelps | |
| SF4 | 128 | Juan Montes | |

**Comment:**
A few commenters stated that DOE had placed an inordinately high emphasis on public relations in an effort to promote the WIPP program.

**Response:**
DOE's continuing commitment to informing its stakeholders requires a comprehensive public affairs program for the WIPP program. The WIPP public affairs staff (1) support public involvement activities germane to its regulatory compliance activities, such as SEIS-II; (2) prepare technical, regulatory, and financial materials for the interested public, agencies, organizations, and local educational interests; (3) ensure continued availability of information to the public through the establishment and maintenance of various electronic links (e.g., WIPP Internet web site, toll-free phone number); (4) encourage and conduct public tours of the WIPP facility; and (5) prepare and conduct other media-related information such as press releases and interviews. Overall, the fulfillment of DOE's commitment to its stakeholders and compliance with its "openness" initiatives require an experienced and knowledgeable staff at the WIPP site.

**03.01 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-006 | 1 | Frank J. Deckert | U.S. Department of the Interior |
| A-013 | 22 | Jennifer Salisbury | New Mexico Radioactive Waste Consultation Task Force |
| ALB1 | 9 | Blaine Hadden | |
| ALB1 | 38 | Joe Rose | |
| ALB1 | 80 | Mark Hoover | |
| SF3 | 2 | Robert S. Light | New Mexico Representative (District 55) |
| SF4 | 16 | Cliff Stroud | |
| SF4 | 39 | Bob Forrest | |
| SF4 | 68 | Bill St. John | |
| SF7 | 86 | Tony Marlow | |

**Comment:**
Many commenters stated their confidence in DOE and indicated that SEIS-II provides an objective and exhaustive review of the affected environment and the environmental impacts of the WIPP project.

**Response:**
Thank you for your comments.

**03.01 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB4 | 5 | Dory Bunting | |
| ALB4 | 95 | Angela Wiebalk | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163E | 7 | No name provided | Citizens for Alternatives to Radioactive Dumping |
| E-056 | 55 | Linda Hibbs | |
| E-071 | 2 | Patricia Hall | |
| NA1 | 12 | Dennis Lee | Better World Technologies |
| SF7 | 46 | Marvin Mattis | |
| SF7 | 58 | Peli Lee | |
| SF8 | 10 | Susan Diane | |

**Comment:**
A few commenters suggested that DOE is moving too quickly to open WIPP, that the decision might be politically motivated rather than scientifically based, and that significant technical uncertainties need to be addressed prior to opening the facility.

**Response:**
It is not possible for DOE to eliminate all of the uncertainties regarding WIPP's performance as a repository. However, based on its current knowledge of the WIPP site from extensive studies on TRU waste disposal conducted over the past 20 years, DOE has a high degree of confidence that the WIPP repository would limit the movement of TRU waste, as it was designed to do.

The WIPP site would open and receive TRU waste for disposal only after several conditions are met. These conditions include at least the following: (1) receipt of a RCRA Part B Permit from the State of New Mexico; (2) receipt of CCA certification from EPA pursuant to 40 CFR Parts 191 and 194; (3) completion of SEIS-II and issuance of a ROD; (4) completion of transportation emergency response and preparedness provisions of the LWA; and (5) completion of any other relevant operating requirements pursuant to DOE orders (e.g., operational readiness review).

**03.01 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF3 | 97 | Anhara Lovato | |

**Comment:**
“And that WIPP, they want to put a WIPP three times as big as WIPP up in Los Alamos. That’s totally insane.”

**Response:**
DOE has no plans to construct a geologic repository similar to the WIPP facility in Los Alamos, New Mexico.

**03.01 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-012 | 8 | Eleanor Ponce | |
| SF8 | 84 | Katherine Montano | Las Vegas Environmental Coalition |

**Comment:**
Comments were made that DOE has broken the law by transporting nuclear waste by regular truck and that some waste has already been moved to WIPP.

**Response:**
DOE has moved some TRU waste between its facilities in accordance with U.S. Department of Transportation (DOT) shipping regulations. The use of TRUPACT-II containers is required only for shipments to the WIPP site, and no TRU waste has been transported to, disposed of, or emplaced at WIPP.

**03.01 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 29 | Eric James | |
| ALB4 | 2 | Charles Goad | |
| ALB4 | 14 | Charles Goad | |
| ALB4 | 44 | Jeri Rhodes | |
| ALB5 | 88 | David Shepard | |
| ALB5 | 98 | Janet Greenwald | |
| BO1 | 40 | Pat Clark | Snake River Alliance |
| C-060 | 7 | Jeff Moyers | RPM2 Building Services Ltd. |
| CA1 | 64 | Betty Richards | |
| SF5 | 8 | Marilyn Hoff | |
| SF5 | 15 | Mark Lee | |
| SF5 | 39 | Louise Baum | |
| SF5 | 42 | Michael Buonaiuto | |
| SF5 | 83 | Michael Collins | |

**Comment:**
Commenters expressed concerns about the corporations that support DOE in general and WIPP in particular. Commenters stated that companies unfairly benefit by being paid to clean up waste that they generated, that companies are indemnified and absolved of any responsibilities if problems occur, that these companies have poor health and safety records, and that they cannot objectively evaluate environmental impacts.

**Response:**
Since the 1940s, thousands of companies have been involved in supporting the U.S. government in its nuclear weapons complex. Many of these larger companies are also the companies that have the demonstrated experience and expertise to manage and dispose of waste. It is also true, however, that over the last two decades the increased demand for

restoration and waste management services has resulted in the growth of new companies having specialized services that also are necessary for the successful management and disposal of nuclear waste. For waste management and environmental restoration services, DOE typically selects companies in open competition, based upon their demonstrated experience and abilities, quality of personnel, and other factors. In addition, the management companies that operate DOE sites are directly liable for violations of environmental and health and safety laws and regulations; indemnification provisions apply only in certain and limited circumstances, such as accidents that occur that are not caused by violations of health and safety laws or regulations.

CEQ regulations require contractors preparing EISs to execute a disclosure statement specifying that they have no financial or other interest in the outcome of the project for which the EIS is being prepared. Battelle and its subcontractors have signed such disclosure statements with regard to the WIPP SEIS-II. Battelle's role has been exclusively to prepare SEIS-II, while Westinghouse is the management and operations contractor at WIPP. Westinghouse staff have provided input to DOE staff regarding the accuracy of the facts in SEIS-II. CEQ regulations require federal agencies to independently evaluate the contractor-prepared EIS prior to its approval and to take responsibility for its scope and contents. Thus, DOE, not Battelle or Westinghouse, will make decisions on WIPP, based in part on the environmental analyses of SEIS-II.

**03.01 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 86 | Janet Greenwald | |
| ALB3 | 71b | Jack Uhrich | |

**Comment:**
Commenters stated that workers at the WIPP facility as well as other employees of DOE and its contractors were afraid to raise safety concerns for fear that they would lose their jobs.

**Response:**
DOE appreciates the commenters' concern for the safety and fair treatment of DOE and contractor employees. Federal "whistleblower" laws serve to protect the identity and well-being of those who step forward with legitimate safety or other concerns. Those who wish to express their concerns regarding the WIPP project but also wish to remain anonymous can contact the Carlsbad Area Office at 101 W. Greene St., Carlsbad, New Mexico 88220 or call 1-800-541-1625.

**03.01 (10)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| BO1 | 31 | Robin Blaisdell | Snake River Alliance Education Fund |
| BO1 | 118 | Michele Kresge | |

**Comment:**
Two commenters said thermal treatment of TRU waste at the proposed Advanced Mixed Waste Treatment Facility in Idaho has not been justified and does not appear to be required for safe disposal at WIPP.

**Response:**
Waste destined for WIPP must meet the minimum level of waste treatment required prior to disposal. Based in part on the SEIS-II analyses, DOE will decide what level of treatment would be required for waste disposed of at WIPP. The comments are based on the assumption that DOE would choose treatment to the planning-basis WAC, which, in many cases, would require little or no treatment of TRU waste. If this is DOE's decision, sites would have the latitude to select waste treatment methods that exceed the WAC, such as thermal treatment or incineration. DOE will conduct a site-specific NEPA review before deciding whether to construct and operate treatment facilities.

**03.01 (11)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-015 | 4 | Jerry Messick | Local 1199NM/AFSCME |

**Comment:**
"The WIPP Medical Working Group has not given equal representation to all the citizens of New Mexico. In fact, the Working Group is biased in favor of the Department of Energy and the Westinghouse Corporation and does not reflect the views of many of the people who will be confronted by a possible WIPP disaster.

"A very serious situation exists when the health and safety of first responders and health care workers depend on the decisions made by an organization which does not consider all of the facts, or makes decisions contrary to the facts available.

"Since the WIPP Medical Working Group was created with no decision-making process many issues that have been raised numerous times have been conveniently dismissed or ignored."

**Response:**
DOE recognizes that members of the WIPP Medical Working Group often have differing opinions as to the conduct of the group's activities, approaches to health and safety training for first responders, decisionmaking procedures, and the like. DOE's obligation has been to determine the merits of each viewpoint and proceed accordingly.

**03.01 (12)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 6 | Don Schrader | |

**Comment:**
"It's impossible to get homeowner's insurance covering nuclear contamination and disaster. These are specifically excluded in most policies. Now, if you experts cannot convince the insurance companies of the safety of WIPP and any nuclear transport across our highways to WIPP, why should we believe you?"

**Response:**
The type of exclusion the commenter is referring to is common to all insurance policies, not just those for residents that may be affected by WIPP. It is DOE's understanding that, in general, this type of exclusion is intended to protect an insurance company from massive claims that might result from events with widespread consequences such as a nuclear war. TRU waste carriers are required to carry a minimum of $5 million insurance, which covers, among other things, environmental restoration expenses. In addition, to the extent that cleanup costs might exceed the carrier's insurance coverage, the government is also responsible for certain cleanup costs resulting from nuclear accidents under the Price-Anderson Act.

**03.01 (13)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-075 | 2 | Louise Hess | |

**Comment:**
"Hey, you don't need to worry about EPA. What do they know about the dangers of low level radiation trash? EPA will surely find a way to make WIPP a 'safe' money-maker."

**Response:**
The EPA's role is to certify whether the WIPP program complies with radiation protection standards in 40 CFR Part 191. The WIPP repository is designed for the safe disposal of TRU waste generated as a result of DOE's missions. The impacts anticipated under the Proposed Action are addressed in Section 5.1 of SEIS-II.

**03.01 (14)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 128 | Janet Greenwald | |
| ALB5 | 94 | Janet Greenwald | |

**Comment:**
One commenter said that DOE is covering up the fact that New Mexico is already contaminated. She stated that if health studies were conducted and New Mexicans knew how contaminated the state already is, they would not let the WIPP project happen.

**Response:**
DOE routinely produces annual site environmental monitoring reports that contain the results of ongoing monitoring programs for its facilities. Although there are localized areas of environmental contamination at DOE sites, DOE does not believe that DOE operations in New Mexico have resulted in widespread environmental contamination and serious health impacts to members of the public.

**03.01 (15)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 76 | Jack Uhrich | |

**Comment:**
"We know that Sandia and Westinghouse covered up the fact that WIPP waste generated explosive gases that could lead to a dangerous explosion, either en route or at the WIPP site. This was kept secret until it was exposed by Citizens for Alternatives to Radioactive Dumping and by a researcher for the Environmental Evaluation Group."

**Response:**
DOE is unaware of any attempts by its contractors, SNL or Westinghouse, to deny that some gases generated by TRU waste are flammable and may, under certain conditions, pose an explosion potential. In 1990, DOE discussed and analyzed potential accidents involving flammable gases in SEIS-I (see SEIS-I, Appendix F). SEIS-II discusses the generation of gas in TRU waste relative to waste transportation and to long-term performance of the WIPP repository. Section A.2.1.2 discusses how hydrogen gas is generated in TRU waste. Appendix H presents information on how gas generation was considered in the SEIS-II performance assessment. Additional information is provided in the WIPP CCA.

**03.01 (16)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF4 | 117 | Corrine Sanchez | |

**Comment:**
"DOE is fighting the lawsuit which found them liable of discrimination in their hiring practices. And if that is the way they treat their work force, how do they treat people that are not represented in that work force, that are outside their boundaries?"

**Response:**
SEIS-II analyzes impacts to workers, maximally exposed individuals, and populations within 80 kilometers (50 miles), without regard to race, ethnicity, or economic status. In addition, the Department has considered whether there would be disproportionately high and adverse impacts to minority and low-income populations. Results are presented in Chapter 5. Hiring, promotion, and termination practices, as well as the legal action to which DOE understands the commenter is referring, are not within the scope of SEIS-II.

# 4.0 EDITORIAL

## 04.01 General

### 04.01 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 27 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 30 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 31 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 32 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 33 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 34 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 35 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 39 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
One commenter stated that the SEIS-II Glossary either included incomplete or incorrect definitions, omitted definitions that should have been included, or contained typographical errors, including the following:

- The definition of backfill as “materials placed in storage panels or drifts” is too ambiguous.
- The definition of contact-handled waste should start with the term “TRU waste” instead of the word “waste.”
- The spelling of sievert is incorrect; the sievert is abbreviated as Sv.
- The definition of disposal should use the definition in the WIPP LWA.
- The definition of disposal phase should use the definition in the WIPP LWA.
- The definition of absorbed dose should also include the mks unit known as the gray and abbreviated as Gy.
- The definition of dose conversion factor should use “resultant dose equivalence” instead of “resultant radiation dose.”
- The definition of WIPP should be changed as WIPP is no longer an experimental facility.

**Response:**
The SEIS-II Glossary has been revised to incorporate the commenter’s suggestions as appropriate.

**04.01 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 29 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page GL-2. Line 12. The glossary should include a definition for the Becquerel since it includes a definition for the curie."

**Response:**
Activity units of becquerel are not used in SEIS-II; therefore, the SEIS-II Glossary has not been modified to include this term.

**04.01 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 36 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page GL-9. Lines 4 through 7. The definition of high-level waste should include unreprocessed spent fuel."

**Response:**
The initial part of this definition is from DOE Order 5820.2A. Unreprocessed spent nuclear fuel could be included under the second part of this definition but may not be considered waste in all cases.

**04.01 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 37 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page GL-9. Lines 22 through 26. The definition of the phrase 'immediately dangerous to health' only includes 'maximum airborne concentration.' The phrase also applies to a dose rate, e.g. 1,000 rem/hour."

**Response:**
The acronym for the term "immediately dangerous to life or health (IDLH) has been added to distinguish this as a specific term, not a phrase. The concept and values for the IDLH were originally developed by National Institute of Occupational Safety and Health (NIOSH) for hazardous chemical exposures and emergency response purposes. Use of the term for high dose rates is not appropriate.

**04.01 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 40 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 42 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 43 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 44 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
One commenter requested the revision of three terms and the addition of one term to the "Acronyms and Abbreviations" section of SEIS-II. The commenter said to do the following:

- Add the definition for BIR-3.
- Change the acronym for Preliminary Performance Assessment to "PPA."
- Change the definition of SWIFT-II to indicate that it is computer software.
- Revise to show that the RH-72B cask is only a proposed RH-TRU waste shipping container.

**Response:**
The SEIS-II "Acronyms and Abbreviations" section has been revised to incorporate the commenter's suggestions as appropriate.

**04.01 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB4 | 25 | Jeri Rhodes | |

**Comment:**
"Someone trained as I am in language has trouble with all your acronyms, has trouble with your euphemisms."

**Response:**
SEIS-II includes technical jargon, acronyms, and abbreviations that may be unfamiliar to a wide audience. DOE has included an "Acronyms and Abbreviations" section and a "Glossary" section at the beginning of SEIS-II and has placed text boxes throughout the document to assist the reader with various technical concepts.

**04.01 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 41 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page AC-1. Line 42. The AC-section has an acronym for design-basis earthquake, but it does not have an acronym for design-basis criteria."

**Response:**
An acronym for the term "design-basis criteria" was not created for SEIS-II because the term was used infrequently.

**04.01 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-028 | 8 | C. M. Wood | Centers for Disease Control |

**Comment:**
"The index to this publication contains some invalid references. Other key words such as 'exposure path' also cite pages that have no apparent reference to that subject."

**Response:**
The SEIS-II index has been corrected to address the commenter's concern.

**04.01 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 45 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 181 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 222 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
One commenter stated that various tables in SEIS-II needed revising, citing incorrect word usage and omission of relevant information, which include the following:

- Table MC-1 should include a conversion factor from psi to pascal and conversion factors from darcy to other units of permeability.

- The values in Table A-14 should be rounded off, and the columns labeled "Existing Stored Volume" should be relabeled "Stored (1995)."

- If plutonium-238 and plutonium-240 in Table G-4 are considered to be major contributors to dose at ORNL, plutonium-239 should also be listed in that category.

**Response:**
The tables cited by the commenter have been revised to incorporate his suggestions.

**04.01 (10)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 206 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 207 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 208 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 221 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
One commenter said that in four instances SEIS-II contained inconsistencies and typographical errors in equations, mathematical terms, and mathematical units of measure. These include the following:

- Equation E-1 has a parameter named FMPI while the explanatory text names the parameter FMRPI.
- Equation E-2 has a parameter named FMRT while the explanatory text names the parameter FMRPT.
- Section E.8.2 has a conversion error in that $3.4 \times 10^6$ cubic meters is equal to $1.2 \times 10^8$ cubic feet.
- On page G-2, the dose-to-risk conversion factor for a population incorrectly uses “per rem” as the unit.

**Response:**
The errors in the mathematical equations, terms, and units noted by the commenter have been corrected.

**04.01 (11)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-087 | 7 | Charles Rice | Citizens Advisory Board Idaho National Engineering and Environmental Laboratory |

**Comment:**
“The [Citizens Advisory] Board also recommends the final SEIS include explanations of the probabilities associated with the accident scenarios. There is no discussion in the Executive Summary of the probabilities of the bounding accidents presented; it appears that they are probable or possibly inevitable. Risks associated with very low probability events must be presented carefully and concisely.”

**Response:**
Facility accident probabilities are included in Chapter 5 and Appendix G, and transportation accident probabilities are included in Chapter 5 and Appendix E. For the sake of brevity, neither has been included in the SEIS-II Summary.

**04.01 (12)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-002 | 7 | Gedi Cibas | New Mexico Environment Department |

**Comment:**
"Although the DSEIS indicates it was published in November 1996, and includes information reflecting changes in the WIPP Land Withdrawal Act as of September 23, 1996, it contains inconsistent references to the correct versions of both the Final No-Migration Variance Petition and the RCRA Part B Permit Application. Page S-3 refers incorrectly to the Final Draft No-Migration Variance Petition; pages 1-8 and 1-15 refer to the RCRA application incorrectly as being Revision 5.2 and issued in 1995; and subsequent chapters reference the superseded RCRA application Revision 5.2 instead of the current Revision 6 issued in April 1996. These are relatively minor errors which nonetheless should be corrected."

**Response:**
The references noted by the commenter have been updated.

**04.01 (13)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-013 | 3 | Jennifer Salisbury | New Mexico Radioactive Waste Consultation Task Force |
| C-132 | 16 | Keith Tinno | Shoshone-Bannock Tribes |
| C-152 | 52 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 130 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 252 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 256 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
Three commenters cited errors in the chapters and appendices of SEIS-II involving misspellings, incorrect word usage, omission of relevant information, typographical errors, and one inappropriately placed callout. These errors include the following:

- The footnote on page 1-1 should read ". . .WIPP could begin disposal operations in November 1997, as encouraged in Public Law 104-201, provided the DOE receives all regulatory approvals by that date."

- Lines 19-20 on page S-13 should read that the berm is to be constructed around the perimeter of the waste panel footprint (not of the site).

- Lines 18 and 19 on page 5-21 should state the population density as "3,861 persons per square kilometer."
- On line 9 on page I-12, the parenthetical reference to Table I-1 should be moved to the end of the second sentence.
- On page I-31, the reference to maximum dose of 14.5 rem per year should be 14.5 rem per lifetime.

**Response:**
The text in the SEIS-II chapters and appendices has been corrected to incorporate the commenters' suggestions as appropriate.

**04.01 (14)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| NA2 | 6 | Lee Poe | |

**Comment:**
"I found that the environmental effects, the summary in the document itself is very difficult to read and understand the significance of the environmental effects. It's buried in the text, and the text is many, many pages and you're flipping back and forth as you try to find that.

"You ought to simplify the document and summarize the material in tabular form so that people can see the significance of the impact."

**Response:**
DOE has attempted to summarize and simplify the environmental impacts in the summary and has included a table of impacts as part of the summary. However, because of the nature of the analysis and the wide range of impacts examined, it is difficult to summarize the impacts succinctly.

**04.01 (15)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB5 | 10 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"The glossary, acronym, and measurement section appear hastily done. Even the title of the document dealing with the disposal phase is incorrect. The disposal phase was defined by Congress in Public Code 96-02, as beginning with the emplacement of waste and ending when the last amount of waste is in place. Then there's eleven years to backfill a repository, close it up, and then disposal begins.

"So there are many illustrations in here where one has come up with new definitions, rather than relying upon existing definitions in there."

**Response:**
The front sections of SEIS-II have been revised to incorporate changes based on specific comments by this and other commenters. The document's title includes "disposal phase" because the intent has been to focus on the disposal of TRU waste at the WIPP site, thereby differentiating SEIS-II from SEIS-I. Other than changing the word "draft" to "final," the title has been left as is.

**04.01 (16)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 126 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 189 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
One commenter stated that the process of rounding off estimates resulted in inconsistencies in some tables contained in Appendix D and Chapter 5. The commenter suggested that a consistent system be used.

**Response:**
The revised life-cycle cost estimates in the Final SEIS-II have been checked in Chapter 5 and Appendix D, and any rounding inconsistencies have been corrected.

**04.01 (17)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 38 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page GL-14. Lines 16 through 20. The definition of remote-handled transuranic waste should start with the term 'TRU waste' instead of the word 'waste.' Also, while the radiation level at the outer surface of the container is less than 1,000 rem/hour, there is a volume limit of 12,500 cu ft for wastes that have radiation doses that are greater than 100 rem/hr at the outer surface."

**Response:**
The term "Waste" has been changed to "TRU waste." WIPP volume limits are not relevant to the definition of RH-TRU waste and are therefore not included.

**04.01 (18)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-028 | 5 | C. M. Wood | Centers for Disease Control |

**Comment:**
"What is 'lag storage?'"

**Response:**
For the purpose of SEIS-II, "lag storage" refers to the storage of TRU waste that has been certified to the WAC and is awaiting shipment to the WIPP facility for disposal. This term has been added to the SEIS-II Glossary.

**04.01 (19)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 28 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page GL-2. Line 4. The definition of background radiation does not include global fallout as it exists in the environment. Global fallout is considered to be man-made radiation."

**Response:**
DOE considers "background" radiation to include all sources of radiation to which a population could be exposed, including natural and enhanced sources normally considered to be man-made. The definition of "natural background radiation," however, would not include these enhanced sources.

**04.01 (20)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163F | 1 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| SF8 | 58 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**
One commenter said he was disappointed that SEIS-II gives only a cursory overview of geology and hydrology.

**Response:**
For the sake of brevity, and to provide an explanation understandable to a nontechnical reader, DOE summarized the geological and hydrological features of the WIPP site and region, then directed the interested reader to more detailed, comprehensive, and technical treatments of the

subject matter. These include the documents incorporated by reference in SEIS-II; namely, the 1980 FEIS, the 1990 SEIS-I, the *Preliminary Performance Assessment for the Waste Isolation Pilot Plant* by SNL, the WIPP SAR, and the CCA.

**04.01 (21)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-010 | 16 | Earl Leming | State of Tennessee Department of Environment and Conservation |

**Comment:**
"Page S-27, paragraph 7 The primary aquifers in the Oak Ridge area are (as in all the Valley and Ridge province in East Tennessee) bedrock aquifer in carbonate rock. The total dissolved solids in these aquifers range from about 150 to 400 PPM. Only in the clastic rocks or at depths of many hundred[s] of feet in the carbonate rock will total dissolved solids limit the use of groundwater."

**Response:**
Background groundwater quality in the Oak Ridge Reservation (ORR) bedrock aquifer is considered poor at depths greater than 300 meters (1,000 feet) due to high total dissolved solids. The "Affected Environments" section of the Summary and Section 4.2.8 of SEIS-II have been changed to reflect this.

**04.01 (22)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 25 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 61 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 240 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
One commenter said that the Draft SEIS-II used an incorrect conversion factor (curies per cubic meter to picocuries per liter) in figures in the Summary, Chapter 5, and Appendix H and stated that the correct conversion factor is 1 pCi/L = $10^{-9}$ Ci/m$^3$. The commenter cited the importance of the correct use of this conversion factor, particularly on pages S-51 and 5-43.

**Response:**
All calculations were performed correctly. The incorrect parenthetical of (1 pCi/L) was introduced during the creation of the graphics and has been removed or corrected in all applicable figures.

**04.01 (23)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB6 | 156 | James Bartosch | |

**Comment:**
"Also under Section 5.12, please consider adding a statement that WIPP represents short-term use of resources to achieve the long-term goal of safer transuranic waste management."

**Response:**
DOE does not generally consider actions that take place over 35 years to be "short term," although 35 years could be viewed as short term relative to the period of disposal operations. In addition, the results of the SEIS-II analyses already support the view that WIPP represents a short-term use of resources to achieve the long-term goal of safer TRU waste management. Therefore, it would be redundant to restate this point as the commenter has suggested.

**04.01 (24)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 100 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 3-12 Closure and decommissioning. Use the definitions of disposal phase and disposal used in the WIPP Land Withdrawal Act. The definitions in the text do not match those in the Act."

**Response:**
The use and definitions of the terms "disposal" and "disposal phase" as defined in the LWA can be confusing to members of the public unfamiliar with the LWA. The definitions used in SEIS-II were selected because they were more intuitive and easier to understand. Therefore, the requested modifications have not been incorporated.

**04.01 (25)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-012 | 15 | Kathleen E. Trever | State of Idaho Oversight Program |

**Comment:**
"Page E-62 to E-63 In the bullet items, '...a breached TRUPACT-II...' or '...a breached RH-72B...' should be changed to '...two breached TRUPACT-IIs...' or '...two breached RH-72Bs...' to make it more clear that, as discussed on p. E-62, the breach of two containers was modeled in each case."

**Response:**
Section E.7.3 has been modified to reflect the comment.

**04.01 (26)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-012 | 13 | Kathleen E. Trever | State of Idaho Oversight Program |

**Comment:**
"Page E-28 'ACCIDENTS' should be deleted from the header for E.4, since this section deals with accident-free transportation as well as with accidents."

**Response:**
The heading for Section E.4 has been modified as suggested in the comment.

**04.01 (27)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-012 | 12 | Kathleen E. Trever | State of Idaho Oversight Program |

**Comment:**
"Appendix E The word 'TRUCK' should be added to headers E.2 through E.5, since rail transportation is discussed only in Section E.7."

**Response:**
The headings for Sections E.2 through E.5 have been modified as suggested in the comment.

**04.01 (28)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-012 | 11 | Kathleen E. Trever | State of Idaho Oversight Program |

**Comment:**
"Page 5-59, paragraph 7 (first paragraph following second list of bullet items) 'The standard method of calculating the number of accidents and fatalities per commercial train is to divide the average number of rail cars per train by 70.' This sentence is unclear (dividing the average number of rail cars per train by 70 will result in 1). What is probably intended is something to the effect of: 'The standard method of calculating the number of accidents or fatalities per rail car is to divide the number of accidents or fatalities per train by the average number of rail cars per train, which is 70.'"

**Response:**
The determination of accidents and fatalities per rail car was incorrectly identified in the Draft SEIS-II. The text has been modified as suggested in the comment.

**04.01 (29)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-013 | 4 | Jennifer Salisbury | New Mexico Radioactive Waste Consultation Task Force |

**Comment:**
"Page 1-2, Table 1-1: Neither this table nor the corresponding text provides a source for the DOE TRU waste volumes listed."

**Response:**
This omission has been corrected.

**04.01 (30)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 209 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page F-14. Section F.2.3.3. External dose of Involved Workers. No units are given in Tables F-11 through F-15. This should be corrected in the Final SEIS-II."

**Response:**
Tables F-11 through F-15 list screening values calculated to determine the radionuclides of greatest importance for the direct external exposure pathway. Each table contains a footnote indicating that the values are unitless.

**04.01 (31)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 131 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 5-26. Table 5-11. Footnote 'd' states that the MEI for RH-TRU is located at SRS. There is no RH-TRU at SRS."

**Response:**
The error was actually under the maximally exposed individual (MEI) for RH-TRU waste in Table 5-11 (not the footnote) of the Draft SEIS-II. It has been corrected in the Final SEIS-II.

**04.01 (32)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 183 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 184 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 185 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 186 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 187 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
One commenter said that the nomenclature and formatting of the equations in Section B.5 were confusing, incomplete, and inconsistent. The commenter also requested additional clarification of the calculations.

**Response:**
The method of adjustment was revised and reflected in Section B.5.

**04.01 (33)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 142 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 5-43. Figure 5-1. There is a $10^6$ conversion error on this Figure (and on lines 18-19 on page 5-42) that is repeated on numerous other Figures in this Chapter and Appendix H. A concentration of 1 pCi/1 is equal to $10^{-9}$ Ci/$m^3$ [(1 pCi/l) ($10^{-12}$ Ci/pCi)($10^3$ l/$m^3$) = $10^{-9}$ Ci/$m^3$)], not $10^{-15}$ Ci/$m^3$. This mistake raises an uncertainty about which value was used in plotting the extent migration areas in the various figures. This is important; it must be clarified, corrected, and the areas re-plotted if necessary."

**Response:**
These sections and figures have been modified to correct this error.

**04.01 (34)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 248 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page I-6. Equation 1-2. The convolution integral appears first in equation I-2. All the explanations pertaining to the convolution integral given much later with equation I-7, should be given first with equation I-2."

**Response:**
This recommended change has been incorporated.

**04.01 (35)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 249 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page I-9. Equation I-7. The symbol for the convolution operation is used twice, the second time inside an integral. The use of the convolution symbol inside the integral is incorrect. A symbol representing multiplication should be used inside the integral."

**Response:**
This recommended change has been incorporated.

**04.01 (36)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 242 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page H-57. Last paragraph. Because of the pCi/1 to Ci/$m^3$ conversion error mentioned, we are unsure whether the 1 pCi/1 value quoted here is correct or whether the value is $10^{-6}$ pCi/1."

**Response:**
The error noted by the commenter has been corrected.

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# 5.0 ENDORSEMENT/OPPOSITION

## 05.01 General

### 05.01 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-001 | 6 | Michael Jansky | United States Environmental Protection Agency Region 6 |

**Comment:**
"The EPA rates your DSEIS as 'LO,' i.e., EPA has 'a Lack of Objections' to the DOE preferred alternative. Our classification will be published in the Federal Register according to our responsibility under Section 309 of the Clean Air Act, to inform the public of our views on proposed Federal actions."

**Response:**
Thank you for your comment. EPA's specific comments on the Draft SEIS-II have been addressed in appropriate sections of the Final SEIS-II.

## 05.02 Endorsement of Alternatives Involving Disposal of Waste at WIPP

### 05.02 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-004 | 1 | George Voinovich | State of Ohio Office of the Governor |
| A-010 | 1 | Justin P. Wilson | State of Tennessee |
| A-010 | 6 | Elgan H. Usrey | State of Tennessee |
| A-013 | 1 | Jennifer Salisbury | New Mexico Radioactive Waste Consultation Task Force |
| A-013 | 21 | Jennifer Salisbury | New Mexico Radioactive Waste Consultation Task Force |
| ALB1 | 8 | Mark Miller | |
| ALB1 | 11 | Blaine Hadden | |
| ALB1 | 14 | Ron Beethe | |
| ALB1 | 16 | Noel Savignac | |
| ALB1 | 19 | George Newton | |
| ALB1 | 39 | Joe Rose | |
| ALB1 | 79 | Mark Hoover | |
| ALB2 | 44 | Harry Kinney | |
| ALB2 | 66 | Rex Allender | |
| ALB2 | 78 | Don Kidd | |
| ALB4 | 13 | Subhas Shah | |
| ALB5 | 14 | Robert H. Neill | Environmental Evaluation Group |
| ALB5 | 23 | Robert H. Neill | Environmental Evaluation Group |
| ALB5 | 57 | Richard Groff | |
| ALB5 | 74 | Paul Anderson | |
| ALB5 | 77 | Paul Anderson | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB5 | 78 | Paul Anderson | |
| ALB5 | 80 | Melinda Stanley | |
| ALB6 | 5 | Ruth Weiner | |
| ALB6 | 6 | Ruth Weiner | |
| ALB6 | 83 | Robert Richards | |
| ALB6 | 153 | James Bartosch | |
| BO1 | 5 | Governor Phillip Batt | State of Idaho |
| BO1 | 11 | Congressman Mike Crapo | State of Idaho |
| BO1 | 17 | Senator Larry Craig | State of Idaho |
| BO1 | 19 | Brian Whitlock | |
| BO1 | 35 | Delbert Farmer | |
| BO1 | 53 | Representative Jack Barraclough | State of Idaho |
| BO1 | 56 | Fred Sica | |
| BO1 | 58 | George Freund | |
| BO1 | 61 | John Commander | |
| BO1 | 66 | Martin Huebner | Federation of Western Outdoor Clubs |
| BO1 | 68 | Stan Hobson | |
| BO1 | 136 | Martin Huebner | Federation of Western Outdoor Clubs |
| C-002 | 1 | Keith W. Marlow | |
| C-004 | 1 | James K. Sprinkle, Jr. | Los Alamos National Laboratory |
| C-006 | 1 | Stephen C. Tadolini | |
| C-007 | 1 | Marge J. Baker | |
| C-009 | 1 | Robert D. Watson, Ph. D. | |
| C-010 | 1 | James Matthews, DDS | |
| C-011 | 1 | Lois Pohl | |
| C-013 | 1 | Tom VanZandt | |
| C-014 | 1 | Nancy Wilson and William Ohs | |
| C-015 | 1 | Geri Velasquez | |
| C-016 | 1 | Craig Martin | |
| C-017 | 1 | James F. Van Hecke, Jr. | |
| C-018 | 2 | Mark Cummings | |
| C-019 | 2 | Tom Sandford | |
| C-023 | 1 | E. Johnson | |
| C-025 | 1 | James F. Mesite, Jr. | |
| C-029 | 1 | Jan and Judith Novak | |
| C-043 | 1 | Larry Avens | |
| C-045 | 1 | Dorothy and Robb Minor | |
| C-046 | 1 | William Ohmstede | |
| C-047 | 1 | Wayne Morris | |
| C-050 | 1 | Howard B. Kreider, Jr. | |
| C-054 | 1 | Mark Trump | |
| C-055 | 1 | Paul E. Sanchez | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-059 | 2 | Sam Volpentest | Tri-City Industrial Development Council |
| C-062 | 1 | R. J. Peterson, Ph. D. | |
| C-063 | 1 | Michael (No last name provided) | |
| C-064 | 1 | Michael Potvin | |
| C-066 | 1 | Ralph W. Maughan | |
| C-067 | 1 | Norling Anderson | |
| C-069 | 1 | William Schaefer | |
| C-072 | 1 | Carl W. Buckland | |
| C-073 | 1 | Warren E. Quinn | |
| C-074 | 1 | W.E. Briggs | |
| C-077 | 1 | Jim Harless | |
| C-078 | 1 | Alethea L. Hill | |
| C-079 | 1 | Erwin Reinhardt | |
| C-080 | 7 | Mike Dempsey | |
| C-081 | 1 | Robert Thrasher | |
| C-082 | 1 | Alfred Brooks | |
| C-083 | 2 | Diantha F. Pare | League of Women Voters Environment Committee |
| C-084 | 1 | Fay M. Martin | |
| C-087 | 1 | Charles Rice | Citizens Advisory Board Idaho National Engineering and Environmental Laboratory |
| C-089 | 1 | Tim M. Greager | |
| C-096 | 1 | W. L. Hampson | |
| C-097 | 1 | Robert Owen | |
| C-099 | 1 | Bruce Rippeteau | |
| C-100 | 1 | Larry Weaver | |
| C-101 | 1 | William R. Stratton | |
| C-108 | 1 | Richard Shropshire | |
| C-113 | 1 | Victor Holm | |
| C-115 | 1 | Melvin M. Vuk | |
| C-120 | 1 | Anonymous | |
| C-129 | 5 | Richard A. Kenney | Coalition 21 |
| C-129 | 6 | Richard A. Kenney | Coalition 21 |
| C-130 | 1 | Susan L. Gawarecki | Oak Ridge Reservation Local Oversight Committee |
| C-132 | 1 | Keith Tinno | Shoshone-Bannock Tribes |
| C-135 | 1 | William Fulkerson | Friends of Oak Ridge National Laboratory |
| C-140 | 1 | Barbara H. Fitzharris | |
| C-142 | 1 | Morris B. Pongratz | |
| C-143 | 1 | Roger Wishau | |
| C-144 | 2 | Robb Minor | |
| C-146 | 1 | W.L. Hampson | |
| C-153 | 1 | Martin Huebner | Federation of Western Outdoor Clubs |
| C-161 | 1 | William L. Partain | |
| CA1 | 2 | Al Hickerson | |
| CA1 | 34 | Mike Currier | |
| CA1 | 35 | Robert Lee | |
| CA1 | 38 | Christen Nuget | |
| CA1 | 43 | Jack Black | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| CA1 | 44 | Jack White, Jr. | |
| CA1 | 49 | Dick Means | |
| CA1 | 52 | Jon Tully | |
| CA1 | 54 | Mike Garringer | |
| CA1 | 56 | Claude McCausland | |
| CA1 | 57 | Bill St. John | |
| CA1 | 75 | John Heaton | |
| CA1 | 83 | John Heaton | |
| CA1 | 84 | Alexis Hilty | |
| CA1 | 85 | Alexis Hilty | |
| CA1 | 86 | Dr. George Markle | |
| CA1 | 87 | Fred Bloss | |
| CA1 | 88 | Tom Duffin | |
| CA1 | 91 | James Koch | |
| CA1 | 92 | Bob Murray | |
| CA1 | 95 | Tom Quintela | |
| CA1 | 97 | Tom Quintela | |
| CA1 | 98 | Mayor Perkowski | |
| CA1 | 99 | Lorraine Allen | |
| CA1 | 104 | Mark Schinnerer | |
| CA1 | 108 | Cliff Stroud | |
| CA1 | 109 | Don Kidd | |
| CA1 | 114 | Carroll Leavell | |
| CA1 | 117 | Dan Funchess | |
| DE1 | 2 | Jeffrey Pecka | |
| DE1 | 36 | Tim Holeman | |
| DE1 | 54 | Vince Likar | |
| DE1 | 190 | Victor Holm | |
| E-021 | 1 | Ruth Weiner | |
| E-032 | 1 | Robert S. Light | New Mexico Representative (District 55) |
| E-033 | 1 | Robert S. Light | New Mexico Representative (District 55) |
| E-038 | 1 | Steve Massey | Eddy County |
| NA1 | 8 | Todd Crawford | |
| NA2 | 2 | Lee Poe | |
| OR1 | 17 | Stanley Reel | Oak Ridge Regional Planning Commission |
| OR1 | 38 | Bob Peele | |
| OR1 | 41 | Karl Shendall | |
| OR1 | 43 | Karl Shendall | |
| OR1 | 48 | Fred Maienschein | |
| OR2 | 4 | John Croes | |
| OR2 | 5 | Lorene Sigal | |
| OR2 | 6 | Doug Turner | |
| OR2 | 7 | Barbara A. Walton | Oak Ridge Reservation Local Oversight Committee |
| OR2 | 16 | Alfred Brooks | |
| OR2 | 19 | Fred Peretz | |
| OR2 | 20 | Ken Preston | |
| RL1 | 2 | Ken Niles | |
| RL1 | 3 | Pam Brown | |
| RL1 | 6 | F.R. Cook | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF1 | 20 | Robert Neill | Environmental Evaluation Group |
| SF1 | 122 | Tom Baca | |
| SF1 | 123 | Tom Baca | |
| SF2 | 5 | John Dendahl | |
| SF2 | 22 | Benny Atencio | |
| SF2 | 25 | Jimmy Joe Gonzalez | |
| SF2 | 26 | John Elling | |
| SF2 | 36 | Jay Shelton | |
| SF3 | 1 | Robert S. Light | New Mexico Representative (District 55) |
| SF4 | 1 | Terry Marshall | |
| SF4 | 11 | John Heaton | |
| SF4 | 13 | John Heaton | |
| SF4 | 15 | Lorraine Allen | |
| SF4 | 17 | Cliff Stroud | |
| SF4 | 18 | George Shoup | |
| SF4 | 35 | Milton G. Lockhart | |
| SF4 | 36 | Jon Mack | |
| SF4 | 37 | Bob Forrest | |
| SF4 | 41 | Bruce LeBrun | |
| SF4 | 42 | Steve Massey | Eddy County |
| SF4 | 67 | Bill St. John | |
| SF4 | 69 | Chuck Wiggins | |
| SF4 | 74 | Les Shepherd | |
| SF5 | 1 | Milton G. Lockhart | |
| SF5 | 18 | Chris Chandler | |
| SF5 | 20 | Chris Chandler | |
| SF5 | 21 | Lawry Mann | |
| SF6 | 2 | Louis Rosen | |
| SF7 | 41 | Stanley E. Logan | |
| SF7 | 61 | Bruce Barnaby | |
| SF7 | 85 | Tony Marlow | |
| SF8 | 73 | Thomas Morgan | |
| V1 | 2 | Ed Stein | |
| V1 | 8 | Glen Graves | |
| V1 | 10 | Mike Dempsey | |
| V1 | 13 | Glen Lockhardt | |
| V1 | 18 | Wally McCorkle | |
| V1 | 22 | Bruce LeBrun | |
| V1 | 23 | Robb Minor | |
| V1 | 24 | David Wass | |
| V1 | 26 | Glen Graves | |
| V1 | 28 | Lawry Mann | |

**Comment:**
Several individuals, organizations, committees, and agencies endorsed TRU waste disposal at the WIPP site. Some commenters endorsed the Proposed Action, while others supported one of the other action alternatives. The following are some of the reasons why commenters said they support the opening of WIPP.

INAPPROPRIATE CURRENT STORAGE OF TRU WASTE: Commenters expressed the following endorsements regarding the disposal of TRU waste at the WIPP facility:

- TRU waste is currently stored aboveground at 22 sites, with the potential to adversely impact the surrounding populations.

- The environmental problems at some generator sites cannot be solved without the WIPP facility.

- At present, the climate and geology at some sites are unsuitable for waste storage, making the temporary storage of TRU waste dangerous.

- TRU waste is much safer in a geologic repository like WIPP than in aboveground storage facilities where it is susceptible to natural and human-induced catastrophes.

- The waste containers were not designed for long-term storage and any delay in moving the waste would only increase the chances of a release and the possible contamination of groundwater or surface water near the generator sites (e.g., Snake River, Rio Grande River).

- The cost of maintaining continuous repackaging would also be substantial and would increase until a permanent repository, such as WIPP, is available for the safe and effective disposal of waste.

- Cleanup activities are also a source of waste generation; therefore, more, not less, TRU waste should be considered for disposal.

- To delay the WIPP facility's opening in the hope that a better alternative will emerge would be irresponsible

WIPP SITE SUITABILITY/SAFETY: Commenters expressed the following endorsements for the suitability and safety of the WIPP site for TRU waste disposal:

- Bedded salt formations (such as the Salado Formation at the WIPP site) are the best means to safely and permanently dispose of TRU waste because radionuclide transport of TRU waste would be isolated, barring human intrusion.

- The performance analyses in SEIS-II, which assume worst-case scenarios, show that no contamination to the Pecos River Basin would be expected.

- The geohydrology of the WIPP site is favorable; that is, there is no karst and the area has a low water table.

- The WIPP site is favorable because the population density is low.

- The WIPP facility meets the performance standards established by the law and its regulators and has won numerous safety awards and the endorsement of the NAS.

- The air monitoring program at WIPP is excellent.

- No waste repository will be perfect and the United States needs to support a site that has already been demonstrated to be safe through scientific analysis (i.e., the WIPP site).

TRANSPORTATION: Commenters endorsed DOE's plans for transporting TRU waste to the WIPP site, stating that exhaustive testing of the TRU transportation containers has demonstrated that they are adequate to prevent the release of waste from credible potential transportation accidents; that truck drivers have been well-trained and have clean, safe trucks; and that countless hours of training of emergency personnel have been conducted to ensure the safe transportation of TRU waste to WIPP.

OVERSIGHT: Commenters said that, because of the DOE and SNL (Lockheed Martin) team, New Mexico has the personnel most qualified to manage TRU waste. They also stated that EEG has been providing more than adequate oversight of WIPP to protect the interests of the people of New Mexico.

UNACCEPTABLE NO ACTION ALTERNATIVES: Commenters stated that No Action Alternatives 1 and 2 in SEIS-II are unacceptable for the following environmental, public health, safety, and policy reasons:

- The no action alternative scenarios do not effectively isolate the waste and would not meet cleanup objectives.

- It would cost approximately $10 billion to properly store defense-generated TRU waste, more than twice the cost of disposing of it at WIPP. Increased costs, increased volumes of processed waste, and requirements for on-site storage for the next 150 to 160 years is unacceptable.

- Leaving the waste on site for this period of time would realistically result in permanent disposal of waste in temporary storage.

- No Action Alternative 2 would have the greatest long-term health impacts of any alternative considered. A projected potential 2,325 deaths over 10,000 years is unacceptable and unnecessary when we can accept the other alternatives.

- The no action alternatives leave us with a problem that has to be addressed in the future.

- If the no action alternatives were chosen, then no TRU waste would be shipped from Idaho to WIPP, which would violate the Governor's Settlement Agreement. In addition, the associated costs of doing nothing could increase to $400 million per year (four times the cost of sending the waste to WIPP).

COST TO THE PUBLIC: Commenters said that too much taxpayer money has been spent on the WIPP project to decide not to use it at all. Some stated that it would be a slap in the face of taxpayers who have been supporting something the NAS believes is safe.

**Response:**
Thank you for your comments.

## 05.03 Opposition to WIPP; Endorsement of Alternatives Not Involving Disposal of Waste at WIPP

### 05.03 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 3 | Mark Rudd | |
| ALB1 | 20 | Maria Santelli | |
| ALB1 | 37 | Eric James | |
| ALB1 | 41 | Sally Alice Thompson | |
| ALB2 | 15 | Sean Asghar | |
| ALB2 | 30 | Virginia Kotler | |
| ALB2 | 41 | Virginia Kotler | |
| ALB2 | 54 | Jeff Radford | Business People Concerned about WIPP |
| ALB2 | 63 | Jeff Radford | Business People Concerned about WIPP |
| ALB2 | 64 | Elaine Regan | |
| ALB2 | 65 | Madeline Aaron | |
| ALB2 | 68 | Charles Hyder | |
| ALB2 | 91 | John Leahigh | |
| ALB2 | 97 | Lesley Weinstock | |
| ALB2 | 102 | Lesley Weinstock | |
| ALB2 | 116 | Judy Kaul | |
| ALB2 | 117 | Judy Kaul | |
| ALB2 | 122 | Deborah Reade | |
| ALB2 | 132 | Deborah Reade | |
| ALB2 | 153 | Rick Packie | |
| ALB3 | 8 | Don Schrader | |
| ALB3 | 15 | Bruce Trigg | New Mexico Public Health Association |
| ALB3 | 19 | Bruce Trigg | New Mexico Public Health Association |
| ALB3 | 20 | Robin Seydel | |
| ALB3 | 29 | Robin Seydel | |
| ALB3 | 34 | Penny Mainz | |
| ALB3 | 42 | Harry Willson | |
| ALB3 | 66 | Chuck Hosking | |
| ALB3 | 68 | Linda Sperling | |
| ALB3 | 81 | Maryann Fiske | |
| ALB3 | 99 | Jeffrey Rich | |
| ALB3 | 102 | Lois Pribble | |
| ALB3 | 109 | Peter Kalberer | |
| ALB3 | 114 | Peter Kalberer | |
| ALB3 | 118 | Michael Dooley | |
| ALB4 | 7 | Dory Bunting | |
| ALB4 | 15 | Don Thompson | |
| ALB4 | 28 | Jeri Rhodes | |
| ALB4 | 90 | Wendy Cory | |
| ALB4 | 102 | Merida Wexler | |
| ALB4 | 124 | Jon Thomas-Weger | |
| ALB5 | 24 | Susan Rodriguez | |
| ALB5 | 42 | Susan Rodriguez | |
| ALB5 | 43 | Lilly Rendt | |
| ALB5 | 51 | Aanya Adler Friess | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB5 | 54 | John McCall | |
| ALB5 | 68 | Pere Barber Gormley | |
| ALB5 | 69 | Kent Gormley | |
| ALB5 | 71 | Kent Gormley | |
| ALB5 | 84 | Pere Barber Gormley | |
| ALB5 | 90 | David Shepard | |
| ALB5 | 96 | Janet Greenwald | |
| ALB6 | 1 | William Beems | |
| ALB6 | 19 | Victoria Michelle | |
| ALB6 | 26 | Dan Kerlinsky | |
| ALB6 | 34 | Joan Robins | |
| ALB6 | 67 | David Pace | |
| ALB6 | 71 | Tsosie Tsinhnahjinnie | |
| ALB6 | 76 | Judy Pratt | |
| ALB6 | 81 | Judy Pratt | |
| ALB6 | 84 | Debra Tenney | |
| ALB6 | 100 | Sharon Williams | |
| ALB6 | 112 | Dair Obenshain | |
| ALB6 | 113 | Glenna Voigt | |
| ALB6 | 121 | Glenna Voigt | |
| ALB6 | 122 | Alan Moskowitz | |
| ALB6 | 129 | Alan Moskowitz | |
| ALB6 | 136 | Amy Nixon | |
| ALB6 | 149 | James Emmett Garrity | |
| ALB6 | 163 | Rich Weiner | |
| BO1 | 25 | Robin Blaisdell | Snake River Alliance Education Fund |
| BO1 | 42 | Patricia Hall | |
| BO1 | 52 | Liz Paul | |
| BO1 | 72 | Steve Hopkins | |
| BO1 | 88 | Rebecca A. Nebelsick | |
| BO1 | 89 | Beatrice Brailsford | |
| BO1 | 93 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| BO1 | 125 | Michele Kresge | |
| BO1 | 128 | Dallas Gudgell | |
| C-003 | 1 | Alexis Higginbotham/ Archie Tew | |
| C-008 | 1 | Linda Whittenberg | |
| C-012 | 2 | Eleanor Ponce | |
| C-020 | 1 | Brian V. Ellison | |
| C-021 | 1 | Kayce Cole | |
| C-022 | 1 | Pam Lytle | |
| C-024 | 5 | Barbara Conroy | |
| C-026 | 1 | Tom and Nancy Florshein | |
| C-030 | 3 | Carole J. Suderman | |
| C-031 | 2 | Nina Johnson and H. Lopez | |
| C-032 | 2 | Joan O. King | |
| C-033 | 2 | Kent Williamson | |
| C-034 | 2 | Linda Seese | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-036 | 1a | Sarah Stout | |
| C-037 | 1 | Erica Simonov | |
| C-038 | 1 | Blanche Brody | |
| C-039 | 3 | Jim Lysne | |
| C-040 | 2 | Christine Ortiz | |
| C-042 | 1 | Marie Ortiz | |
| C-044 | 1 | Sally Spencer | |
| C-048 | 1 | Ronald Forthofer | |
| C-049 | 1 | Lorraine Hanley | |
| C-051 | 1 | Tom Williams, Director | Choctaw Nation of Oklahoma |
| C-057 | 1 | Diana Reimers | |
| C-060 | 1 | Jeff Moyers | RPM2 Building Services Ltd. |
| C-071 | 1 | Diane Stayner | |
| C-088 | 7 | Victoria Parrill | |
| C-090 | 8 | Linda Ewald | |
| C-091 | 1 | Niels Schonbeck | |
| C-092 | 1 | John Savorra | |
| C-093 | 1 | Hugo Bertini | |
| C-098 | 1 | Jill M. Cowley | |
| C-105 | 1 | Valerie Hookham | |
| C-106 | 1 | Jerry L. Gerber | |
| C-107 | 1 | Deborah M. Brink | |
| C-109 | 1 | Dana Middleton | |
| C-110 | 1 | Rafaelita Bachicha | |
| C-111 | 6 | Scott W. Estep | |
| C-114 | 1 | Cecil Caldwell | |
| C-116 | 1 | Lauren O'Neal | |
| C-118 | 1 | David Proctor | |
| C-121 | 2 | Bob McEnaney | |
| C-122 | 1 | Ross Lockridge | Concerned Citizens of Cerrillos |
| C-122 | 4 | Ross Lockridge | Concerned Citizens of Cerrillos |
| C-123 | 3 | Carol Merrill | |
| C-124 | 6 | Roy Young | |
| C-125 | 20 | Barbara H. Johnson | The Rio Grande Chapter of the Sierra Club |
| C-126 | 1 | Richard Dant, Jack Dant, Christi Schackel | |
| C-128 | 1 | Mary Fran O'Connor | |
| C-131 | 46 | Don Hancock | |
| C-134 | 1 | Jessica A. Giglia | |
| C-136 | 1 | N. Watson | |
| C-137 | 2 | Herbert Arthur | |
| C-139 | 1 | Judy Herzl | |
| C-141 | 8 | Margret Carde | Concerned Citizens for Nuclear Safety |
| C-147 | 1 | Nena Hoeprich | |
| C-148 | 3 | Landi Fernley | |
| C-149 | 1 | Lindy Lyman | |
| C-150 | 7 | Mary Olson | |
| C-151 | 22 | Don Moniak | Serious Texans Against Nuclear Dumping |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-154 | 1 | Tom Marshall, Jack Mento, et al. | Rocky Mountain Peace and Justice Center |
| C-155 | 1 | Peggy Finch, Jerry J. Finch Jr., James Finch | |
| C-156 | 13 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |
| C-157 | 8 | Wendy Lynne Botwin | |
| C-158 | 3 | Maureen Eldredge | Military Production Network |
| C-160 | 6 | Julie R. Sutherland | |
| C-162 | 1 | Kathleen Sullivan | |
| C-163A | 82 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163B | 5 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163B | 7 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163B | 8 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163C | 39 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163G | 3 | Jeff Radford | Business People Concerned about WIPP |
| C-164 | 1 | Mansi Kern | |
| C-164 | 6 | Mansi Kern | |
| C-166 | 1 | Elliott H. Libman, MSW | |
| C-166 | 12 | Elliott H. Libman, MSW | |
| C-166 | 13 | Elliott H. Libman, MSW | |
| CA1 | 11 | Richard Boren | |
| CA1 | 58 | Betty Richards | |
| CA1 | 68 | Charles M. Loftus | |
| DE1 | 10 | Leroy Moore | |
| DE1 | 20 | Nicholas Helburn | |
| DE1 | 27 | Kathleen Sullivan | |
| DE1 | 29 | Jack Mento | |
| DE1 | 30 | Michael Dolan | |
| DE1 | 84 | Ben Lipman | |
| DE1 | 95 | Laura Kriho | |
| DE1 | 102 | Michelle Foy | |
| DE1 | 115 | Amy Rosser | |
| DE1 | 121 | Judith Mohling | |
| DE1 | 124 | Kathleen Sullivan | |
| DE1 | 132 | Kathleen Sullivan | |
| DE1 | 133 | Andrew Thurlow | |
| DE1 | 140 | Kenneth Worth | |
| DE1 | 143 | Magdalen Seaman | |
| DE1 | 154 | James Ciarlo | |
| DE1 | 161 | Tom Marshall | Rocky Mountain Peace and Justice Center |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| DE1 | 164 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| DE1 | 170 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| DE1 | 176 | Kathryn Becker | |
| DE1 | 188 | Scott Polanchyck | |
| DE1 | 192 | Scott Hatfield | |
| E-012 | 27 | Charles Hyder | |
| E-012 | 30 | Charles Hyder | |
| E-012 | 32 | Charles Hyder | |
| E-063 | 1 | Tom Moore | |
| E-069 | 1 | Pat Clark | Snake River Alliance |
| E-077 | 4 | Rebecca A. Nebelsick | |
| E-077 | 5 | Rebecca A. Nebelsick | |
| OR1 | 30 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |
| OR1 | 37 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |
| SF1 | 3 | Richard Deyo | |
| SF1 | 23 | Ray Schmidt | |
| SF1 | 33 | Nausika Richardson | |
| SF1 | 36 | Lety Seibel | |
| SF1 | 46 | Margret Carde | Concerned Citizens for Nuclear Safety |
| SF1 | 59 | Virginia Miller | |
| SF1 | 89 | Chris Moore | |
| SF1 | 108 | Basia Miller | |
| SF1 | 111 | Peggy Prince | |
| SF1 | 124 | Clan Ianaeby | |
| SF1 | 127 | Peggy Prince | |
| SF2 | 6 | Kathleen Sullivan | |
| SF2 | 31 | Shawn Sigsredt | |
| SF2 | 45 | Elliott Skinner | |
| SF2 | 60 | Nancy Judd | |
| SF3 | 8 | Cathy Swedlund | |
| SF3 | 19 | Myla Reason | |
| SF3 | 48 | Jai Lakshman | SEVA Foundation |
| SF3 | 73 | Bill Gould | |
| SF3 | 74 | Sasha Pyle | Religious Society of Friends |
| SF3 | 78 | Sasha Pyle | Religious Society of Friends |
| SF3 | 91 | Anhara Lovato | |
| SF3 | 112 | Anhara Lovato | |
| SF3 | 125 | Shannyn Sollitt | |
| SF3 | 126 | Shannyn Sollitt | |
| SF3 | 131 | Norman Budow | |
| SF4 | 70 | Mary Riseley | |
| SF4 | 102 | Kathy Sanchez | |
| SF4 | 120 | Corrine Sanchez | |
| SF4 | 122 | Vicki Downey | |
| SF4 | 130 | Juan Montes | |
| SF4 | 137 | Pat Larragoite | |
| SF5 | 13 | Marilyn Hoff | |
| SF5 | 29 | Jeanne Wheeler | |
| SF5 | 31 | Louise Baum | |
| SF5 | 57 | Amy Mohr | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF5 | 61 | Alicia Katz | |
| SF5 | 64 | Reno Myerson | |
| SF5 | 66 | Sharon Laurie | |
| SF5 | 72 | Michael Collins | |
| SF5 | 89 | Maria Moreno | |
| SF5 | 91 | Peggy Prince | |
| SF5 | 95 | Sonja Swanson | |
| SF5 | 98 | Caroly Mae Lassiter | |
| SF5 | 100 | Stephanie Clifton | |
| SF6 | 8 | Sheldon Herman | |
| SF6 | 12 | Rebecca Henderson | |
| SF6 | 14 | Alfred Fuller | |
| SF6 | 17 | Guy Fuller | |
| SF6 | 23 | Susannah Harrison | |
| SF6 | 25 | Amy Stix | |
| SF6 | 30 | Laura Center | |
| SF6 | 31 | Mariel Kinsey | |
| SF6 | 33 | Pamela Baumgertel | |
| SF6 | 39 | Pamela Baumgertel | |
| SF6 | 41 | Ian Duncan | |
| SF6 | 45 | Burleigh Shepard | |
| SF6 | 48 | Janet Degan | |
| SF6 | 65 | Anna Hansen | |
| SF6 | 67 | Garland Harris | |
| SF6 | 75 | Garland Harris | |
| SF6 | 81 | Pia Gallegos | |
| SF6 | 93 | Deborah Hibbard | The Sierra Club |
| SF7 | 4 | Carole Tashel | |
| SF7 | 10 | Sister Penelope McMullen | |
| SF7 | 21 | Suzanne Phillips | |
| SF7 | 40 | Rosemary Lowe | |
| SF7 | 48 | Eric Ericson | |
| SF7 | 53 | Todd Macon | |
| SF7 | 56 | Peli Lee | |
| SF7 | 66 | Margaret Cohen | |
| SF7 | 68 | Melissa McDonald | |
| SF7 | 72 | Nate Downey | |
| SF7 | 74 | Bonnie Bonneau | Legions of Living Light |
| SF7 | 91 | Linda Hibbs | |
| SF7 | 98 | Linda Larson | |
| SF7 | 106 | Jill Cliburn | |
| SF7 | 113 | Monika Steinhoff | |
| SF7 | 115 | Julie Sutherland | |
| SF7 | 116 | Bren Bacon | |
| SF7 | 131 | Lee Lysne | |
| SF7 | 133 | Dominique Mazeaud | |
| SF7 | 142 | Barbara Conroy | |
| SF7 | 144 | Nancy Brown | |
| SF7 | 146 | Naomi Mattis | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF8 | 7 | Susan Diane | |
| SF8 | 18 | Carl Tsosie | Picuris Pueblo Tribal Council |
| SF8 | 19 | Robin Laughlin | Concerned Citizens for Nuclear Safety |
| SF8 | 22 | Jean Nichols | |
| SF8 | 27 | Ruth Sougstad | |
| SF8 | 32 | Allen Lytle | |
| SF8 | 41 | John Otter | |
| SF8 | 46 | Karin Salzmann | |
| SF8 | 56 | Katherine Lage | |
| SF8 | 78 | Michael Combs | |
| SF8 | 82 | Quinn Evans | |

**Comment:**
Several individuals, organizations, and committees stated their opposition to TRU waste disposal at the WIPP site in favor of leaving the waste aboveground in monitored, retrievable storage until a better alternative was proposed (e.g., transmutation). Some commenters supported one of the no action alternatives, while others rejected all of the alternatives in SEIS-II. The following are some of the reasons why commenters said they oppose the opening of WIPP.

COST: Commenters stated that the WIPP project is an enormously wasteful expenditure of money.

UNCERTAINTIES: Commenters stated that the WIPP program lacks the most fundamental aspect of science: logic. They said that WIPP is a huge experiment in deep geological burial of nuclear waste and, as it has not been tried anywhere else in the world, it is unproven and controversial. They also stated that WIPP has too many unanswered questions for the public to feel safe for themselves and the environment. Some of these unanswered questions concern the following:

- The lack of knowledge regarding TRU waste and TRU waste treatment
- Technical issues, including human health and safety; geology; hydrology; operational safety; backfill; facility design; engineered barriers; transportation health risks; water intrusion; criticality; potential explosions; radioactive gas containment; and performance issues
- The ability to deter future inadvertent human intrusion

FUTURE: Some commenters said that the WIPP program is a symbol of DOE's total disregard for future generations and ecological integrity and that it makes that section of the earth forever unusable.

ATTITUDE: Some commenters said that the WIPP program is just one more example of an "out of sight, out of mind" mentality. In addition, they stated that this enormous problem would not be solved by burying the waste permanently, but that DOE is merely repositioning the waste in order to avoid the problem.

PROBLEMS WITH THE SITE: Commenters stated that waste cannot be monitored or retrieved once it is emplaced in the WIPP repository and that, if any problems arise with the storage due to water seepage, earthquakes, or nearby oil drilling, it might be infeasible or impossible to retrieve the waste. They said the site also has permeable and corrosive salt beds positioned over water and that, in time, the water would dissolve the salt and form a slurry. They said that the waste containers in the WIPP repository would corrode, and people in southern New Mexico, Texas, and Mexico would die because TRU waste would contaminate the water (e.g., the Pecos River, the Rio Grande, the Gulf of Mexico). They also stated that it is irresponsible to dump TRU waste into one of the poorest states.

TRU WASTE: Some commenters said that TRU waste is an astonishingly toxic material with an unbelievably long half-life, that it would be unsuitable to bury long-lived radionuclides like plutonium, and that until TRU waste can be fully characterized, quantified, treated, and stored temporarily or permanently, DOE cannot claim an adequate analysis of the action alternatives in SEIS-II has been performed.

TRANSPORTATION: Some commenters who live near transportation routes strongly opposed the transportation of TRU waste to the WIPP site. They stated that highways are not safe and that transporting nuclear waste would only add to the danger on the nation’s highways, putting thousands of people at an even greater risk.

RESOURCES: Some commenters said that it is irresponsible to contaminate the environment of the western states, particularly the beautiful natural formations (the Carlsbad Caverns system) in New Mexico. They said that the land is valuable to the people of New Mexico, particularly the WIPP site in terms of oil and gas.

CONTAMINATION: Many commenters stated that TRU waste should remain at the generator sites. They stated that many sites are already contaminated, so it does not make sense to contaminate another site.

RELIANCE: Commenters said that a reliance on the WIPP project has created poor storage conditions for TRU waste at the generator sites (e.g., Rocky Flats).

RUSHING TO OPEN THE WIPP FACILITY: Many commenters stated that an emphasis has been placed on the completion of an unsound facility and transportation plan, at the expense of moving radioactive materials out of the facilities where they are currently stored. Commenters urged DOE to immediately change its policy and consider retrievable storage at the generator sites, with minimal transportation for the period of the next 100 years or so until the waste can be properly treated without danger and stored or made benign.

Some commenters preferred No Action Alternative 2 because they said it was the safest and cheapest alternative. Others stated that the six alternatives presented in SEIS-II were inappropriate and that new alternatives should be developed. Some of the alternatives to WIPP that were specifically mentioned included the following:

- Storage of radioactive waste aboveground on or near the generator sites, so that it is not transported on the highways of the country, harming the ecosystem

- Creation of a safer disposal procedure for TRU waste rather than deep geologic burial at the WIPP site
- Constant monitoring of TRU waste for 100 years until technology has had time to mature
- Cleanup of the generator sites and aboveground storage of all waste, whether treated or not
- Planning by DOE for safe, monitored, retrievable storage of TRU waste at the point of generation
- Acceptance of nuclear waste by the people of New Mexico, for the purpose of incinerating, transmuting, or destroying the waste to eliminate its danger
- A 10-year moratorium, during which WIPP would be sealed and reopened to assess the condition of the site. Meanwhile, address priorities such as effective waste storage at the generator sites

**Response:**
Thank you for your comments.

## 05.04 WIPP SEIS-II Public Hearing Process

### 05.04 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 78 | Janet Greenwald | |
| ALB2 | 152 | Rick Packie | |
| ALB3 | 21 | Robin Seydel | |
| ALB3 | 79 | Jack Uhrich | |
| ALB3 | 83 | Karen Navarro | |
| ALB4 | 47 | Lawrence Carter-Long | |
| ALB4 | 111 | Virginia Corazon | |
| ALB5 | 61 | Lilly Rendt | |
| ALB5 | 91 | David Shepard | |
| ALB5 | 95 | Janet Greenwald | |
| ALB6 | 9 | Catherine O'Neill | |
| ALB6 | 22 | Dan Kerlinsky | |
| ALB6 | 27 | Dan Kerlinsky | |
| ALB6 | 158 | James Bartosch | |
| ALB6 | 170 | Julie Ahern | |
| BO1 | 127 | Dallas Gudgell | |
| C-085 | 1 | Sam W. Booher | |
| C-111 | 4 | Scott W. Estep | |
| CA1 | 17 | Richard Boren | |
| E-071 | 1 | Patricia Hall | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF3 | 26 | Jai Lakshman | SEVA Foundation |
| SF3 | 29 | Jai Lakshman | SEVA Foundation |
| SF3 | 118 | Anna Katherine | |
| SF4 | 94 | Joseph Oliaro | |
| SF4 | 118 | Corrine Sanchez | |
| SF5 | 35 | Louise Baum | |
| SF5 | 40 | Louise Baum | |
| SF5 | 41 | Michael Buonaiuto | |
| SF5 | 90 | Peggy Prince | |
| SF6 | 56 | Anna Hansen | |
| SF7 | 35 | Amy Bunting | |
| SF7 | 59 | Peli Lee | |
| SF7 | 73 | Nate Downey | |
| SF7 | 152 | Norah Pierson | |
| SF8 | 3 | Elliott Skinner | |
| SF8 | 14 | Carl Tsosie | Picuris Pueblo Tribal Council |
| SF8 | 23 | Jean Nichols | |
| SF8 | 44 | Karin Salzmann | |
| SF8 | 79 | Michael Combs | |
| SF8 | 80 | Michael Combs | |
| V1 | 12 | Glen Lockhardt | |

**Comment:**
A number of commenters said they were skeptical of the purpose of the hearings; some commenters asked if public input was taken into account. Some commenters stated that the hearings were being held for political reasons, that comment identification is biased, that commenters were not being taken seriously, and that DOE had already decided to open the WIPP facility for the disposal of TRU waste. Some commenters voiced their appreciation for the hearings and stated that public comments can affect the outcome of the NEPA process.

**Response:**
According to the CEQ regulations that implement NEPA, opportunities for public comment must be provided as part of developing an EIS. The CEQ regulations do not specifically require public hearings; DOE regulations require a minimum of one public hearing. The public hearing process is a vehicle by which individuals, organizations, and agencies may provide comments and voice concerns regarding the WIPP program.

DOE has made every reasonable effort to ensure that the comments received on SEIS-II have been responded to without bias. DOE identified and categorized each comment into issue areas (e.g., NEPA process, legal, performance assessment) and prepared responses, including appropriate changes to SEIS-II. All comments and responses, as well as environmental impacts and other factors, will be considered by the Secretary of Energy in rendering a decision on whether to dispose of TRU waste at the WIPP facility.

Although not reprinted in the Final SEIS-II, a copy of all public comment letters and all public hearing transcripts is available in one volume in the SEIS-II reading rooms. A list of these reading rooms is included in Section 2.3 of SEIS-II.

It should be recognized that DOE is not the sole decisionmaker as to whether and when WIPP should open for disposal operations. Before it could open WIPP, DOE must, at a minimum, (1) receive a RCRA Part B Permit from the State of New Mexico to operate WIPP as a storage and disposal facility and satisfy any relevant permit conditions; (2) receive CCA certification from EPA (i.e., a finding that there is a reasonable expectation that TRU waste would be contained), as well as satisfy any conditions issued pursuant to 40 CFR Parts 191 and 194; (3) complete SEIS-II and issue a ROD to begin disposal operations; (4) comply with the transportation emergency response and preparedness provisions of the LWA; and (5) complete any other relevant operating requirements pursuant to DOE orders (e.g., operational readiness review).

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# 6.0 ENVIRONMENTAL JUSTICE

## 06.01 General

### 06.01 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-159 | 3 | Susan Maret | Sierra Club National Nuclear Waste Task Force |
| E-012 | 20 | Charles Hyder | |
| SF4 | 66 | Deborah Reade | |
| SF4 | 107 | Kathy Sanchez | |
| SF4 | 124 | Juan Montes | |

**Comment:**
Commenters said that TRU waste transportation routes throughout the United States, and particularly in New Mexico, would run next to or through low-income and minority communities. Thus, these communities would have a higher-than-average likelihood of being impacted by an accident. Some commenters stated that SEIS-II does not adequately address the impacts to these communities in the event of a shipping accident and that there must be assurances that these communities receive emergency response training.

**Response:**
The routes presented and analyzed in SEIS-II are proposed routes based upon DOT regulations (49 CFR Section 177.825). The regulations require the carriers to use the interstate highway system, to the extent possible and reasonable, as the preferred route for shipping hazardous material. Where no interstate highway exists, the shortest reasonable route must be used. States or other recognized routing authorities also may designate alternate routes in accordance with procedures stated in 49 CFR Section 177.825. Additionally, the State of New Mexico invited tribes to participate in routing decisions, though none chose to do so. Section 5.8 of SEIS-II analyzes the environmental impacts, specifically looking for potential high and adverse impacts to low-income and minority populations.

Potential impacts to populations along specific routes would be small because of the few shipments transported along those routes. For instance, along St. Francis Drive in Santa Fe, 5,000 shipments would be expected throughout the campaign, resulting in an estimated 3 additional accidents, 3 injuries, and 0.4 fatality. In view of the conservatism of the estimates, the most likely impact would be zero fatalities. In addition, accidents would be random events that could occur on any segment of the transportation route and thus would not be likely to disproportionately affect minority or low-income populations.

DOE has conducted emergency response training for several communities along the transportation routes. DOE provides field incident/accident response exercises through its Transportation Accident Exercise (TRANSAX) and WIPP Transportation Exercise (WIPPTREX) programs. The purpose of the TRANSAX program is to demonstrate that participating tribal, state, local, and DOE emergency preparedness systems are capable of responding cooperatively and effectively to a transportation emergency involving a TRUPACT-II transporter. The WIPPTREX program is designed to help states and tribes achieve readiness for response to WIPP transportation emergencies and to assure them of DOE's ability to provide specialized technical assistance. Training will continue as required by the LWA in order to ensure that all communities are adequately prepared to deal with potential emergencies.

**06.01 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 6 | Mark Rudd | |
| ALB1 | 84 | Janet Greenwald | |
| ALB2 | 114 | Sandra Schroeder | |
| C-105 | 4 | Valerie Hookham | |
| C-166 | 11 | Elliott H. Libman, MSW | |
| CA1 | 7 | Richard Boren | |
| SF3 | 5 | Cathy Swedlund | |
| SF4 | 133 | Juan Montes | |
| SF6 | 84 | Pia Gallegos | |
| SF7 | 50 | Eric Ericson | |
| SF7 | 70 | Melissa McDonald | |
| SF7 | 101 | Linda Larson | |
| SF8 | 75 | Willem Malten | |

**Comment:**
Commenters said that New Mexico was chosen for the WIPP site because it is a poor and politically weak state, or that the government favors states with higher populations. Some stated that the WIPP site is located near the low-income and minority community of Loving, New Mexico, which has a higher-than-average likelihood of being impacted by releases from the facility. Other commenters stated that more attention needs to be paid to environmental justice analyses in SEIS-II.

**Response:**
The site selection process, described in Subsection 2.2 of the 1980 FEIS, relied on a series of criteria that included characteristics of the salt beds and surrounding geological layers, tectonics, hydrology, mineral potential, existing boreholes, population density, and land availability. With the exception of mineral potential (oil, gas, potash), none of the criteria were based on social, political, or economic factors. Low population density in the vicinity of the WIPP site is a desirable safety factor, not a political consideration.

Section 5.8 of SEIS-II indicates that potential high and adverse impacts (described in Section 4.1.6) may occur as a result of waste transportation activities. However, accidents would be random events that could occur on any segment of the transportation routes within and outside of New Mexico and thus would not be likely to disproportionately affect minority or low-income populations. For disposal at WIPP, normal disposal operations would not cause significant adverse human health or environmental impacts, and there would be no impacts that could disproportionately affect minority or low-income populations, including those in Loving or Carlsbad, New Mexico. Although possible, the very low probability of the more severe accidents would not be expected to result in disproportionately high and adverse effects on minority or low-income populations (see Section 5.8). Both Carlsbad and Loving have high percentages of minority populations (see Figure 4-11). Carlsbad is slightly farther from WIPP than Loving, but its larger population results in greater calculated impacts than Loving from exposure to a postulated accident at WIPP.

**06.01 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-001 | 1 | Michael Jansky | United States Environmental Protection Agency Region 6 |

**Comment:**
"The Council on Environmental Quality has issued a draft guidance for addressing Environmental Justice (EJ) under the National Environmental Policy Act (NEPA). The guidance seeks to advance the goals of Executive Order 12898: Federal Actions to Address Environmental Justice in Minority and Low-Income Populations. EPA believes that there are elements of the guidance that relate to this SEIS, for example, the Rocky Flats Technology Site and the Savannah River Site. Both of these sites have been reported as having environmental justice concerns. EJ should be considered in evaluating the alternatives in the Final Statement."

**Response:**
Section 5.8 of the Final SEIS-II assesses the potential for environmental justice impacts at all treatment sites, including RFETS and SRS, and at WIPP. This analysis is consistent with draft guidance from both CEQ and DOE.

**06.01 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-013 | 5 | Jennifer Salisbury | New Mexico Radioactive Waste Consultation Task Force |

**Comment:**
"Page 1-7: In the last bullet (Changes in the Status of Relevant Regulations) of the section discussing the need for a second Supplemental Environmental Impact Statement, there is mention of Presidential Executive Order 12856 -- Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements. DOE should similarly include a reference to Presidential Executive Order 12898 of February 11, 1994 -- Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations."

**Response:**
The discussion of executive orders in Section 1.4 has been deleted to focus on the regulations of 40 CFR Parts 191 and 194.

## 06.01 (05) General

| Document Number | Comment Number | Name | Organization |
|---|---|---|---|
| C-157 | 7 | Wendy Lynne Botwin | |

**Comment:**
"I am concerned about the impacts on the cultural resources on the WIPP land and about the impacts on minority and low-income people in the surrounding area."

**Response:**
SEIS-II examined the entire range of reasonably foreseeable environmental impacts, including those to cultural resources in the vicinity of the WIPP facility. Under some alternatives, decommissioning activities may adversely affect some cultural sites and mitigation measures would be taken to protect them. Impacts to cultural resources are discussed in Sections 5.1.4, 5.2.4, 5.3.4, 5.4.4, and 5.5.4 of SEIS-II.

For disposal at WIPP, normal disposal operations would not cause significant adverse human health or environmental impacts, and there would be no impacts that could disproportionately affect minority or low-income populations (described in Section 4.1.6). Although possible, the very low probability of the more severe accidents would not be expected to result in disproportionately high and adverse effects on minority or low-income populations (see Section 5.8).

# 7.0 FACILITY ACCIDENTS

## 07.01 General

### 07.01 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-012 | 16 | Kathleen E. Trever | State of Idaho Oversight Program |

**Comment:**
"Page G-2, Second paragraph The text states 'Impacts from external dose pathway ... are not included in the impacts reported here.' As defined by EPA 400 for emergency planning purposes, the plume phase of an accident includes the contribution from inhalation, ground surface deposition, and immersion or external exposure from the plume. To be consistent with the format of other EIS documents published by the DOE, we suggest including these pathways even if they are several orders of magnitude below the inhalation dose."

**Response:**
For the overall WIPP SEIS-II analysis, most of the calculations were performed using the PE-Ci unit of activity, which is based on the relative inhalation hazard of a radionuclide compared to plutonium-239. External dose calculations were not possible because radionuclide-specific inventories were not available. This is not a problem, however, because screening calculations were performed that demonstrated that doses from the inhalation pathway are much greater than those from the external pathway. On a radionuclide-specific and consolidation site-specific screening basis, the dose from the external pathway is less than 0.003 percent of the inhalation dose, even in the RH-TRU waste inventory. For the CH-TRU waste inventory, the inhalation dose was 36,000 times the greatest external dose. If the external doses were to be included in the reported values, they would be lost in the rounding off of the numbers.

### 07.01 (02)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-012 | 21 | Kathleen E. Trever | State of Idaho Oversight Program |

**Comment:**
"Page G-19, The final SEIS should describe the location of the nearest public access point for the maximally-exposed individual (MEI). Also, was INEL-specific 95% annual meteorological data used to determine highest concentration factors?"

**Response:**
The final SEIS-II contains an additional column in Table G-12 that describes the general release location and presents the location of the MEI. All sites' meteorological data were used in determining the highest concentration factor; 95 percent annual meteorological conditions were assumed for all cases.

**07.01 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 225 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page G-17. Line 4. Q is defined as the radionuclide or hazardous metal inventory of a waste container (from Appendix A). Appendix A provides radionuclide inventories only on a per treatment site basis. Additional math is required to convert the data to a per drum basis. It is not possible to verify independently the health impacts data presented in Tables G-13, G-16, and G-19."

**Response:**
In SEIS-II, the radionuclide "Q" values are indicated in Table G-4 and the metal "Q" values are indicated in Table G-6. The text of the description of the "Q" term has been changed to refer to these specific tables.

**07.01 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-012 | 22 | Kathleen E. Trever | State of Idaho Oversight Program |
| C-152 | 228 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
Two commenters questioned DOE's method for calculating impacts from treatment accidents, as discussed in Section G.2.4. One of the commenters said that the maximally impacted sector should be based on the highest x/Q for that particular area. The commenter said that population-weighted sectors produce the highest person-rem exposure used in determining LCFs, but the MEI and nearest public access should be based on the highest annual average x/Q. The other commenter stated that the description of consequences of treatment accidents in Section G.2.4 does not allow the reader to independently verify the calculations. The commenter suggested that the discussion include the equations used for the calculations of the population-weighted atmospheric dispersion values and for the calculations of the population consequences in a single 22.5-degree sector.

**Response:**
DOE used 95th percentile acute atmospheric dispersion factors (E/Q) to calculate consequences to the MEI from acute release scenarios. The population-weighted dispersion factors were computed by the GENII code and are presented in Table G-11. For those interested in the specific details of the code algorithms, the code documentation is available in the public reading rooms listed in the Final SEIS-II.

For a given acute release, the code determines which of the sixteen compass-direction sectors would receive the greatest population dose. GENII calculates and compares the sums of the [population in sector i] multiplied by the [air dispersion factor not exceeded 5 percent of the time in sector i] for each sector. Each sector calculation is composed of calculations for 10 segments with linked populations and dispersion factors.

**07.01 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 229 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page G-30. Lines 3 through 5. Statement: 'Intakes of radionuclides could result in a dose of up to 14,800 rem, with a corresponding probability of an LCF of greater than 1.' Numerically, a probability is a dimensionless number with values between 0.0 and 1.0. 0.0 indicates that the event cannot occur and 1.0 indicates that the event will occur with absolute certainty. A probability cannot be greater than 1.0. Also, a TEDE of 14,800 rem may be a lethal dose (rather than an LCF) even for transuranic wastes where internal doses are delivered over many years."

**Response:**
Text in Section G.2.4.2 of SEIS-II has been revised to correct the inaccurate statement and clarify the potential consequences.

**07.01 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 95 | John Leahigh | |
| ALB6 | 13 | Catherine O'Neill | |
| ALB6 | 66 | David Pace | |
| C-141 | 40 | Margret Carde | Concerned Citizens for Nuclear Safety |
| E-056 | 15 | Linda Hibbs | |
| SF4 | 51 | Deborah Reade | |
| SF7 | 95 | Linda Hibbs | |
| SF7 | 110 | Jill Cliburn | |

**Comment:**
A number of commenters raised the issue of human error as a cause of accidents, stating that SEIS-II had not adequately analyzed human error as an accident initiator and therefore underestimated potential consequences. One commenter stated that the consequences of "high-probability, high-consequence" events needed to be analyzed.

**Response:**
The estimated accident frequencies presented in Appendix G of SEIS-II reflect a number of accident initiators, including human error. DOE does not believe there are any "high-probability, high-consequence" accidents that could occur under the SEIS-II alternatives. Facilities and operations are designed to prevent such accidents.

SEIS-II analyzed the consequences of a spectrum of postulated accidents with low to high frequencies of occurrence that could occur at treatment sites, storage sites, and at the WIPP facility (see Section 5.1.10 for the Proposed Action and Appendix G in SEIS-II). DOE believes that the risk of these accidents is low, taking account of the frequency of their occurrence and their potential consequences. DOE facilities maintain administrative controls, including standard operating procedures and active health and safety programs, to prevent or minimize the occurrence of accidents and their potential consequences. The currently existing and proposed facilities included in the SEIS-II alternatives use engineered safety systems, barriers, and administrative controls to prevent accidents and to minimize consequences if they were to occur.

**07.01 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF1 | 99 | Tom Udall | Attorney General of New Mexico |
| SF5 | 82 | Michael Collins | |

**Comment:**
Two commenters said that SEIS-II failed to address consequences on facilities caused by sabotage or nuclear terrorism.

**Response:**
DOE does not believe that sabotage or terrorist actions directed at TRU waste on DOE sites (i.e., treatment or storage facilities) are credible scenarios because the consequences would not warrant such an effort. Numerous accident scenarios have been included in SEIS-II that would have consequences similar to or greater than those from any terrorist activities.

**07.01 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 59 | David Mitchell | |
| E-056 | 19 | Linda Hibbs | |
| SF4 | 51 | Deborah Reade | |

**Comment:**
A few commenters said the examination of drum fires for lag storage and in the WIPP underground was inadequate. For lag storage, one commenter said that DOE did not consider a drum fire to be a credible accident. The commenters stated that the long storage periods of some alternatives, combined with the possibility of imperfect, corroded, or incorrectly installed drum filters, would result in the accumulation of flammable gases in some drums, leading to fires or explosions. One commenter also stated that drum fires have already occurred in unvented storage drums. Another commenter stated that in the underground during the operational period, such a fire could occur from such causes as spontaneous combustion from brine interaction with the metal waste drums. The underground scenario of a fire inside a closed waste drum and involving a single drum was considered optimistic by the commenters.

**Response:**
The consequences of a drum fire in each lag storage facility were evaluated for waste meeting the planning-basis WAC and treated by shred and grout (see Section G.3.2, scenario S2 in SEIS-II; the consequences are reported in Section G.3.3). The waste treated to WAC in the lag storage facilities would have a greatly reduced flammability hazard compared to that of uncharacterized or untreated waste. Uncharacterized waste not meeting the WAC, stored in sealed drums, would be much more susceptible to an accumulation of flammable gases. As that waste treated to WAC remained in lag storage, it would be routinely monitored for bulging or other signs of gas accumulation. Although the lag storage periods could last for long periods of time, the amount of time any one drum would spend in storage would be 20 years or less, assuming a “first-in, first-out” storage strategy to limit the need for repackaging or overpacking. Additional discussion has been added to Appendix F, presenting the analysis of waste lag storage times.

All drums of TRU waste would be fitted with a carbon composite, passive filter to allow gases to escape. Each drum would have a new filter, and it is very unlikely that the new filters would corrode and prevent a gas release. Improper installation of a filter, although unlikely, would also not prevent gas release.

The consequences of a single container fire in the underground are described in Section G.4.2 and its consequences are presented in Section G.4.3. No sources of externally initiated fires that would affect numerous waste containers were identified. A spontaneous fire in a single waste drum was considered possible, although unlikely because such a fire would probably extinguish itself. No mechanism was identified that would allow this fire to breach its own container or to initiate a fire in another container. If such a mechanism were to be identified, DOE would evaluate the likelihood and consequence of its occurrence.

**07.01 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF4 | 52 | Deborah Reade | |

**Comment:**
“You also don't include storage building fire scenarios or a waste handling building fire, even under your earthquake scenarios. Fire in a storage facility building or in the repository itself is a distinct possibility with the amount of flammable gases that are present. Earthquakes are often associated with fire.”

**Response:**
SEIS-II analyzed the consequences of a spectrum of postulated accidents, in categories that can be described as high-probability, low-consequence; moderate-probability, moderate-consequence; and low-probability, high-consequence. There was no intent to analyze consequences of all potential facility accidents but rather to show the range of accident consequences over the entire scope (treatment, storage, disposal) of multiple alternatives, providing the public and decisionmakers with information on the relative and absolute consequences of a spectrum of potential accidents for each alternative.

To evaluate the category of low-probability, high-consequence accidents that would include total building fires, the SEIS-II analysis evaluated a beyond-design-basis earthquake. This accident was selected, in part, to maintain comparability between alternatives with different final waste forms and between treatment and storage accidents. Storage facilities, considered to be a metal shell or air support building with few accident-initiating energy sources available, were considered to have a minimal fire hazard even for waste treated to WAC. Accumulation of flammable gases in these facilities, which were assumed to be subject to daily operations involving waste movement and monitoring (for evaluating consequences to workers as well), was considered unlikely. The WIPP Waste Handling Building has an active ventilation system that would prevent buildup of gases.

**07.01 (10)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF4 | 54 | Deborah Reade | |

**Comment:**
"Under the Proposed Action and Action Alternative 1 for disposal accidents at WIPP, you state that radionuclide impacts would predominate in all accidents, yet the drum drop and the puncture scenarios, for both disposal and storage accidents which you say would be high-frequency, low-impact accidents, predict life-threatening effects to the maximally-exposed involved worker for methylene chloride as well as irreversible nonlife-threatening impacts from other volatile organic compounds. This is not a low-impact accident, and it appears to be more severe than your predicted radiological effects."

**Response:**
The commenter is correct. Radionuclide consequences would dominate for members of the public and the noninvolved worker, but chemical consequences could dominate for workers. Section G.4.3.1 in SEIS-II has been revised to clarify the description of the consequences.

**07.01 (11)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB4 | 22 | Andy Lenderman | |

**Comment:**
"It just can't possibly be safe. There have already been 13 accidents, as I understand, at the WIPP site."

**Response:**
Thirteen industrial accidents, including falls, back strain, and insect bites, occurred at WIPP during 1996 and were reported to the Occupational Safety and Health Administration (OSHA). DOE's SEIS-II accident evaluation found no consequences to the public as a result of anticipated or unlikely accidents from routine WIPP operations. DOE also evaluated some extremely unlikely operational and transportation accidents and found that these could have

adverse consequences on members of the public. DOE's policy is to operate all facilities and conduct all DOE activities in a manner that provides the highest level of safety for members of the public and workers. Detailed information is presented in Appendix G in SEIS-II.

Section 5.1.11 of SEIS-II shows that the occupational injury and fatality rate is more than 50 percent lower for DOE and its contractors than for private industry.

**07.01 (12)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB6 | 86 | Debra Tenney | |
| C-164 | 3 | Mansi Kern | |

**Comment:**
Commenters stated that one major accident could devastate the health of families, particularly fetuses, and acutely affect environmental air quality and the local economy.

**Response:**
DOE's SEIS-II accident evaluations found no such consequences to the public as a result of accidents from routine WIPP operations. DOE also evaluated unlikely operational accidents, including likely and unlikely transportation accidents, and found that these could have adverse consequences (including deaths) on members of the public, in the event that such an accident occurred. DOE's policy is to operate all facilities and conduct all DOE activities in a manner that provides the highest level of safety for members of the public and workers. Detailed information is presented in Appendix G in SEIS-II.

**07.01 (13)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-012 | 18 | Kathleen E. Trever | State of Idaho Oversight Program |
| A-012 | 19 | Kathleen E. Trever | State of Idaho Oversight Program |
| ALB3 | 58 | David Mitchell | |
| C-151 | 27 | Don Moniak | Serious Texans Against Nuclear Dumping |

**Comment:**
Commenters stated that WIPP waste accident and exposure scenarios minimized consequences. One commenter said that according to the scenarios, workers evacuated just in time, which would be inconsistent with the chaotic and random nature of accidents. Another commenter said the exposure of four average breaths by workers seemed inappropriate, as did the assumption that all radionuclide releases would plate to the walls, thereby reducing consequences to the public and noninvolved workers. Commenters requested that a reference and explanation be provided for the estimated airborne release fraction of 0.001 of the entire inventory and for the plateout of released particles onto interior building surfaces.

**Response:**
DOE disagrees that WIPP accident scenarios minimized consequences. For example, under the waste hoist failure accident scenario, SEIS-II states that any involved workers near the base of the waste shaft would be killed in the accident. However, DOE has revised some calculations of involved worker consequences. Estimates of involved worker consequences have a great deal of inherent uncertainty: if the worker is nearby, the accident consequences may be catastrophic; if the worker is not in the vicinity, the accident consequences may be zero. The use of four average breaths in the SEIS-II accident scenarios has been replaced by an exposure time period, in order to better assess worker exposure to an average concentration of radionuclides or hazardous chemicals contained in a plume released prior to activation of a nearby continuous air monitor.

References have been added to SEIS-II for the release fractions. The plateout factors have been deleted from all accident scenarios involving intact facilities, increasing the overall release.

**07.01 (14)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 132 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 5-33. Lines 3 and 4 from bottom. The assumption that there would be no dose to the maximally exposed involved worker in the T1 and T2 accidents is apparently based on the assumption stated on page G-11 ('The involved workers, positioned outside of the glovebox, were assumed to exit the facility immediately and thus would escape impact'). The assumed geometry and operational procedures need to be described in more detail so that the reasonableness of this assumption could be evaluated."

**Response:**
Accident T1 is the mispositioning of a drum about to be filled with TRU waste treated to planning-basis WAC. Accident T2 is a fire occurring in a waste drum just after it has been opened during the characterization process. Although the exact design of the waste-handling facilities may vary, based on existing facilities, it is reasonable to assume that such operations would occur within a glovebox-type containment structure. Some TRU elements may be pyrophoric as fine powders and present a hazard from inhalation; it was assumed that a fire suppression system within the glovebox would effectively contain resuspended radionuclides. Under both of these accident scenarios, breaching of the glovebox is not anticipated and involved workers would be expected to remain free of contamination. Additional explanation has been provided in SEIS-II.

**07.01 (15)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 134 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 5-35. We were able to approximately reproduce the LCFs for the RH-TRU Waste Storage Accident in Table 5-17 by using the overall release factor for stored CH-TRU waste from Page G-40 ($3.125 \times 10^{-6}$) rather than the values described on this page for RH-TRU ($6.25 \times 10^{-8}$). This overall RH-TRU release factor seems unreasonably low. Once again, the SEIS-II calculations are difficult to check because the specific input values are not given. It was necessary to retrieve numbers from two locations in Appendix 6 and one in Appendix A. We trust these were the values used in the calculation. Please provide more detail to enable the reader to reconstruct the calculation."

**Response:**
Additional details of the calculations used to determine RH-TRU waste accident consequences under the Proposed Action during a severe seismic event at Hanford and ORNL have been added to Appendix G of SEIS-II. The average PE-Ci content of RH-TRU waste at these sites is lower than that of CH-TRU waste. Also, a lowered release fraction was used for RH-TRU waste, accounting for the greater integrity of the RH-TRU waste container, which has quarter-inch-thick steel walls, compared to the integrity of a normal CH-TRU waste drum.

**07.01 (16)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 135 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 5-35 to 37. WIPP disposal accidents and their consequences are summarized in this section. More detail is provided in Appendix G.4. The WIPP Safety Analysis Report also contains a suite of WIPP disposal accident consequences. The SEIS-II scenarios and SAR scenarios are not identical. They differ in numbering, description, assumptions, and consequences. MEI and Involved Worker consequences are mostly greater in SEIS-II, while non-involved worker consequences are mixed. It is unnecessary and confusing to use different scenarios and assumptions in the SEIS-II than were used in the SAR. The scenarios in the SAR evolved over a number of years and influenced by discussions between DOE/Westinghouse and EEG. These SAR scenarios are more specific to WIPP conditions and should be used in the final SEIS-II."

**Response:**
The intent and level of detail of the accident analyses in a SAR and a NEPA document such as SEIS-II differ greatly. The SAR provides a detailed identification, selection, and analysis of all potential accidents in a facility, from initiation to consequence, in order to identify areas where

engineered barriers, safety systems, and controls are necessary to prevent accidents or mitigate their consequences. The SAR helps determine the level of system or control needed. While the SAR is very useful as a source of information, there is no need to duplicate WIPP SAR analyses in SEIS-II, and more information may be gained by not using previous analyses. The SEIS-II NEPA accident analyses are more broad-based, covering the entire scope (treatment, storage, disposal) of multiple alternatives, providing the public and decisionmakers with information on the relative and absolute consequences of a spectrum of potential accidents for each alternative. The SAR is more detailed for specific facilities, but the SEIS-II analyses use a prudently conservative approach to estimate a reasonable upper limit of potential accident consequences.

The Draft SEIS-II analyses used information from the 1995 final WIPP SAR. The 1996 draft WIPP SAR was not used because it was preliminary and presented material that was subject to change. Since publication of the Draft SEIS-II, the 1996 WIPP SAR has been finalized and has become available. For the Final SEIS-II, the 1996 final WIPP SAR was examined and incorporated for changes critical to SEIS-II analyses and information.

**07.01 (17)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 136 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 5-36. The frequency of various accident scenarios [is] different in SEIS-II than in the 1996 Draft Safety Analysis Report (SAR). An explanation should be provided."

**Response:**
The accident frequency estimates were based on the documents cited in Section G.4.3 of SEIS-II and are shown below compared to the values in the 1996 Final SAR, which was finalized in March 1997. Accident frequency values have been changed in SEIS-II to reflect the 1996 SAR updates.

| SEIS-II | 1996 SAR |
|---|---|
| Accident Frequency | Accident Frequency |
| W1 0.01 | CH4 0.01 to 1 x $10^{-4}$ |
| W2 0.01 | CH3 0.01 to 1 x $10^{-4}$ |
| W3 0.01 | CH9 0.01 to 1 x $10^{-4}$ |
| W4 0.01 | [not evaluated] |
| W5 1 x $10^{-4}$, <1 x $10^{-6}$ | CH7 1 x $10^{-4}$ to 1 x $10^{-6}$, and <1 x $10^{-6}$ for CH-TRU waste drums with <8 PE-Ci |
| W6 1 x $10^{-6}$ | CH5 <1 x $10^{-6}$ |
| W7 0.01 (Panel 1) <1 x $10^{-6}$ (other panels) | CH11 5 x $10^{-7}$ |
| W8 1 x $10^{-4}$ to 1 x $10^{-6}$ | [not evaluated] |

All SEIS-II accident frequencies fall within the range of the 1996 SAR estimates.

**07.01 (18)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-012 | 17 | Kathleen E. Trever | State of Idaho Oversight Program |

**Comment:**
"Page G-6, Section G.1.3 If the information is available, the final SEIS should include the estimated probability of the selected accident scenarios (e.g. probability of a beyond-design-basis earthquake with a given magnitude."

**Response:**
Table G-7 in SEIS-II provides the estimated frequencies of the accident scenarios. The actual magnitude and frequency of a design-basis earthquake is different at each site, because each facility may have a different design base. A beyond-design-basis earthquake was selected for the SEIS-II analysis because the accident consequences would be comparable among different sites and final waste forms and with facilities being destroyed in all cases. A beyond-design-basis earthquake frequency of $1 \times 10^{-5}$ or less was assumed to cover a catastrophic accident at all sites.

**07.01 (19)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 152 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 5-67. The Radiological Impacts storage accidents for Action Alternative 1 in Table 5-34 are from Table G-28. We reproduced the calculation for population and MEI LCFs from the Earthquake Scenario. However, the maximally exposed non-involved worker should have only 0.4 LCFs and not 0.7 LCFs for a dose of 1,050 person-rem. We calculated only 760 person-rem for this calculation."

**Response:**
The difference in the calculated probability of an LCF to the maximally exposed noninvolved worker is the result of the analytical approach used in SEIS-II and described in Section G.1.1. This approach did not include the dose and dose-rate effectiveness factor (DDREF) for any year in which the annual effective dose equivalent (EDE) would be greater than 20 rem. The effect is to double the dose-to-risk conversion factor during these years. Annual doses above 20 rem EDE do not include a DDREF (see Section G.1.1).

**07.01 (20)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 220 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page G-1. Lines 31 and 32. Statement: 'The health impacts from acute exposures to radionuclides from accidental releases were calculated as described in Appendix F.' The statement is incorrect. Appendix F deals with human health impacts that may result from exposures to radioactive materials and hazardous chemicals during routine storage operations at waste storage sites and during routine disposal operations at the WIPP."

**Response:**
The reference "as described in Appendix F" is indeed incorrect and has been deleted.

**07.01 (21)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 223 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page G-13. Line 40. Statement: 'Because of the serious nature of the accident, the involved workers were assumed to be fatally injured.' There should be an indication of the number of workers involved."

**Response:**
The text has been revised to state that any involved workers present at the time of the accident would be killed; however, it is not possible to present a more exact estimate of the number of fatalities that could occur.

**07.01 (22)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 231 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"G-42. Table G-28. Insufficient data are provided in the text to verify the dose calculations. The text does not provide a reference for the dose conversion factor, DCF, for PE-Ci, and it is not possible to calculate the source term for accident scenario 3 (earthquake) because there is no reference to the number of waste drums involved."

**Response:**
Section G.3.2 of SEIS-II has been updated to include parameters used in the calculations of accident impacts (see Table G-28). In cases where intermediate values that are not explicitly tabulated in the document were used (i.e., the number of waste drums involved in a seismic event being the equivalent to the total site waste volume divided by the container waste volume), new tables have been added. Dose conversion factors are given in Section G.1.1.

**07.01 (23)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 224 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page G-14. Table G-9. The text on page G-13 states that thermally treated waste is placed in 5 drums simultaneously. Cell (T4, Number of Drums) shows 4.9 drums. The difference is small, but the lack of consistency is confusing."

**Response:**
The text in Section G.2.2.2 of SEIS-II has been revised to reflect the use of 14 drums in this analysis.

**07.01 (24)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 230 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page G-36. Lines 28 and 29. Statement: 'The fission products contributing the most to external dose rates were Cs-137/Ba-137m and Co-60....' Co-60 is an activation product and not a fission product."

**Response:**
Use of the term "fission product" has been changed to "fission and activation product" throughout Section G.3.1.1 to more accurately describe the origin of all radionuclides emitting x- or gamma radiation.

**07.01 (25)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-012 | 20 | Kathleen E. Trever | State of Idaho Oversight Program |
| C-152 | 226 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 227 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
One commenter said that the quantities “E/Q” and “Population-Weighted E/Q” should be defined in the SEIS-II Glossary and that “E/Q” should be added to the “Acronyms and Abbreviations” section of SEIS-II. Also, one commenter said that the use of E/Q terminology should be replaced with “X/Q” to avoid confusion.

**Response:**
The SEIS-II Glossary and the Acronym and Abbreviations section have been revised to incorporate the commenters’ suggestions.

**07.01 (26)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 57 | David Mitchell | |

**Comment:**
“In Appendix G, it says, ‘A waste [drum] fire is not an anticipated event during the lifetime of any of the waste treatment.’ What happened to Rocky Flats in 1969 to cause that?”

**Response:**
The Rocky Flats fire of 1969 occurred in a plutonium production facility, not a waste treatment facility. New waste treatment facilities would be constructed to current construction standards, which have changed markedly since 1969. Existing facilities that may be used for repackaging TRU waste to meet the WAC must meet all current building standards for fire prevention and suppression. The environmental consequences of waste treatment, including potential consequences of accidents involving fires, would be evaluated at all waste treatment sites.

**07.01 (27)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-141 | 35 | Margret Carde | Concerned Citizens for Nuclear Safety |

**Comment:**
“WIPP waste includes 141 radioactive elements, 47 organic and 13 non-organic contaminants of concern (CoCs). An individual exposed for one hour to organic and inorganic CoCs at concentrations meeting emergency response 3 (ERG3) guidelines would develop or experience a life-threatening effect. Exposure to ERG2 concentrations for one hour result in an individual ‘experiencing or developing irreversible or other serious health effects or symptoms which could impair an individual’s ability to take protective action.’ Although exposure time for SEIS II accident scenarios is considered to be less than 30 minutes, the ERG guideline concentration values indicate how dangerous these chemicals are. DOE's failure to consider exposure to these chemicals beyond a ½ hour limit seriously underestimates real dangers which could occur underground.”

**Response:**
These concentrations in the WIPP underground are very unlikely and could occur only during an accident situation. Taking into account the size of the WIPP underground, the nature of the hazardous chemicals, and the operation of the ventilation system, DOE believes that a scenario of dangerously high chemical concentrations in the WIPP underground for extended periods of time is not reasonably foreseeable.

**07.01 (28)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF4 | 55 | Deborah Reade | |

**Comment:**
"You state that ingestion pathways are not analyzed for effect because DOE would buy up all the contaminated foods. But for how long?"

**Response:**
The potential widespread contamination of foodstuffs from a severe transportation accident involving TRU waste was not specifically evaluated in SEIS-II, because this type of accident would be extremely unlikely (i.e., result only from a series of severely unlikely circumstances). If such an incident were to occur, DOE plans call for the excavation of the contaminated soil and implementation of appropriate measures to mitigate the consequences for as long as necessary to ensure protection of the public health and safety.

**07.01 (29)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-012 | 23 | Kathleen E. Trever | State of Idaho Oversight Program |

**Comment:**
"Page G-53, Section G.4.2 The impact from a waste box accident should also be described using a probability based on the number of waste boxes received, relative to the total number of shipments made to the facility."

**Response:**
The relative amount of waste that may be packaged in standard waste boxes as compared to drums is not known. Probabilities of facility accidents are presented for the reader and are not considered in the calculation of consequences. As noted in Section G.4.2, consequences from an accident involving a standard waste box would be approximately 60 percent higher than the same accident involving a drum. Also in Section G.4.2, standard waste boxes would not be used for the higher-density waste of Action Alternatives 2 and 3.

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# 8.0 GENERATOR SITE OPERATIONS

## 08.01 General

### 08.01 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 45 | Harry Kinney | |
| ALB2 | 79 | Don Kidd | |
| ALB4 | 12 | Subhas Shah | |
| C-012 | 7 | Eleanor Ponce | |
| SF2 | 32 | Alonzo Gallegos | |
| SF4 | 38 | Bob Forrest | |

**Comment:**
Several commenters raised concerns about the possibility of natural or externally initiated accidents at LANL, including wild fires (such as those recently experienced near LANL), tornadoes, and an airplane crash. Several commenters said tornadoes were of particular concern because of the current temporary storage configuration.

**Response:**
Across the DOE complex, TRU waste is found in a variety of forms and in a variety of containers and storage facility designs. For the most part, TRU waste at LANL is in combustible forms. Each site, including LANL, maintains safety programs that reduce the risk and consequences of a fire. The natural disaster analyzed in SEIS-II is an earthquake, which has a low probability of occurrence. The probability of a tornado at LANL is lower than that of an earthquake, such that risks are correspondingly low.

LANL's TRU waste storage area is located at TA-54 (Area G) on Mesita del Buey. The vegetation on the mesa top is characterized as a pinon pine/juniper woodland with a blue grama grass understory. Mesita del Buey is located between Pajarito Canyon on the south and Cañada del Buey to the north. The actual TRU waste storage areas are located on cleared land areas within temporary dome structures that have been built with a fire-retardant fabric material. Each dome building is equipped with an emergency sprinkler system. In addition, TA-54 personnel maintain a 30,300-liter (8,000-gallon) water tanker for fire emergencies. Brush, weeds, and trees have been cleared away from the temporary dome buildings to reduce the threat of wildfire. Yearly ground maintenance keeps fire fuels at a manageable level.

The most recent major NEPA document for LANL, the final EIS for the *Dual Axis Radiographic Hydrodynamic Test Facility* (DARHT) (DOE/EIS-0228) at LANL, evaluated the need for assessing the impacts of an aircraft crash. The preliminary hazards analysis of the DARHT EIS found an aircraft crash at the site to be not reasonably foreseeable, therefore requiring no further evaluation. Major factors were the limited number of flights over LANL, the small amount of aircraft traffic in the area, and the distance of the facility from the airport. These factors would also apply to waste treatment and storage facilities at LANL. DOE is preparing a site-wide EIS for LANL that examines accident impacts for the entire site.

The WIPP facility is intended to provide a permanent solution to the disposition of TRU waste and would reduce the potential human health impacts from an accident involving stored TRU waste at storage sites such as LANL.

**08.01 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-013 | 20 | Jennifer Salisbury | New Mexico Radioactive Waste Consultation Task Force |
| ALB3 | 100 | Jeffrey Rich | |
| C-059 | 1 | Sam Volpentest | Tri-City Industrial Development Council |
| SF1 | 1 | Richard Deyo | |
| SF1 | 2 | Richard Deyo | |
| SF3 | 15 | Myla Reason | |
| SF3 | 18 | Myla Reason | |
| SF3 | 95 | Anhara Lovato | |
| SF8 | 25 | Jean Nichols | |

**Comment:**
Several commenters raised concerns about the locations of areas with existing contamination at DOE sites and environmental remediation of contamination at the sites. Commenters' concerns included the desire for the Hanford cleanup to begin as soon as practicable (while being consistent with regulatory and technological constraints), past practices at LANL that resulted in unknown locations and levels of environmental contamination, and the need for identifying solid waste management units and key TRU waste management facilities at each site.

**Response:**
SEIS-II examines the issues and environmental impacts of treating and storing TRU waste at generator sites and disposing of the waste at the WIPP facility. Issues associated with remediating existing environmental contamination at DOE sites are beyond the scope of SEIS-II and would be the subject of future DOE NEPA or Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) reviews.

With respect to buried TRU waste, the Additional Inventories under Action Alternatives 1, 2, and 3 in SEIS-II were developed using the best available information to estimate the environmental impacts of waste disposal at the WIPP facility.

Identifying the locations of existing environmental contamination (such as solid waste management units) is not appropriate or within the scope of SEIS-II. Many of the treatment and storage facilities included in the SEIS-II alternatives are prospective facilities that may or may not be constructed.

**08.01 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB5 | 75 | Paul Anderson | |
| C-118 | 7 | David Proctor | |
| CA1 | 50 | Dick Means | |
| OR1 | 7 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |

**Comment:**
Some commenters said they were concerned about the current storage of TRU waste at generator sites. Some commenters said storage conditions at DOE sites are inadequate and unsafe and expressed concern about the safety of the surrounding populations, while another stated that TRU waste was stored safely at present and such storage could continue as long as institutional controls were maintained.

**Response:**
The conditions of the current storage of TRU waste at generator sites are outside the scope of SEIS-II. However, as long as the waste is stored aboveground at generator sites, there is a potential for accidents and subsequent exposure of the public. If institutional controls were to be lost, waste containers would deteriorate over time and potentially disperse waste. Waste would also be vulnerable to intruders. WIPP would help to alleviate this problem.

**08.01 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-010 | 25 | Earl Leming | State of Tennessee Department of Environment and Conservation |

**Comment:**
"Chapter 5, Section 5.1.3 Biological Resources, page 5-6 'Analyses conducted during the Draft WM PEIS determined that construction and operation of TRU waste treatment facilities should not have major adverse effects …' These analyses should be considered questionable since the Draft WM PEIS is not yet final and is also in question."

**Response:**
The Draft WM PEIS has now been finalized, and these conclusions did not change in the Final WM PEIS (Section 8.7).

**08.01 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 126 | Deborah Reade | |

**Comment:**
"It is interesting that the DOE doesn't seem to feel that they will lose control of all the other waste that is stored or buried at DOE facilities."

**Response:**
For purposes of analysis, SEIS-II assumed that there could be eventual loss of institutional control at the generator sites. SEIS-II focuses on TRU waste. Other types of waste, except to the extent that they might contribute to cumulative impacts, are not within the scope of SEIS-II. Other types of waste are considered in other DOE NEPA documents, such as the WM PEIS.

DOE intends to maintain control of waste at its sites as long as it occupies the sites, and it does not intend to cease occupying any site until the site has been cleaned up and/or closed in accordance with the requirements of existing laws and regulations.

**08.01 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 123 | David Mitchell | |

**Comment:**
"The first missing chapter is the lag storage. How are you going to store the stuff for 160, 190 years, or even 35 years?"

**Response:**
There is no lag storage under the Proposed Action, although storage at the generator sites before TRU waste could be shipped to WIPP is discussed. Impacts of lag storage under the action alternatives are included in the analyses presented in Chapter 5 and related appendices in SEIS-II. Additional descriptions of potential lag storage operations have been added for Action Alternatives 1, 2, and 3 in Sections 3.2.2.1, 3.2.3.1, and 3.2.4.1.

**08.01 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-015 | 2 | Geri Velasquez | |

**Comment:**
"I stress that the loading of these drums be done with the utmost of care and that safeguards are in place to handle spills. Additionally, there should be procedures in place at the receiving location to handle damage in shipment."

**Response:**
DOE would conduct waste management operations at the sites and disposal operations at WIPP in a safe and effective manner. Numerous agencies, training programs, and administrative controls oversee the handling of the radioactive and hazardous waste at the sites and at WIPP. Each waste generator site would be responsible for developing procedures to ensure that no unacceptable exposures or releases occurred prior to waste shipment, including spill prevention and control plans. These procedures would be based on the characteristics of the waste of each site and the design of the facility used to handle, characterize, and package the waste. Numerous studies have been completed to ensure that waste containment would not be compromised during the handling, transportation, and disposal of the waste containers at WIPP.

The WIPP WAC Revision 5 defines safe levels for characteristics of the waste to ensure that it would be accepted for disposal. The integrity of the waste containers would be verified prior to shipment to WIPP and at the point of receipt in the Waste Handling Building. Upon receipt, the air within the shipping container would be sampled for radioactive and hazardous materials before the waste container would be opened. If contaminated air were discovered inside the shipping container, the waste container would be returned to the point of origin for remediation if it were safe to do so.

**08.01 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-136 | 4 | N. Watson | |

**Comment:**
"Many of the [generator] sites contain endangered species and prehistoric sites."

**Response:**
Each site must comply on a site-specific basis with regulations that protect threatened and endangered species and prehistoric sites. All generator sites must comply with the Endangered Species Act, and DOE requires that all sites have a cultural resources program to identify, evaluate, and (if necessary) mitigate impacts to identified cultural resources.

**08.01 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| OR1 | 4 | Don Hancock | Southwest Research and Information Center |

**Comment:**
"What kind of analysis have you done about the safety issues of that remote-handled waste at Battelle Columbus? What kind of analysis have you done in terms of the relative safety of that waste at Battelle Columbus as opposed to at Oak Ridge?"

**Response:**
No specific analysis has been performed regarding the relative safety of leaving RH-TRU waste at Battelle Columbus, rather than consolidating it at Oak Ridge. However, consistent with the preferred alternative stated in the WM PEIS, under the Preferred Alternative in SEIS-II DOE would ship RH-TRU waste at Battelle Columbus directly to WIPP rather than consolidating it at ORNL.

**08.01 (10)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF4 | 30 | Bonita McCune | |

**Comment:**
"What is a subcritical test? Instead of preparing to close the Nevada test site, the DOE has awarded a five-year, $1.5 billion contract to Bechtel Corporation to manage the test site and to maintain the capability to perform full-scale underground tests there and conduct subcritical underground tests. Subcritical tests will involve 50 to 500 pounds of high explosive charges and special nuclear materials such as weapons-grade plutonium, but they will be designed to occur without self-sustaining nuclear reactors or nuclear explosions; thus, the term 'subcritical.' The subcriticals are slated to take place some 980-feet below ground at the Nevada test Site. Subcritical underground tests increase the waste. Where is that waste going to go?"

**Response:**
DOE does not currently plan to excavate waste generated by underground subcritical tests at the NTS; therefore, no additional TRU waste will be generated for disposal at WIPP.

**08.01 (11)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF5 | 85 | Michael Collins | |

**Comment:**
"Although treatment of radioactive hazardous waste reduces transportation and disposal risks, DOE's current scientific and technological expertise in treating waste is not advanced enough to answer critical health and safety questions about dangers to workers and communities around generator sites."

**Response:**
The SEIS-II analyses of impacts from routine treatment operations and from accidents used existing facility design and planned operations. The analyses used a prudently conservative approach, resulting in impact estimates that would be reasonable upper limits of expected outcomes. To the extent possible, the assumptions used in these analyses were conservatively estimated, based on empirical research and SARs.

**08.01 (12)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| OR2 | 1 | Don Hancock | Southwest Research and Information Center |

**Comment:**
"There have been some historic [waste storage impact and accident] differences [at generator sites]; and it would be useful for that kind of information to be included in a document like this [because], whether it's by intent or not, this document is making decisions about storage."

**Response:**
Historic information on impacts at the generator sites is included in SEIS-II. For example, Table 5-34 in Section 5.2.10.2 contains information on potential storage accidents for Action Alternative 1 that is based on site-specific information. Similarly, Table 5-33 looks at the impacts from accident scenarios during storage. Results also are presented for the Proposed Action and other action alternatives.

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# 9.0 HEALTH AND SAFETY

## 09.01 General

### 09.01 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB6 | 24 | Dan Kerlinsky | |
| C-125 | 19 | Barbara H. Johnson | The Rio Grande Chapter of the Sierra Club |
| C-159 | 15 | Susan Maret | Sierra Club National Nuclear Waste Task Force |
| E-005 | 2a | Maurice Weisberg | |

**Comment:**
Several commenters said that, although the Draft SEIS-II presents the impacts from potential radionuclide and hazardous chemical exposures separately, there may be interactions of radioactive and hazardous chemicals that would result in adverse health impacts far worse than DOE has currently estimated.

**Response:**
Limited quantities of both radioactive and hazardous chemicals are expected to be released during routine operations, and the impacts of exposures to both types of chemicals are presented in SEIS-II. Impacts were estimated using reasonably conservative, bounding input parameters to produce a conservative health impact estimate. Little is known about the interaction of radionuclide and hazardous chemical exposure impacts, and there are no standardized guidelines to quantify such multiple exposures. Therefore, the impacts are presented to the extent that they can be supported by current scientific knowledge and guidance. Recommendations for allowable radiation exposures have been made by independent scientific organizations such as the International Commission on Radiological Protection (ICRP) and National Council on Radiation Protection and Measurements (NCRP) and are typically adopted as standards by U.S. regulatory and other agencies after a period of evaluation.

Synergistic effects of radiation and chemical pollutants are currently being studied, but at this time there is no direct evidence of effects at the low level of exposure allowed by current standards.

### 09.01 (02)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 105 | Lois Pribble | |
| ALB3 | 115 | Michael Dooley | |
| ALB4 | 57 | Lawrence Carter-Long | |
| ALB4 | 58 | Lawrence Carter-Long | |
| ALB6 | 14 | Catherine O’Neill | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-005 | 2b | Maurice Weisberg | |
| E-021 | 2 | Ruth Weiner | |
| SF1 | 109 | Mary Hall | |
| SF7 | 43 | Stanley E. Logan | |
| SF7 | 44 | Stanley E. Logan | |
| SF7 | 45 | Stanley E. Logan | |

**Comment:**
Some commenters said they were concerned about the possible effects of exposure to low levels of radiation. Some commenters stated that even very low doses of radiation are harmful and would cause cancer and other health effects. Other commenters stated that the linear, no-threshold hypothesis for induction of radiation effects at low doses had been discredited and that there was no scientific basis for assuming any impacts at low doses.

**Response:**
The radiation risk factors used in SEIS-II are consistent with the current recommendations of NCRP Report No.116 and ICRP Publication 60, and those of EPA, the NRC, and DOE. The risk factors are $5 \times 10^{-4}$ LCFs per person-rem for the public and $4 \times 10^{-4}$ LCFs per person-rem for occupationally exposed individuals. The use of these risk factors will result in an estimate of impact even at very low doses. The greater risk factor for the public results from children in this population. The risk factors are most accurately applied to a sizable, exposed population. For purposes of NEPA, risk values are applied to a hypothetical individual who may receive an estimated dose and are expressed as the probability of an LCF.

The merits of the linear no-threshold dose-response hypothesis and radiation hormesis (beneficial effects of radiation) at low levels of ionizing radiation are currently being debated in the scientific community. Cancer has been observed as a result of high radiation doses and dose rates and has been extrapolated to situations of low dose and dose rates. These data have been used as the basis for the linear no-threshold risk factors used in SEIS-II. The SEIS-II analyses have taken a prudently conservative approach that produces results expected to be the reasonable upper limit of possible impacts.

**09.01 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB4 | 85 | Wendy Cory | |
| ALB4 | 86 | Wendy Cory | |
| ALB6 | 114 | Glenna Voigt | |
| BO1 | 116 | Michele Kresge | |

**Comment:**
Several commenters said they were concerned about the potential for releases of radioactive material, stating that there were no guarantees of safety or zero release from TRU waste operations.

**Response:**
Guarantees of safety or promises of a zero release are very rarely, if ever, feasible for large-scale operations of any type. SEIS-II analyses show that there are risks associated with all of the chosen alternatives. DOE recognizes that eliminating all risk is impossible.

**09.01 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB6 | 7 | Ruth Weiner | |
| E-021 | 2 | Ruth Weiner | |

**Comment:**
"One of the deficiencies in the EIS is that the doses should be reported as doses in rem or as effective dose equivalents, not as latent cancer fatalities. All that does is add an enormous amount of uncertainty, and if you were to report that uncertainty, the difference between alternatives would wash out."

"I should like to emphasize at this point, that human health effects should always be reported as dose or effective dose equivalent (in rem or Sv) rather than only as latent cancer fatalities (LCF), as is done in Chapters 1 and 5 of the Draft SEIS. Dose calculation includes a large uncertainty associated with physiological partition models, and the conversion from dose to LCF, which is a simple multiplier (page F-2, for example) adds still more uncertainty. Had these uncertainties been reported in Chapters 1 and 5, they would have blurred differences between the alternatives. Indeed, the linear non-threshold theory of radiation-induced carcinogenesis, on which this extrapolation is based, is now the subject of a considerable controversy with the health physics community. This controversy has led the Health Physics Society to recommend that, for individual effective dose equivalents (EDEs) below <u>5 rem per year</u>, any quantitative risk assessment should not use the sort of simple multiplier used here, but should use a distribution of risks, and the low end of the distribution should be zero. In the present case, most of the individual doses reported fall below 5 rem/yr, so that the simple multiplier to yield LCF is not appropriate. I am in no way suggesting that the Draft SEIS analysis be repeated using risk distributions—such a complex calculation is unwarranted. Just report doses or EDEs instead of latent cancer fatalities. I would also like to reiterate that the use of a simple multiplier in the Draft SEIS does not indicate a deficiency in the SEIS methodology, but suggests that DOE and other federal and state agencies should bring their risk assessment protocols up to date."

**Response:**
Radiation doses and the resultant estimates of cancer fatalities are both provided in the appendices of SEIS-II. Only the estimates of LCFs are presented in the main text of SEIS-II, in part to facilitate the readability of the document. Because so many numbers are presented, in Chapter 5 in particular, presentation of both radiation doses and LCFs would have limited the readability and usefulness of the main text for the lay reader. The text of SEIS-II does not present only radiation doses because, although the principal potential human health effect from exposure to low doses of radiation is cancer, the connection between radiation dose and cancer fatalities may not be clear to many readers.

DOE is aware of the uncertainty in estimating cancer mortality resulting from radiation exposure, and a text box on the uncertainty of human health impact estimates has been added to Chapter 5. Because one of DOE's goals is to choose between alternatives, the consistent consideration of uncertainty among alternatives means that the relative differences in impact estimates among alternatives should not be affected.

The NAS, in a report by its Committee on Biological Effects of Ionizing Radiation (BEIR-V), notes that due to sampling variation alone, the 90 percent confidence limits for increased risk of cancer mortality due to an acute whole body exposure from low linear energy transfer (LET) radiation cover a range of about plus or minus 50 percent. (This estimate is in reference to a hypothetical exposure to 0.1 sievert (10 millirem) of a population of 100,000.) There are also other factors affecting the uncertainty of the estimate, such as the age at exposure. The NCRP, in Report No. 116, notes that these estimates are subject to many uncertainties:

- uncertainties of an epidemiological nature (statistical, underreporting of cancer, etc.)
- uncertainties in dosimetry (random error, bias, and other errors)
- uncertainties in relative biological effectiveness (RBEs) of different kinds of radiation
- uncertainties in the projection of risks from the period of observation to total lifetime
- uncertainties in the transfer of risks between populations with different underlying cancer incidence rates
- uncertainties associated with extrapolation of risk data from high-dose rate exposure to low-dose rate exposure

Uncertainty also increases at lower doses, such as many of those estimated in SEIS-II. The NAS acknowledges that derivation of risk estimates for low doses and dose rates through the use of any type of risk model involves assumptions that remain to be validated. At low doses and doses rates, the lower limit of the range of uncertainty in the risk estimates extends to zero, even when estimates are based on the linear no-threshold dose-response hypothesis.

DOE is aware of the position paper of the Health Physics Society and the controversy surrounding use of the linear no-threshold hypothesis and effects of low-level radiation. However, DOE will not adopt such positions until they have been adopted by cognizant health and environmental protection agencies such as EPA or the Nuclear Regulatory Commission.

**09.01 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-104 | 3 | Bob Slay | Savannah River Site Citizens Advisory Board |
| E-084 | 2 | Bill Lawless | Savannah River Site Citizens Advisory Board |

**Comment:**
Commenters stated that an appropriate review of the SRS health impact ought to be performed and that SRS personnel should conduct some of the reviews.

**Response:**
The commenters' comments were received and were considered for the Final SEIS-II.

**09.01 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-131 | 41 | Don Hancock | Southwest Research and Information Center |
| SF1 | 16 | Robert Neill | Environmental Evaluation Group |

**Comment:**
Two commenters said various DOE officials have recently stated that approximately 60 million people are at risk from potential releases from TRU waste. One commenter said the SEIS-II fact sheet titled "Why is the Waste Isolation Pilot Plant Important to the Nation?" contains a similar statement, yet the Draft SEIS-II contains no such information. Commenters said they would like to see the risks to those populations from the storage of all types of waste, not just TRU waste, since other waste can pose a larger threat to surrounding populations.

**Response:**
The statement concerning 60.9 million people identifies the size of the populations who live within 80 kilometers (50 miles) of sites where TRU waste is, has been, or may be generated in the near future. Most of these people live within 80 kilometers (50 miles) of sites with small amounts of waste, commercial waste, and sites where the waste has since been removed. The fact sheet did not describe the nature or magnitude of the risks to those individuals and is not a risk assessment. SEIS-II, however, does present risk assessments for populations near TRU waste treatment and storage sites, along transportation routes, and near WIPP.

Impacts related to TRU and other waste types have been examined in the WM PEIS. SEIS-II analyses focus only on TRU waste.

**09.01 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 129 | Deborah Reade | |

**Comment:**
"Because inhalation slope factors are unavailable for lead and mercury, these toxic metals are not analyzed at all for carcinogenic impacts, even though there are large amounts of lead in the waste."

**Response:**
The lack of inhalation slope factors for lead and mercury indicates that there is not sufficient evidence for EPA to consider them carcinogenic agents. Adverse health impacts from lead and mercury result from their toxicological impacts rather than from their risk of initiating a cancer. The toxicological impacts of lead and mercury were determined using their IDLH and Emergency Response Planning Guideline (ERPG) values (see Tables G-2 and G-3).

**09.01 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-028 | 4 | C. M. Wood | Centers for Disease Control |

**Comment:**
"[Why are] Latent Cancer Fatalities caused by site operations at the INEL in 1994, while still within safe limits, much higher than at any other DOE facilities? Since the purpose of this document is to assess the environmental impact of shipping transuranics to New Mexico, why are the LCF figures for 'normal site operations' at other DOE facilities relevant?"

**Response:**
The LCF estimate for the population within an 80-kilometer (50-mile) radius of INEEL was misprinted on pages S-24 and 4-41 of the Draft SEIS-II. The correct value is $2 \times 10^{-4}$ LCF to the population residing within 80 kilometers (50 miles) of the site. This information is relevant to the SEIS-II analyses because DOE is required to assess the environmental impacts of the alternatives, including waste treatment impacts at the treatment sites and the cumulative impacts of all activities at or near the site when combined with those treatment impacts.

**09.01 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 56 | David Mitchell | |

**Comment:**
"In the section titled 'WIPP Disposal Exposure Scenarios' on sheet [page] F-14, it says 'The external radiation dose received by noninvolved workers is considerably greater than the internal radiation dose; therefore, only the external doses were calculated.' That means that internal radiation dose from gaseous releases of radionuclides was ignored for the operational disposal scenarios.

"Then you flip over to Appendix G, and Impacts of Storage Accidents. And there it says, 'Inhalation was the only exposure pathway considered for radionuclides.' So apparently during the operational phase of WIPP, when people are putting in drums and the workers are working in the buildings, nobody ever inhales a radionuclide. But when you're storing the stuff somewhere, well, inhalation is the only exposure pathway considered."

**Response:**
The text cited from page F-14 of the Draft SEIS-II refers to routine operational impacts to involved workers, not noninvolved workers. The potential external dose to involved workers is much greater than the internal dose from gaseous radionuclides. (Note: gaseous radionuclides include only those that can pass through the filters on the waste containers, not airborne particulate radionuclides, which cannot pass through.) Any explicitly reported inhalation dose for the involved worker would not change the total involved worker dose/impact estimate because inhalation dose is significantly smaller than the external dose. The same would not necessarily be true for noninvolved workers; therefore, gaseous radionuclide doses were calculated for the noninvolved workers.

Under the accident scenarios discussed in Appendix G of SEIS-II, waste containers were assumed to be breached and particulate radionuclides released. For TRU radionuclides, inhalation of particulates is by far the dominant exposure pathway. Exposure scenarios under normal operating conditions (Appendix F) and accidents (Appendix G) are fundamentally different.

**09.01 (10)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-088 | 2 | Victoria Parrill | |

**Comment:**
"While estimated numbers of deaths among workers, crew, and public were given, there was no mention of estimated cancers and other medical conditions caused by exposure to radiation. This Environmental Impact Statement (EIS) is incomplete without those estimates."

**Response:**
The principal potential human health effect from exposure to radiation is cancer. Impacts of radiation dose received are reported in SEIS-II as the number of LCFs in an exposed population or the probability of an LCF for an exposed individual. Additional information is provided in Appendices F and G of SEIS-II. Readers should also refer to the text box labeled "Radiological Impacts Other Than LCFs" in Chapter 5.

**09.01 (11)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-002 | 4 | Gedi Cibas | New Mexico Environment Department |

**Comment:**
"Assumptions in the DSEIS about the location of maximally exposed individual (MEI) at WIPP are inconsistent with information provided in the RCRA Part B Permit Application. In the DSEIS (page 5-28), the MEI noninvolved worker from normal disposal operations at WIPP is located 200 meters east of the exhaust filter building, which would put him nearly 170 meters outside the Property Protection Area fence, half-way to the SPDV Salt Storage Area. Likewise, when evaluating WIPP disposal accidents (page 5-37), the MEI member of the public and the noninvolved worker were at the same location, 300 meters south of the exhaust filter building. This may be the closest physical access a member of the public has to the exhaust, but air dispersion modeling conducted for the RCRA Part B Permit Application (Appendix D10, and depicted graphically in Figures D9-2 and D9-3) indicate this location to be directly upwind of any releases from the exhaust filter building. According to the RCRA Part B Permit Application, the MEI noninvolved worker would be located 10 meters south of the exhaust outlet, while the MEI member of the public would be located on the north boundary of the Exclusive Use Area. DOE must reevaluate DSEIS calculations of risk based on releases to the air considering the information contained in other regulatory application documents."

**Response:**
The RCRA Part B Permit Application calculations assumed that a member of the public was located at the point of least atmospheric dispersion (highest concentration) along the facility boundary (the Exclusive Use Area boundary). In SEIS-II analyses, the MEI was assumed to be located at the point of least dispersion (highest concentration) where public access is unrestricted: within the Exclusive Use Area, 300 meters (980 feet) south of the Property Protection Area fenceline. For comparison, inhalation of carbon tetrachloride (using SEIS-II methods and assumptions) would result in a $5 \times 10^{-7}$ risk of cancer incidence for the MEI, while RCRA Part B Permit Application calculations would result in a $5 \times 10^{-8}$ risk of cancer.

The RCRA Part B Permit Application assumed the noninvolved worker to be located "10 meters [30 feet] south of the exhaust outlet." In Section 6.0, p. D9-32, the application states that calculations of occupational exposures assumed that "no dispersion takes place from the release of mine air on the surface from the exhaust fans to the site boundary." Both assumptions of location and no dispersion are conservative. In contrast, the SEIS-II analysis used site-specific meteorological data and atmospheric dispersion modeling to determine the location of the maximally exposed noninvolved worker. The SEIS-II noninvolved worker was assumed to be at different locations for chronic, routine exposures and acute exposures from accidents. For chronic, routine exposures, over the course of an entire year, the point of least dispersion (highest concentration) would be 200 meters (660 feet) east of the point of release. For an acute release such as could occur during an accident, a point of even lower dispersion (greater potential exposure) could occur for a short time 300 meters (980 feet) south.

The RCRA Part B Permit Application compared the calculated air concentration at the point of exposure to the Permissible Exposure Limit (PEL). To compare to SEIS-II results, this concentration was used to calculate a risk of cancer incidence. Inhalation of carbon tetrachloride (using SEIS-II methods and assumptions) by the noninvolved worker would result in a $4 \times 10^{-6}$ risk of cancer incidence, while RCRA Part B Permit Application calculations would result in a $3 \times 10^{-4}$ risk of cancer.

**09.01 (12)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 54a | David Mitchell | |

**Comment:**
"It's interesting that the maximum long-term concentrations of airborne particulate depositions occur 1.9 miles, 9,840 feet north of the source, which you can take as the exhaust ventilation shaft from WIPP."

**Response:**
Health impact analyses for the MEI were performed assuming an individual lived at the site boundary. Greater air concentrations are found at other on-site locations (e.g., 200 meters [0.12 mile] east of the exhaust air shaft), but the public is not permitted to reside there. Therefore, health impact estimates for a member of the public were made at the nearest off-site location—3,000 meters (1.9 miles) north—and for a noninvolved worker at a location 200 meters (0.12 mile) east. One of the differences between the two analyses is that the MEI breathes the air 24 hours a day, 7 days a week, and the noninvolved worker breathes the air 8 hours a day, 5 days a week.

**09.01 (13)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-002 | 8 | Gedi Cibas | New Mexico Environment Department |

**Comment:**
"One minor annoyance which permeates the entire document is the apparently arbitrary use of the terms 'probability' and 'percent chance' when referring to latent cancer fatalities (LCF). When the text is compared to tables listing probabilities, it is clear that the values in the text are multiplied by 100 whenever a 'percent chance of an LCF' is provided. This sort of mental gymnastic burden on the reader is unnecessary, and DOE should reconsider the use of 'percent chance' throughout the text."

**Response:**
Use of the term "percent chance" has been eliminated from the Final SEIS-II. The Draft SEIS-II made use of "percent chance" only in the text (not tables) when referring to the chance of an LCF occurring in an individual.

**09.01 (14)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-131 | 37 | Don Hancock | Southwest Research and Information Center |

**Comment:**
"Given the hundreds of workers involved with WIPP and included in the socioeconomic analysis, the SEIS-II must provide a much more detailed basis for the relatively small populations of 'involved workers' considered susceptible to accidents analyzed in Chapter 5."

**Response:**
For the purposes of health impact analyses, involved workers are considered to be those workers directly involved in day-to-day waste handling, treatment, storage, disposal, and management activities (see Section 5.1.9.3 of SEIS-II). They differ from noninvolved workers (see Section 5.1.9.2) who work at a site but are not directly performing these activities and are thus less likely to suffer health impacts from them. For most accidents, only a few involved workers would potentially be affected.

**09.01 (15)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 63 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"The estimated cancer incidence from exposure to hazardous chemicals is below 0.05 in all alternatives. This is less than 5% of the expected radiological LCFs in NAA2 and is less than 1% in all other alternatives. The effect of hazardous chemical exposure can be ignored in choosing between alternatives."

**Response:**
DOE will consider the commenter's observations in its decisionmaking process.

**09.01 (16)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-056 | 14 | Linda Hibbs | |

**Comment:**
"At the WIPP site, during the operational phase, workers are those most likely to be exposed. They are allowed to receive 5 rem per year, much reduced from previous limits, but, even this amount may not be safe. And unless DOE changes its long-time practices, workers at WIPP can expect to be exposed to contamination as much as workers in the CMR and TA-55 facilities at LANL where a person is contaminated every few weeks."

**Response:**
DOE has approved a 1-rem administrative dose limit at the WIPP site. Because DOE and DOE contractors are also committed to the as low as reasonably achievable (ALARA) principle, DOE expects most involved worker doses to be less than 1 rem. Contamination of workers may or may not result in radiation dose to these individuals.

**09.01 (17)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 156 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 5-145. Table 5-88. The lifetime waste treatment impacts to Involved workers in the No Action 2 Alternative are only 0.08 LCFs. Yet for the Proposed Action they are 1.7 LCFs (Table 5-13). NAA 2 would treat 43% of the CH-TRU volume and 64% of the RH-TRU volume as the Proposed Action. Both actions treat waste to the WAC criteria at the generating sites. Why are the human health impacts for the Proposed Action 20 times as great?"

**Response:**
The health impact estimates from routine treatment activities in the Draft SEIS-II were based on information presented in the Draft WM PEIS and have been revised in the Final SEIS-II (see SEIS-II, Appendix B). Impacts for the Proposed Action are 0.8 LCFs in the Involved Worker Population compared to 0.4 LCFs for No Action Alternative 2. The impacts are higher for the Proposed Action because a greater volume of waste is treated.

**09.01 (18)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 213 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page F-20. The reason for calculating the worker lifetime dose on a per waste panel basis is not apparent since the exposure assumptions are unrelated to the filling of a panel. All that is needed is the assumption of the hours per year that the worker is present at 1 meter from the drum and the average 1-meter dose rate from Table F-17. The workers should have exposure time limited to 345 hours per year in order to have the annual dose ≤ 1 rem for an average 1-meter dose rate of 2.9 mrem/hr. Furthermore the assumption in Table F-18 that the 10 panels will be completed in 20 years is inconsistent with the rationale described in the last paragraph of page F-20 that would require 23.2 years in order to hold doses to 1 rem/year. These calculations do not appear to address exposures from the installation of MgO around the drums."

**Response:**
The section describing radiological impacts to WIPP involved workers has been updated in the Final SEIS-II to provide more detail, include radiological decay, and change the time required to fill a panel with CH-TRU waste. The time required to fill a CH-TRU waste panel was changed from an effective 2 years per panel to 2.5 years per panel, reflecting updated information available in the recently finalized WIPP SAR. A detailed table has been added to the WIPP Involved Worker section of F.2.3.3 that indicates annual worker doses over 70 years for all alternatives. For all action alternatives except the Proposed Action, each worker was assumed to be exposed for 400 hours per year. Under the Proposed Action, worker exposure time is limited to that which would result in a 1 rem per year dose for the first 20 years of disposal operations. At year 21, the Proposed Action workers can be exposed for the maximum 400 hours per year because radiological decay has reduced waste container dose rates to low enough levels.

DOE believes that the involved worker dose estimates are sufficiently conservative (estimated at the WIPP administrative dose limit of 1 rem per year) to include the small additional dose contribution from magnesium oxide installation. This installation, of limited duration, would consist of placing magnesium oxide bags around CH-TRU waste drums before emplacement, and using a forklift to place larger bags on top of emplaced CH-TRU waste.

**09.01 (19)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 211 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page F-18, first paragraph. Dose rates are said to be reducible by administrative controls but no credit is taken for this. Credit should not be taken because there is no commitment to exercising administrative controls."

**Response:**
DOE has approved the 1-rem administrative dose limit as the effective dose limit at the WIPP site. Because DOE and DOE contractors are also committed to the ALARA principle, DOE expects involved worker doses to be well below 1 rem.

**09.01 (20)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 212 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page F-18. Equation F-1. No reference is provided as to where the input data of $D_{id}$ and $C_{ic}$ can be found. Without these input data, it is not possible to verify independently the average surface dose rate in Table F-17."

**Response:**
Two tables have been added to Section F.2.3.3 in SEIS-II and have been placed after Equation F-1, which includes the $D_{id}$ and $C_{ic}$ values used in Equation F-1.

**09.01 (21)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 214 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page F-21. Attempts to reproduce two of the individual dose values for storage site workers for Alternative 1 resulted in values that were +12% and -17% of the Table F-22 values. In this effort we started with the average 1-meter dose rate in Table F-17 and decayed screening values from Table F-12 over the 20 to 55 year period to obtain average annual dose rates for the 35 years. Ingrowth of $^{241}$Am from decay of $^{241}$Pu was also included. It would be helpful to reviewers if SEIS-II gave more details of the calculations so they could be checked without making numerous assumptions."

**Response:**
From the information provided in the Draft SEIS-II, Appendix F, it was not possible to accurately determine the storage site worker doses. The appendix lacked the dose contributions from each nuclide in the waste. Two tables have been added to Section F.2.3.3 in SEIS-II to provide the missing intermediate data. These tables provide the input values to be used in Equation F-1.

**09.01 (22)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 216 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page F-21. Equation F-3. No reference is provided for the input data of $V_{CH,S}$ and T. The definition of T as a worker throughput rate of one worker per 1,000 cubic meters is confusing. It is not possible to verify independently the values in Table F-19."

**Response:**
The descriptions of T and $V_{CH,S}$ have been clarified in SEIS-II to read:

$V_{CH,S}$ = site-specific (site "s") post-treatment CH-TRU waste volume from Chapter 3 or Appendix A.

T = a constant of 1,000 cubic meters (35,300 cubic feet) of stored waste handled per worker per year.

This value for handling and monitoring activities conducted during storage was based on expert opinion from waste management staff at Hanford.

**09.01 (23)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 217 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page F-25. The involved worker lifetime radiological impacts from routine CH-TRU waste disposal operations in Table F-21 total 720 person-rem for the entire disposal phase. This total is derived from 36 workers x 20 rem/worker = 720. The WIPP Safety Analysis Report (DOE/WIPP-Draft - 2065 Revision 1, Table 7.1-2) used 36.9 rem/year for 38 persons and a 35-year disposal operations period. This totals 1,292 person-rem and a dose of 34 rem/per person. This is 1.8 times the worker population dose used in SEIS-II. The main difference is in assuming a 35-year disposal phase rather than a 20-year phase. DOE should present consistent methodology and results in its related WIPP documents."

**Response:**
The draft WIPP SAR cited in the comment has been finalized, and the final SAR was issued in March 1997. The final SAR was changed from the draft SAR, and the Final SEIS-II incorporates information from the final SAR.

The section describing involved worker radiological impacts at the WIPP site has been updated in the Final SEIS-II to provide more detail, to include radioactive decay, and to change the time required to fill a panel with CH-TRU waste from an effective 2 years to 2.5 years per panel. These changes reflect updated information available in the recently finalized WIPP SAR. The final SAR uses a 36-worker population, consistent with SEIS-II. The final SAR indicates that the involved worker population would be expected to receive 14.6 person-rem per year. The Final SEIS-II estimates (which are more conservative than the final SAR) indicate that, under the Proposed Action, involved worker population estimates at the WIPP site for the first year of operations would be 36 person-rem per year. Over a minimum 25-year disposal operations period (2.5 years per panel × 10 panels), the worker population dose is estimated in SEIS-II to be 898 person-rem and over the entire possible 35-year disposal phase, the worker population could receive up to 1,240 person-rem.

NEPA documents and SARs are prepared for different reasons; therefore, the methods and results need not be identical. DOE believes that the methods of calculation presented in SEIS-II provide a sufficient basis for the Department to make a decision on the operation of WIPP and to meet the requirements of NEPA.

**09.01 (24)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 218 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"The individual lifetime worker doses in Table F-22 for RFETS are excessively high. For Action Alternative 1 and No Action Alternative 2 they exceed occupational limits (5 rem/y) every year for 35 years. Surely such doses would not be allowed. These doses need to be explained or the text needs to be corrected."

**Response:**
The estimated involved worker doses have been revised in SEIS-II so that the occupational dose limit of 5 rem would not be exceeded. Although the total worker population dose remains the same, the number of workers needed has been adjusted upward. DOE's ALARA policy would keep individual worker and worker population doses as far below occupational limits as reasonably achievable. Revised numbers of RFETS workers are shown in Section F.2 and revised impacts are shown in Section F.3.

**09.01 (25)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-132 | 26 | Keith Tinno | Shoshone-Bannock Tribes |

**Comment:**
"Pg [Summary] S-58 through S-60 - The additional deaths are given for each alternative. Are these deaths solely radiation-related or do they include trauma casualties from the accidents themselves?"

**Response:**
These impacts are fatalities from all causes.

**09.01 (26)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163E | 3 | No name provided | Citizens for Alternatives to Radioactive Dumping |

**Comment:**
"There is great reliance in the SEIS on the DOE's Draft Waste Management PEIS (WMPEIS) to determine human health and other impacts at the treatment sites. The WMPEIS has been severely criticized as being incomplete and incorrect. Also, impacts have been adjusted from the WMPEIS for increased volumes of waste as well as changes in key radionuclides. However, according to the SEIS itself (p A-3) '...only about 80 percent of the CH-TRU waste stream volumes and about 15 percent of the RH-TRU waste stream volumes have reported radionuclide inventories.' Therefore, actual impacts of key radionuclides either for the treatment sites, transport or for disposal at WlPP itself are largely unknown. This makes all the health effects (a major part of the SEIS II) suspect. They should be thrown out and redone when DOE has a better understanding of the waste."

**Response:**
Information in the WM PEIS, which was published in its final version in May 1997, is used in SEIS-II as a basis for estimating routine human health impacts from treatment at generator sites. Comments on the Draft WM PEIS, for the most part, were not directed at specific human health analyses, and DOE considered and responded to comments in the Final WM PEIS. DOE believes that the WM PEIS information has been used appropriately in SEIS-II. The inventories used to estimate potential impacts in an accident were increased by a factor of four to account for uncertainties in the waste inventory. All available radionuclide information (not just for key radionuclides) was extrapolated to cover waste volumes with unknown radionuclides and used in SEIS-II analyses of lag storage, transportation, WIPP disposal impacts, accidents, and long-term performance assessment. In many cases, source terms were specified as average or maximum PE-Ci values, subject to limitation by the planning-basis WAC, and used in analyses rather than specific radionuclide source terms. DOE used the best available information to estimate environmental impacts.

**09.01 (27)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF7 | 79 | Bonnie Bonneau | Legions of Living Light |

**Comment:**
"Since 1994 they've been finding not only strontium and uranium, but also americium and plutonium down in the drinking water of these lovely brilliant people in Los Alamos. And they say this is really safe because it's well below federal drinking water standards. Are there drinking water standards for americium and plutonium? I'm not sure. But it's just absolutely absurd to think that even the tiniest bit of this isn't going to hurt whatever consumes it."

**Response:**
DOE has found trace concentrations of strontium, uranium, americium, and plutonium in a few main aquifer test wells at Los Alamos that are not used as a drinking water supply. The concentrations have been approximately equal to the lowest detection limit specific to each radionuclide. Additional samples have been taken in an attempt to reproduce these trace concentration results; however, the radionuclides in question were not identified in the additional samples. Drinking water standards for radionuclides can be found in Title 40 CFR Part 141. As alpha particle emitters, plutonium and americium are subject to the gross alpha radioactivity limit of 15 picocuries per liter.

**09.01 (28)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB6 | 15 | Catherine O'Neill | |

**Comment:**
"Very few baseline studies on workers exposed to radiation have been done, but some recent studies done at Hanford on Hanford workers show the latency period for cancers in exposed workers to be as long as 17 years, and that later in life, these workers pay a dear price for their labors."

**Response:**
A number of studies have been conducted on the cancer mortality of nuclear workers, including DOE workers. Findings of recent and ongoing studies on workers support the use of risk factors used in SEIS-II for assessing health risks to involved and noninvolved workers. A study of 80,000 to 100,000 radiation workers around the world has shown little or no evidence that they suffer higher incidences of morbidity or death than other workers.

**09.01 (29)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB6 | 8 | Ruth Weiner | |

**Comment:**
"The EIS finds that, in some cases, health effects from doing nothing are worse than from using WIPP. That doesn't make any sense.

"Basically, what is ignored is the probability of intruding into the waste. One is left with the perception that it's going to be as easy to drill a hole half a mile underground into a sealed repository as it is to back a pickup truck over the barrels that are now stored at Oak Ridge out in the open. That's just not so. If this were true, neither the National Academy, nor Congress, nor anybody else, nor the U.S. Geologic Survey would not, for the last 15 years, have suggested that we use mine geologic disposal for the radioactive waste."

**Response:**
DOE agrees that it would be much easier to intrude on an uncontrolled waste disposal site than it would be to drill into the repository. Probabilities of intrusion are not included for either the WIPP repository or aboveground waste facilities because both cases are speculative. DOE hesitates to assign probabilities to such events because of the speculative nature of any probability that might be placed on future events involving so many unknown variables. Rather, SEIS-II analyses assume the intrusion occurs and estimate the consequences. A text box has been added to Chapter 5 describing the probability of intrusion at the WIPP repository and at generator-storage sites.

**09.01 (30)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB4 | 3 | Charles Goad | |

**Comment:**
"Half-life is created by the light rays of the sun shining on the ground."

**Response:**
A half-life is the amount of time required for half of a given amount of a radioactive substance to decay to a stable isotope or element. For example, the isotopes of plutonium-238, plutonium-239, plutonium-240, and plutonium-241 have half-lives of 88 years, 24,000 years, 6,600 years, and 14 years, respectively. No known scientific theory would predict that light could influence the half-lives of radionuclides.

**09.01 (31)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 52 | Lisa Sparaco | |

**Comment:**
"Risks to human health are too frequently unstated, ignored, denied."

**Response:**
In Chapter 5, SEIS-II evaluates the impacts to human health and safety under the Proposed Action, three action alternatives, and two no action alternatives from transportation, from routine disposal operations, from facility accidents, and from long-term performance of the WIPP repository.

**09.01 (32)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 56 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page S-23. Sixth Paragraph. The value of 0.3 LCF reported for the population dose around the Hanford Site is incorrect. The Hanford Site Environmental Report for Calendar Year 1994 (PNL 10574) reports a total dose of 0.6 person-rem to the population of 380,000 persons. This would be $3 \times 10^{-4}$ LCF. The values for INEL and NTS also seem to be too high but have not been checked."

**Response:**
Errors noted for the Hanford and Lawrence Livermore National Laboratory (LLNL) sites have been corrected. For 1994 operations, $2 \times 10^{-4}$ LCF and $4 \times 10^{-4}$ LCF were estimated to occur in the populations within 80 kilometers (50 miles) of the Hanford and LLNL sites, respectively. This information is included in Chapter 4 of SEIS-II, as part of the description of the affected environment at the generator-treatment sites, to give a baseline for impacts analysis at the generator-treatment sites.

**09.01 (33)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-021 | 10 | Ruth Weiner | |

**Comment:**
"The assessment of hazardous chemical risks, both for operation and transportation, includes massive uncertainties, and I don't put much stock in it. Nothing is wrong with the Draft SEIS analysis; it is performed according to accepted protocols, but in my opinion these protocols are

excessively conservative as well as highly uncertain. They are done by linearly extrapolating a putative cancer risk from inhalation exposure to substances that, in most cases, may be known animal carcinogens but are not known to be human carcinogens. Moreover, the SEIS analyses do not include background levels of RCRA controlled substances, or the ambient air concentrations of such substances emitted from other sources. If both background levels and uncertainties were reported, there would probably be no difference between alternatives."

**Response:**
The uncertainty of hazardous chemical risks may be high or unknown, particularly for acute exposures. SEIS-II used the current dose-response relationship information from the national authorities, such as the EPA Integrated Risk Information System (IRIS) database. This database provides a measure of confidence in the reported risk values. This confidence is indicated in the "Comment" columns of Tables F-1 and F-2 of Appendix F. Few chemicals have definitive evidence for carcinogenicity or a high level of confidence for noncarcinogenic impacts. DOE has included estimates of impacts from chemical exposure in order to provide a complete picture of environmental impacts. DOE will consider the commenter's observations in its decisionmaking process.

Background levels of RCRA-controlled substances and other similar sources at WIPP are undetectable.

**09.01 (34)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 215 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"The SEIS-II chose to evaluate the radiological effects of routine operations involving lag storage and no action alternatives on the 35-year working lifetime of individual workers. These results are presented in Table F-22 and this is an appropriate way to evaluate the risk to an individual worker or a (35-year) generation of workers. However, it does not indicate the cumulative effect over several generations (for the various action alternatives) and perpetually for the No Action Alternatives. The method used makes the human health effects (LCFs) of the alternatives appear better in comparison with the Proposed Action than it would be if multi-generational effects were included."

**Response:**
Sections F.2 and F.3 and 5.1.9, 5.2.9, 5.3.9, 5.4.9, 5.5.9, and 5.6.9 have been revised to show estimated cumulative worker population impacts over the operating periods for different alternatives.

**09.01 (35)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB4 | 59 | Lawrence Carter-Long | |
| OR1 | 15 | Stanley Reel | Oak Ridge Regional Planning Commission |

**Comment:**
Two commenters expressed concern about health factors at the WIPP site and at Oak Ridge. One of the commenters said health factors need to be considered before thinking about ways to dispose of TRU waste. The other commenter said impacts at Oak Ridge would be much less under Action Alternative 1 than under the other action alternatives.

**Response:**
The health impacts for the public and for workers at the WIPP site have been taken into consideration throughout the analyses in SEIS-II (see Chapter 5 and related appendices). These impacts have been considered at the WIPP site and the generator sites, as appropriate, for storage, treatment, transportation, waste handling, waste disposal, accidents, and long-term facility performance assessment.

**09.01 (36)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-130 | 11 | Susan L. Gawarecki | Oak Ridge Reservation Local Oversight Committee |
| OR1 | 16 | Stanley Reel | Oak Ridge Regional Planning Commission |
| OR1 | 18 | Stanley Reel | Oak Ridge Regional Planning Commission |
| OR2 | 10 | Barbara A. Walton | Oak Ridge Reservation Local Oversight Committee |
| OR2 | 11 | Barbara A. Walton | Oak Ridge Reservation Local Oversight Committee |
| OR2 | 12 | Barbara A. Walton | Oak Ridge Reservation Local Oversight Committee |

**Comment:**
Several comments discussed the acceptability of various alternatives, particularly with regard to impacts at ORNL and its surrounding area. Both no action alternatives were said to be unacceptable because the climate and geology of east Tennessee are unsuitable for long-term storage of TRU waste. One commenter supported the opening of WIPP but did not want to see waste brought to Oak Ridge for treatment before being shipped to WIPP. Action Alternative 1 was said to be an acceptable alternative if impacts of lag storage were analyzed to a greater degree and scheduling done to minimize impacts. Both Action Alternative 2 and Action Alternative 3 were said to have unacceptable environmental impacts.

**Response:**
SEIS-II identified the Proposed Action as the Preferred Alternative and would avoid the impacts that the commenters describe as undesirable. There would be no lag or long-term storage at ORNL under the Preferred Alternative. In addition, the most recent estimate of TRU waste volumes shows that all currently stored TRU waste and waste expected to be generated could be disposed of at WIPP. There would be no excess RH-TRU waste to be stored at ORNL.

**09.01 (37)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-141 | 18 | Margret Carde | Concerned Citizens for Nuclear Safety |

**Comment:**
"Risk assessment is a relatively new field which admits to deficiencies such as its dependence on methodological value judgments and inability to provide benchmarking between models. Current risk assessment models used in the SEIS II are limited in that they cannot accurately yield data which assesses on-site dangers of releases to workers. Figures from both MEPAS and GENII models become more uncertain the closer one gets to a release."

**Response:**
The MEPAS® and GENII codes were not used to calculate potential impacts to involved workers for the reasons the commenter noted. Impacts to involved workers were evaluated quantitatively and qualitatively, using methods described in Appendix G. DOE is cognizant of the limitations of risk assessment and assessment models for prospective (events that may occur in the future) analyses and considers these limitations in making decisions.

**09.01 (38)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF7 | 51 | Eric Ericson | |

**Comment:**
"As far as the risk analysis, I think that much of this may be useful, but basically it's based on statistics, and it's a gamble, in effect."

**Response:**
Risk analyses in DOE NEPA documents estimate the potential impacts that could occur from future DOE actions, and there is unavoidable uncertainty associated with these estimates. The analyses used prudently conservative assumptions and input parameter values such that these are considered to be the maximum reasonably foreseeable impacts.

**09.01 (39)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF8 | 6 | Jay Shelton | |

**Comment:**
"One of the things this study does not have, at least to the extent that I've looked at it so far, is uncertainties on these estimates of both radiological and nonradiological fatalities."

**Response:**
DOE has not included quantitative estimates of uncertainty on potential radiological and nonradiological impacts. However, DOE recognizes the importance of uncertainty in evaluation of potential human health impacts. A text box on the uncertainty of human health impact analyses has been added to Chapter 5, describing how DOE considered uncertainty in the SEIS-II analyses.

## 09.02 Baseline and Monitoring Program

**09.02 (01)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 10 | Bruce Trigg | New Mexico Public Health Association |
| ALB3 | 38 | Penny Mainz | |
| ALB3 | 124 | David Mitchell | |
| ALB3 | 127 | Janet Greenwald | |
| ALB4 | 43 | Jeri Rhodes | |
| ALB6 | 74 | Tsosie Tsinhnahjinnie | |
| E-008 | 5 | Bruce Trigg | New Mexico Public Health Association |

**Comment:**
Commenters said DOE should conduct baseline health studies on the communities closest to the WIPP site prior to the disposal of waste, as promised, and to perform baseline health studies of those along the transportation corridors. One commenter stated that the lack of such studies would make it impossible to monitor the effects caused by activities at WIPP. Another commenter said that estimated exposures should be verified during the disposal phase and post-decommissioning phase.

**Response:**
The Carlsbad Environmental Monitoring and Research Center, run by New Mexico State University, has conducted and will continue to conduct baseline studies of the communities near the WIPP site. It has also conducted baseline studies of environmental media in the vicinity of WIPP and performed some limited health surveys related to cancer incidence in the area. The center plans to conduct bioassays of volunteers in the vicinity of the WIPP site and plans to complete those bioassays before WIPP disposal operations would begin.

No baseline health studies will be carried out for transportation corridors. Numerous transportation studies and analyses have determined that routine or incident-free transportation would result in very little risk to the public along these corridors. Transportation would involve very low doses of external radiation exposure to workers and the public. The incident-free exposures would be less than the levels (10 millirem per hour at 2 meters [6.5 feet]) allowed by DOT transportation regulations (10 CFR Part 71).

**09.02 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 23 | Sean Asghar | |
| ALB3 | 54b | David Mitchell | |
| E-056 | 34 | Linda Hibbs | |

**Comment:**
Several commenters stated that continuous air monitors, which would monitor radiation exiting through the waste and air shafts, can be severely limited by salt build-up. The commenters stated the following concerns: (1) since all of the air in the repository exits to the surface through the exhaust shaft, the shaft is a major potential pathway for radiation to reach the surface during the operational phase of the project; (2) the continuous air monitors have been known to lose 90 percent of their plutonium detection efficiency as a result of the salt build-up; (3) exhaust air is not routinely filtered to remove radioactivity; (4) if the continuous air monitors detect alpha particles, the exhaust air is diverted through filters; and (5) if a release occurs after salt has built up on the continuous air monitors, radioactivity might not be detected until it exits the exhaust shaft. These concerns were cited as possible problems for worker safety on the surface and in the repository below.

**Response:**
No radionuclide releases from surface or underground facilities at the WIPP site would be expected. SEIS-II evaluated the impacts of potential accidents that resulted in the release of TRU nuclides. SEIS-II accident analyses assumed that the exhaust air monitoring system was not operable and that there was no high-efficiency particulate air (HEPA) filtration of underground releases. Therefore, the SEIS-II accident impact results do not underestimate the potential impacts that might result from an accident if the exhaust air monitoring system failed to operate at the time of an accident. Workers in the underground would be warned of the presence of elevated levels of airborne radioactive contamination from nearby, portable, continuous air monitors, which are easier to maintain than the exhaust air monitors, and from surveys in areas where the possibility of such contamination existed. DOE is currently studying possible performance limitations of continuous air monitors due to salt deposition, encrustation, and corrosion. Depending upon these evaluations, DOE will consider the development of alternative systems.

## 09.03 Retrieval and Recovery

### 09.03 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 58 | Lisa Sparaco | |
| ALB2 | 162 | Rick Packie | |
| ALB4 | 100 | Angela Wiebalk | |
| ALB5 | 41 | Susan Rodriguez | |
| BO1 | 71 | Fritz Bjornsen | |
| BO1 | 81 | Kerry Cooke | |
| BO1 | 90 | Beatrice Brailsford | |
| BO1 | 100 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| BO1 | 124 | Michele Kresge | |
| C-028 | 2 | C. M. Wood | Centers for Disease Control |
| C-053 | 6 | David Hensel | |
| C-110 | 3 | Rafaelita Bachicha | |
| C-124 | 5 | Roy Young | |
| C-132 | 25 | Keith Tinno | Shoshone-Bannock Tribes |
| C-154 | 7 | Tom Marshall, Jack Mento, et al. | Rocky Mountain Peace and Justice Center |
| C-163E | 19 | No name provided | Citizens for Alternatives to Radioactive Dumping |
| CA1 | 70 | Richard Malcolm | |
| DE1 | 12 | Michael Hoffman | |
| DE1 | 24 | Kathleen Sullivan | |
| DE1 | 86 | Ben Lipman | |
| DE1 | 88 | Ben Lipman | |
| E-056 | 39 | Linda Hibbs | |
| E-063 | 5 | Tom Moore | |
| SF3 | 66 | Bill Gould | |
| SF3 | 88 | Sasha Pyle | Religious Society of Friends |
| SF3 | 117 | Anhara Lovato | |
| SF4 | 77 | Bonita McCune | |
| SF8 | 37 | John Otter | |

**Comment:**
Many commenters questioned the need or ability of DOE to retrieve and recover TRU waste once it has been disposed of, stating it to be a difficult and dangerous operation, and that once it is out of sight, it will be out of mind. Some commenters objected to the generator sites becoming the destination of recovered waste and the potential increase in transportation impacts, and others stated that DOE has no clear plan to recover the waste.

**Response:**
DOE intends to permanently close the WIPP repository; however, Section 5.7 of SEIS-II presents the potential impacts should it become necessary to retrieve or recover the TRU waste. "Retrieval" is defined as removal of the waste prior to the collapse of the panel rooms. The waste containers would be intact and unbreached and all facilities would be intact and operational, with no contaminated salt. "Recovery" could take place during operations (for Action Alternatives 1, 2, or 3, which have long operational periods) or after closure. Recovery

assumes waste containers would be breached and excavation of contaminated salt would also be necessary.

DOE does not believe that either retrieval or recovery would ever be necessary, nor have any possible scenarios been identified for which recovery would be required. Nevertheless, DOE must anticipate the possibility that retrieval or recovery might, at some time in the future, be required, and evaluate potential impacts. The earliest that recovery would be considered is 45 years, after decommissioning and closure under the Proposed Action. If recovery were required, detailed plans would be developed to accomplish the task at that time, including acquiring the appropriate regulatory approvals. DOE considers the discussion of recovery impacts presented in Section 5.7.2 to bound the impacts that may actually occur.

For purposes of analysis, it was assumed that recovered waste would be transported back to the treatment sites of Action Alternative 3 (CH-TRU waste to Hanford, INEEL, RFETS, LANL, and/or SRS, and RH-TRU waste to Hanford and/or ORNL). In light of current agreements with the states, transportation back to the sites of origin would be unlikely. Before retrieval or recovery could take place, DOE would consult with the states to find a suitable storage location. The number of waste shipments and traffic-related impacts of transporting the recovered waste would be about 8.5 times higher than Action Alternative 3 because of the large volume of salt contaminated and removed under the recovery scenario.

**09.03 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 159 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 160 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 161 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
The following comments were made about waste recovery:

“The discussion of waste recovery in section 5.7.2 relies almost entirely on remote controlled activities as expressed in the above statement. At present, remote controlled handling of CH-TRU and RH-TRU does not exist. The discussion of radiological impacts in section 5.7.2.1 Operational Impacts of Waste Recovery, has no basis or justification.”

“Page 5-155. Second complete paragraph. This discussion mentions the greater external radiation hazard from waste recovery (compared to waste emplacement). However, inhalation exposures from dealing with breached containers and contaminated salt could also be significant and this need to be recognized in the Final SEIS-II.”

“Page 5-156. Second complete paragraph. Was any analysis involved in arriving at the conclusion that health impacts to the public and non-involved workers from recovery operations were 1,000 times that in Action Alternative 3?”

**Response:**
Section 5.7.2 has been modified to reflect that recovery and support operations would be done remotely to the extent practicable. This does not necessarily mean remote handling of CH-TRU and RH-TRU waste as stated in the comment. The intent would be to protect workers from external radiation, airborne particulates and radioactive contamination, and physical hazards associated with excavation.

The paragraph referenced in the second comment above notes the greater external radiation hazard associated with RH-TRU waste as compared to CH-TRU waste. Because radiological impacts were evaluated in terms of total dose received, all exposure pathways, including inhalation, were considered.

Additional description of the analysis of potential impact for waste recovery has been added to Section 5.7.2. Potential impacts to the public and workers were qualitatively evaluated, using impacts calculated for WIPP disposal operations under Action Alternative 3. The Action Alternative 3 waste inventory was the one assumed to be disposed of and evaluated for recovery, because it would have the largest waste volume and essentially the same radionuclide activity as the other action alternatives. Packaging of recovered waste and contaminated salt was assumed to take place underground. It was assumed that engineered contamination controls, such as a HEPA-filtered ventilation system typical of DOE facilities that handle radioactive material, would be put into place. DOE believes that such controls would be adequate to maintain releases and radiation exposures below the current regulatory levels. Therefore, all releases and radiation exposures to the public and workers were assumed to be limited to current regulatory standards, and the MEI would receive no more than 10 millirem per year, the National Emissions Standards for Hazardous Air Pollutants (NESHAP) limit for radionuclides in 40 CFR Part 61. Workers would be subject to the WIPP administrative dose limit of 1 rem per year.

The number of workers required for excavation and packaging activities was estimated to be about 100. The time period needed to remove the waste was estimated to be about the same as that required for emplacement, about 200 years, based on 5 years to excavate and package each panel containing CH-TRU and RH-TRU waste, and 2 years to excavate and package each panel containing only RH-TRU waste. Assuming a 35-year work period per worker, the accumulated worker-population dose over the entire 200-year recovery period would be 20,000 person-rem. The maximum accumulated LCFs in the involved worker population would be about 8. The accumulated potential of cancer incidence from exposure to hazardous chemicals would be smaller, on the order of $1 \times 10^{-3}$. No noncarcinogenic effects from exposure to hazardous chemicals would be expected.

## 09.04 Plutonium

### 09.04 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 46 | Harry Kinney | |
| ALB2 | 82 | Charles Hyder | |
| ALB6 | 90 | Debra Tenney | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-012 | 6 | Eleanor Ponce | |
| C-104 | 10 | Bob Slay | Savannah River Site Citizens Advisory Board |
| SF5 | 32 | Louise Baum | |

**Comment:**
Various commenters stated the purported hazards of plutonium:

"We KNOW that plutonium is the most poisonous substance on the face of the earth. It doesn't go away for 240,000 years; the equivalent of 12,000 future generations."

"The amount of hazard in the entire project and in each of the TRUPACT containers is enormous. The amount of plutonium is sufficient to kill 23 trillion people. Each TRUPACT will have about a little bit less than a billion lethal doses per TRUPACT."

"In the SEIS-II, document the unique characteristics of Pu-238 relative to Pu-239 (see SRT-MTS-96-3026, or SR1-6-MW-51). This means that Pu-238 is roughly 400 to 500 times more dangerous than Pu-239. Although the chemical and physical properties of the two nuclides are identical, their radioactive properties are significantly different. Our concerns are more related to the possibility of inhalation as a valid pathway and should be considered."

"Waste is such an interesting word for something that's so toxic and so poisonous that it's going to last for 24,000 years. Our legacy, what we're leaving for this vast, vast amount of time is this incredibly toxic, poisonous waste."

One commenter said he knew people in Los Alamos who had been exposed to and had ingested plutonium as long as 35 to 40 years ago but were still in good health. The commenter said that scar tissue had grown around the exposed regions.

**Response:**
DOE's risk estimates took into account the radiotoxicity of plutonium and the exposure circumstances. The impacts from internal depositions of radionuclides can vary considerably. The critical factor is whether the radionuclide decays and causes damage to a sensitive tissue. Under the assumption that the cell impacted by a plutonium radiological decay was "sensitive," damage could range from cell death and normal biologic elimination of that cell tissue with no noticeable health detriment to chromosomal aberrations leading to an eventual cancer.

For intakes that do not lead to immediate, acute health effects, the health impact of concern is an LCF. Research by the ICRP has determined the risk of contracting an LCF as a result of a unit dose of exposure. The ICRP risk factors were used for the SEIS-II analyses. These risk values are most accurately applied to a sizable, exposed population. When the risk values are applied to a specific individual who receives a certain estimated dose, they are expressed as the probability of an LCF. This, in effect, takes into account the uncertainty of the health impact that might result from a radiation exposure.

## 09.05 Standards

### 09.05 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF1 | 126 | Peggy Prince | |
| SF3 | 93 | Anhara Lovato | |

**Comment:**
Several commenters stated that DOE's intent in providing the background doses and dose estimates from normal DOE site operations in SEIS-II is to imply to the reader that, because we are all exposed to some level of radiation, exposure to additional radiation and radioactive materials in groundwater, air, and along transportation corridors should be acceptable.

**Response:**
Estimates of the potential dose received or quantity of radionuclides released are always made and reported as the amount in excess of background radiation; therefore, background radiation or radionuclide levels provide a frame of reference to which these incremental increases in dose or radionuclide levels can be compared.

Radiation dose limits are 0.1 rem annually for members of the public and 5 rem annually for DOE radiation workers. Administrative limits at individual sites may be lower. For all cases of potential radiation exposure from DOE operations, it is DOE policy to keep radiation doses ALARA. Radiation dose limits were established using the linear no-threshold hypothesis, which assumes that any radiation dose results in some reported probability of cancer. SEIS-II analyses use dose-to-risk conversion factors that are based on the same hypothesis.

### 09.05 (02)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 163 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 5-161. Lines 5 and 6. More information is needed on the statement: 'Emissions of radionuclides would be 134% of the standards for the alternatives that would involve treatment to the LDRs at LANL.' Page 5-88 mentions a 9 x $10^{-5}$ chance of an LCF but doesn't mention standards. Is this the 10 millirem/year NESHAPs Standard?"

**Response:**
The standard referred to in the Draft SEIS-II is the NESHAP. The Final SEIS-II includes the following revision in Section 5.9.3: "Emissions of radionuclides would exceed the NESHAP standard and the emission standard for vinyl chloride for the thermal treatment alternatives (Action Alternative 2 and No Action Alternative 1) at LANL; mitigation would be necessary to prevent radionuclide levels from exceeding standards in the event LDR treatment of TRU waste at LANL were implemented."

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# 10.0 LEGAL AND POLICY ISSUES

## 10.01 General

### 10.01 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 117 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 4-1. The 1996 Amendments to the 1992 WIPP Land Withdrawal Act are not recognized."

**Response:**
The 1996 National Defense Authorization Act for Fiscal Year 1997, Public Law 104-201, is not cited on page 4-1 of the Draft SEIS-II (as the commenter suggested), but Section 1.4 and the Summary of SEIS-II recognize Public Law 104-201, which modified the LWA.

### 10.01 (02)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-056 | 60 | Linda Hibbs | |

**Comment:**
"Over and over again the history of WIPP shows a democratic process that has been short-circuited and a scientific process that has been ignored. If regulations or scientific criteria create problems, they are changed or deleted. If promises are inconvenient, they are broken. Only continuing strong public participation and outrage can change this."

**Response:**
DOE believes that it has acted in good faith in addressing issues and contrary opinions raised by oversight organizations, regulatory agencies, and interested stakeholders. In SEIS-II, Appendix H.9 addresses alternative conceptual models and various viewpoints of disposal performance that are largely at odds with DOE's perspective. Other perspectives also have been incorporated into DOE's CCA, which is now undergoing EPA appraisal. DOE solicits alternative viewpoints to determine whether its characterization and experimental programs demonstrate the reasonable expectation that TRU waste can be isolated from the environment for at least 10,000 years.

DOE advocates requirements that add to the protection of human health or the environment. Specifically, DOE and others submitted comments on EPA's proposed criteria to certify WIPP (40 CFR Part 194). During the public comment period, EPA received more than 100 written public comments, including those of DOE. The final rule, issued on February 9, 1996, responded to the comments received and, in some cases, the draft criteria were modified.

In summary, DOE believes that it has acted in a manner that satisfies congressional direction to demonstrate the safe disposal of radioactive waste, has demonstrated compliance with applicable state and federal regulations and criteria, and has served to more fully engage the interested public in DOE's decisionmaking activities.

**10.01 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| BO1 | 3 | Delbert Farmer | |

**Comment:**
"These impacts which reduce the animal and plant populations and in turn adversely banish the treaty rights of the [Shoshone-Bannock] Tribes."

**Response:**
DOE expects that shipments of TRU waste to the WIPP site would not significantly affect animal and plant populations and would not adversely affect the treaty rights of the Shoshone-Bannock Tribes.

**10.01 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| BO1 | 1 | Delbert Farmer | |

**Comment:**
"The Shoshone-Bannock Tribes have an ordinance regulating and controlling shipments of nuclear waste across or through the Fort Hall Indian Reservation which requires certain permits and et cetera. Does DOE intend to abide by Shoshone-Bannock Tribes' laws and regulations? What kind of notice will the DOE provide to the Shoshone-Bannock Tribe regarding the shipment of waste across the Fort Hall Indian Reservation?"

**Response:**
DOE would work with any affected tribes regarding the transportation of TRU waste through tribal lands, including notification prior to shipment.

**10.01 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB5 | 56 | John McCall | |

**Comment:**
"I can tell you that the tort liability that is posed by this transportation system, the way it's set up now, is just going to be tremendous."

**Response:**
DOE recognizes the potential for transportation accidents. The probability and environmental impacts of such accidents were addressed in SEIS-II (see Sections 5.1.8.2, 5.2.8.2, 5.3.8.2, 5.4.8.2, 5.5.8.2, and Appendix E). The extent of potential liability for any such accidents is outside the scope of the SEIS-II analysis.

**10.01 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| BO1 | 2 | Delbert Farmer | |

**Comment:**
"There will be adverse impacts on plants, foods and medicines, animals and endangered species. What are the mitigation efforts taken by DOE?"

**Response:**
SEIS-II analyses did not identify specific adverse impacts in the areas noted in this comment. Any mitigation measures that DOE believes are necessary as a result of its decision (to be announced in a ROD) would be included in a mitigation action plan.

**10.01 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 7 | Don Schrader | |

**Comment:**
"The Federal Government has forbidden the state of New Mexico the right to ban radioactive garbage."

**Response:**
Under existing law, disposal of radioactive waste is mainly a federal responsibility. Nevertheless, DOE must obtain a RCRA Part B Permit from the State of New Mexico before it can operate WIPP as a disposal facility for TRU mixed waste.

**10.01 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-058 | 4 | George L. Miller | |

**Comment:**
"September 1991 the Governor of New Mexico had N. M. State Patrol set up road blocks at the Colorado/New Mexico state line and refuse to accept Colorado's waste which came from Rocky Flats. Will New Mexico's Governor accept it now?"

**Response:**
DOE will not speculate about what the governor of New Mexico may or may not do. DOE is not aware of any information suggesting that the governor of New Mexico would stop shipments destined for WIPP at the state line.

**10.01 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-056 | 51 | Linda Hibbs | |
| SF5 | 11 | Marilyn Hoff | |

**Comment:**
One commenter said she was concerned that, in the case of an accidental waste release, victims would not be properly compensated for damages. Another commenter said she was concerned that, in the case of an accidental radioactive release, farmers and ranchers would not be properly compensated for contaminated agricultural products (e.g., crops, timber) or cattle.

**Response:**
DOE or its contractors would clean up contamination resulting from an accidental release, if any, pursuant to applicable law. DOE recognizes the potential for transportation accidents. The probability and environmental impacts of such accidents were addressed in SEIS-II (see Sections 5.1.8.2, 5.2.8.2, 5.3.8.2, 5.4.8.2, 5.5.8.2, and Appendix E). The extent of potential liability for any such accidents is outside the scope of the SEIS-II analysis.

**10.01 (10)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-013 | 8 | Jennifer Salisbury | New Mexico Radioactive Waste Consultation Task Force |

**Comment:**
"Page 2-1: Include here in the discussion of Defense TRU Waste (and/or other appropriate sections of the document) a reference to the September 9, 1996 Memorandum from DOE General Counsel [Robert] Nordhaus, entitled 'Interpretation of the Term "Atomic Energy Defense Activities" as used in the Waste Isolation Pilot Plant Land Withdrawal Act.'"

**Response:**
The definition of defense TRU waste included in Section 2.1 of SEIS-II is consistent with the memorandum mentioned in this comment.

## 10.02 Changes in Laws and Regulations

### 10.02 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 53 | Lisa Sparaco | |
| ALB2 | 27 | Sean Asghar | |
| ALB2 | 40 | Virginia Kotler | |
| ALB2 | 94 | John Leahigh | |
| ALB2 | 151 | Rick Packie | |
| ALB3 | 32 | Robin Seydel | |
| ALB3 | 35 | Penny Mainz | |
| ALB3 | 117 | Michael Dooley | |
| ALB4 | 32 | Jeri Rhodes | |
| ALB5 | 34 | Susan Rodriguez | |
| ALB5 | 70 | Kent Gormley | |
| ALB6 | 10 | Catherine O'Neill | |
| ALB6 | 25 | Dan Kerlinsky | |
| ALB6 | 42 | Joan Robins | |
| ALB6 | 139 | Tom Metcalf | |
| ALB6 | 167 | Julie Ahern | |
| C-125 | 7 | Barbara H. Johnson | The Rio Grande Chapter of the Sierra Club |
| C-132 | 15 | Keith Tinno | Shoshone-Bannock Tribes |
| C-163E | 12 | No name provided | Citizens for Alternatives to Radioactive Dumping |
| C-164 | 2 | Mansi Kern | |
| CA1 | 14 | Richard Boren | |
| E-015 | 2 | Jerry Messick | Local 1199NM/AFSCME |
| E-056 | 59 | Linda Hibbs | |
| E-071 | 3 | Patricia Hall | |
| OR1 | 9 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |
| RL1 | 12 | F.R. Cook | |
| SF6 | 74 | Garland Harris | |
| SF8 | 17 | Carl Tsosie | Picuris Pueblo Tribal Council |

**Comment:**
Commenters stated that DOE has circumvented regulations and criteria necessary to protect public health and safety and the environment, in essence, to ensure that the WIPP site "fits the regulations." Commenters stated that EPA should not have altered its proposed draft criteria (40 CFR Part 194) in response to DOE comments. Commenters also said that Congress should not have eliminated provisions from the LWA, such as the plans for waste retrieval and for facility closure and decommissioning of the WIPP site as well as compliance with the solid waste disposal regulations. Two commenters asked why DOE was in favor of a waiver of the LDRs and whether WIPP could comply with the restrictions. Other commenters stated that the bill that amended the LWA should have been openly debated in Congress, and some expressed the concern that Congress will further weaken the law by allowing more waste to be disposed of, should the WIPP repository open on its expedited schedule of November 1997. One commenter requested clarification of the law dealing with hazardous chemicals while stating

that DOE should address this aspect of the waste. One commenter stated that noncompliance and modified requirements for DOE are eliminated from EPA standards and disposal operations restrictions by the National Defense Authorization Act. One commenter stated that EPA has not yet issued disposal standards for the WIPP facility.

**Response:**
EPA has issued the disposal standards for the WIPP facility. These standards are contained in Title 40 CFR Part 191, *Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes* (published December 20, 1993), and in Title 40 CFR Part 194, *Criteria for the Certification and Re-Certification of the Waste Isolation Pilot Plant's Compliance With the 40 CFR Part 191 Disposal Regulations* (published February 9, 1996).

DOE advocates requirements that add to the protection of human health or the environment. DOE and others submitted comments on EPA's proposed criteria to certify WIPP (40 CFR Part 194). During the public comment period, EPA received over 100 written public comments, including those of DOE.

The final rule, issued on February 9, 1996, responded to the comments received and, in some cases, the draft criteria were modified.

Congress has the power to amend the LWA to change the TRU waste capacity of WIPP. In recent amendments to the LWA, Congress exempted TRU mixed waste that is designated for disposal at WIPP from certain requirements applicable to hazardous waste (40 CFR Part 268). Nevertheless, DOE has addressed the hazardous component of TRU waste in SEIS-II. The extent to which Congress debated the LWA is beyond the scope of SEIS-II.

In SEIS-II, DOE analyzes the ability of WIPP to isolate radionuclides and heavy metals. The long-term performance analyses (see Chapter 5) demonstrate that both radionuclides and heavy metals would remain isolated from the environment if undisturbed for at least 10,000 years. In addition, SEIS-II analyzes thermal treatment of TRU waste (Action Alternative 2), required to demonstrate compliance with the treatment requirements of the LDRs. Also as shown in Chapter 5, thermally treated waste would remain isolated from the environment for at least 10,000 years. Although effective as a treatment method, thermal treatment would be expensive, and DOE and EPA agreed that if TRU waste were disposed of at WIPP, thermal treatment would not be necessary to protect the health and safety of the public.

Further, although Congress eliminated the statutory requirement that the waste be retrieved if WIPP is found to be in noncompliance with EPA regulations, if the WIPP facility opened for disposal operations, it would continue to be subject to oversight by the State of New Mexico, EPA, and other federal agencies. In particular, the facility would be required to comply with State of New Mexico RCRA permitting requirements. Moreover, even with the amendments to the LWA, EPA would maintain continuing independent oversight authority for WIPP. The LWA indicates (section 8(f)) that "not later than 5 years after the initial receipt of transuranic waste for disposal at WIPP, and every 5 years thereafter until the end of the decommissioning phase, the Secretary [DOE] shall submit to the Administrator [EPA] and the State documentation of continued compliance with the final disposal regulations." The EPA criteria for recertification (40 CFR Section 194.15) would require DOE to update the previous CCA by providing sufficient information to enable EPA to determine whether the WIPP program continued to comply with the disposal regulations. If EPA determined that WIPP did not comply with applicable laws, the Department would submit a remediation plan, consistent with the amendments to the LWA. SEIS-II includes analysis of the impacts of retrieval.

**10.02 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-132 | 17 | Keith Tinno | Shoshone-Bannock Tribes |
| E-050 | 1 | No name provided | Citizens for Alternatives to Radioactive Dumping |
| SF6 | 91 | Pia Gallegos | |
| SF7 | 64 | Margaret Cohen | |
| SF7 | 127 | Lee Lysne | |

**Comment:**
A few commenters said that the November 30, 1997, date set by Congress for the opening of the WIPP facility, described as arbitrary by one commenter, would rush EPA in its review of DOE's CCA, putting scientific analysis at risk.

**Response:**
The 1996 National Defense Authorization Act for Fiscal Year 1997, Public Law 104-201, encouraged DOE to begin WIPP operations in November 1997, provided that the WIPP project met all applicable health and safety standards and complied with all applicable laws. In October 1996, DOE submitted its CCA to EPA for review. EPA certified in May 1997 that the application is complete and has indicated that it does not expect to be able to make a certification decision before May 1998.

**10.02 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-095 | 1 | K. K. S. Pillay | |
| C-095 | 3 | K. K. S. Pillay | |
| C-095 | 4 | K. K. S. Pillay | |

**Comment:**
One commenter stated that there was an ongoing effort to circumvent safeguard regulations in order to dispose of plutonium-rich residues at the WIPP site. The commenter said that those who are promoting this effort view safeguard regulations prohibiting the disposal of "attractive materials" as obstacles to be overcome, as opposed to prudent measures intended to preserve national security and minimize environmental impact. The commenter said such plans are inconsistent with DOE's mission of reducing global nuclear danger and international agreements on safeguarding special nuclear materials. The commenter also said that there were nuclear nonproliferation issues involved with TRU waste. The commenter further stated that

the addition of plutonium to the waste inventory to be disposed of at WIPP would transfer the problems of storage and environmental impacts from Colorado to New Mexico.

**Response:**
A DOE Headquarters policy statement indicates that "attractiveness level E" materials can be removed from material control and accountability and be declared waste. Attractiveness level E materials are nuclear materials consisting of highly irradiated forms or solutions which, if they contain uranium, contain less than 20 percent in the form of uranium-235. Some of this waste still must be protected to Category IV requirements. Category IV indicates a security category of nuclear material requiring the lowest level of security (e.g., unescorted during shipment). RFETS plutonium residues intended for disposal at the WIPP site would include waste shipped in TRUPACT-IIs, and WIPP's transportation system requirements exceed the protection requirements of Category IV materials. Therefore, shipments of residues (waste) would meet the requirements of the safeguard regulations. Also, it is not technically and economically feasible to recover the low quantities and low concentrations of radionuclides in TRU waste; thus, there are no nuclear nonproliferation issues associated with this material.

It should be noted that the decision to declare any of the residues TRU waste is beyond the scope of the decisions to be made based on SEIS-II. SEIS-II will determine only whether residues would be accepted for disposal at WIPP, should they be declared waste.

**10.02 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-132 | 19 | Keith Tinno | Shoshone-Bannock Tribes |

**Comment:**
"PCB contaminated waste cannot currently be emplaced in WIPP because that would require a permit under the Toxic Substances Control Act (TSCA), which WIPP does not plan to obtain. What would it entail to obtain this permit?"

**Response:**
DOE would need to demonstrate that the WIPP facility could comply with the relevant chemical waste landfill regulations at 40 CFR Section 761.75. These regulations, which continue to evolve, would require DOE to, at a minimum, address soils requirements, use synthetic membrane liners, evaluate hydrologic conditions, consider flood protection and topography, propose and implement monitoring and leachate collection systems, and discuss waste disposal operations and supporting facilities.

## 10.03 Oversight

### 10.03 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-129 | 1 | Richard A. Kenney | Coalition 21 |
| CA1 | 48 | Jack White, Jr. | |
| CA1 | 105 | Cliff Stroud | |
| CA1 | 124 | Dan Funchess | |

**Comment:**
A number of commenters said that, based on the findings of a 1996 report published by the NAS titled *The Waste Isolation Pilot Plant: A Potential Solution for the Disposal of Transuranic Waste*, the WIPP site should open.

**Response:**
Although DOE agrees with the conclusions of the report cited by the commenters and believes that sufficient information and analysis is available, the decision to open the WIPP site and begin disposal operations must meet several legal requirements. Specifically, DOE must, at a minimum, (1) receive a RCRA Part B Permit from the state of New Mexico to operate WIPP as a storage and disposal facility and satisfy any relevant permit conditions; (2) receive CCA certification from EPA and satisfy any conditions issued pursuant to 40 CFR Parts 191 and 194; (3) complete SEIS-II and issue a ROD; (4) comply with the transportation emergency response and preparedness provisions of the WIPP LWA; and (5) complete any other relevant operating requirements pursuant to DOE orders (e.g., operational readiness review).

### 10.03 (02)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB5 | 2 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 2 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 166 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 219 | Robert H. Neill | Environmental Evaluation Group |
| CA1 | 19 | Don Gray | |
| SF1 | 5 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
Commenters said that Chapter 6 of SEIS-II lists the status of permits and all of the regulatory agencies for the WIPP project except DOE and suggested that the status of WIPP's compliance with DOE orders should be provided. Commenters also said that because DOE has the authority to self-approve the Draft SEIS-II, the internal system used for approval should be discussed and a statement that SEIS-II is in compliance with DOE's *Recommendations for the Preparation of Environmental Assessments and Environmental Impact Statements* should be included. Finally, one commenter stated that SEIS-II did not indicate its compliance with the C&C Agreement.

**Response:**
The Final SEIS-II includes a list of relevant DOE orders. An EIS typically does not describe the internal procedures the agency will use for its approval; however, that information is contained in DOE Order 451.1A, which is available by writing the Office of NEPA Policy and Assistance (EH-42) at DOE Headquarters, 1000 Independence Avenue, S.W., Washington, DC 20585-0119, calling (202) 586-4600, leaving a message at l-800-472-2756, or by the Internet at Universal Resource Locator http://tis.eh.doe.gov/nepa/. The referenced report presents recommendations, as opposed to requirements, for the preparation of DOE NEPA documents. SEIS-II followed these recommendations to the fullest extent possible.

**10.03 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB6 | 35 | Joan Robins | |
| C-118 | 10 | David Proctor | |
| C-133 | 10 | Bonnie Bonneau | Legions of Living Light |
| C-133 | 11 | Bonnie Bonneau | Legions of Living Light |
| C-141 | 26 | Margret Carde | |
| C-163H | 2 | David T. Snow | |
| SF6 | 62 | Anna Hansen | |

**Comment:**
Commenters stated that the lack of scientific consensus should cause DOE to conduct additional peer review of its data and assumptions. One commenter also stated that independent site visits are needed to examine information and the site characterization activities. Some commenters said that significant work remains before WIPP could possibly open.

**Response:**
Over the past 20 years, DOE has undertaken an extensive site characterization and experimental program designed to demonstrate that TRU waste can be isolated from the environment in the WIPP repository in compliance with applicable regulations. The WIPP characterization and experimental program has been overseen by state and federal regulatory agencies, the EEG, the NAS, and others.

The peer review program has included waste characterization analysis, reviews of conceptual models, engineered alternatives cost/benefits, engineered systems data qualification, natural barriers data qualification, waste form and disposal room data qualification, and passive institutional controls. In addition, the following groups and organizations have conducted peer reviews: the NAS (12 reports), Performance Assessment Peer Review Panel, Shaft Seal Design Independent Review, Engineered Alternatives Task Force Report Peer Review, Blue Ribbon Panel Peer Review, Advisory Committee on Nuclear Facility Safety Review (two reports), Performance Assessment Review Team, INTRAVAL (international organization), WIPP Conceptual Model Uncertainty Group Review, EEG reviews (15 reports), Fracture Expert Group Review, Fanghänel Review, and the Independent Technical Review of the Bin and Alcove Test Programs, Performance Assessment Reviews. The results of these peer review efforts have been incorporated into the long-term performance analyses of SEIS-II.

Knowledgeable and qualified individuals have often held opinions differing from those of DOE; in those instances, DOE's obligation has been to determine the merits of each scientific or engineering viewpoint and proceed accordingly. In SEIS-II, Appendix H.8 addresses the alternative conceptual models and various viewpoints of disposal performance that are largely at odds with DOE's perspectives. Differing perspectives have also been incorporated into DOE's CCA, which is now undergoing EPA appraisal. Thus, although DOE has sometimes taken scientific and engineering positions that were contrary to others, it has continued to solicit these viewpoints to determine whether its characterization and experimental programs provided sufficient information to demonstrate compliance with the regulations.

As required by 40 CFR Section 194.21, EPA may inspect any area of WIPP and any locations performing activities that provide information relevant to compliance. In addition, EPA may obtain samples and monitor and measure aspects of the disposal system and the waste.

**10.03 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 36 | Penny Mainz | |
| ALB6 | 30 | Dan Kerlinsky | |
| ALB6 | 168 | Julie Ahern | |
| ALB6 | 169 | Julie Ahern | |
| E-050 | 2 | No name provided | Citizens for Alternatives to Radioactive Dumping |
| E-056 | 56 | Linda Hibbs | |
| SF6 | 92 | Pia Gallegos | |

**Comment:**
Commenters stated that recent LWA amendments eliminated EPA's authority to close WIPP if leakage occurred. One commenter said that continuing oversight of WIPP operations by an independent scientific panel is necessary.

**Response:**
If the WIPP facility opened for disposal operations, it would continue to be subject to oversight by the State of New Mexico, EPA, and other federal agencies. The State of New Mexico would ensure that the facility operates within the conditions imposed by its RCRA permit. Even with the amendments to the LWA, EPA would maintain continuing independent oversight authority for WIPP. The WIPP LWA indicates (section 8(f)) that "not later than 5 years after the initial receipt of transuranic waste for disposal at WIPP, and every 5 years thereafter until the end of the decommissioning phase, the Secretary [DOE] shall submit to the Administrator [EPA] and the State documentation of continued compliance with the final disposal regulations." The EPA criteria for recertification (40 CFR Section 194.15) would require DOE to update the previous CCA by providing sufficient information to enable EPA to determine whether the WIPP program continued to comply with the disposal regulations. If EPA determines the Department has not complied with applicable laws, the Department would submit a remediation plan to EPA.

**10.03 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB5 | 6 | Robert H. Neill | Environmental Evaluation Group |
| ALB5 | 58 | Robert H. Neill | Environmental Evaluation Group |
| BO1 | 15 | Mike Crapo | Congressman, State of Idaho |
| C-152 | 66 | Robert H. Neill | Environmental Evaluation Group |
| CA1 | 21 | Don Gray | |
| E-012 | 4 | Charles Hyder | |
| SF1 | 7 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
Commenters requested that SEIS-II clearly indicate that EPA has authority to regulate the WIPP project. One commenter stated that a footnote on page 1-1 of the Draft SEIS-II indicates that DOE has the sole authority to decide if waste should be disposed of at the WIPP site when, in fact, Congress reassigned the authority to EPA.

**Response:**
In SEIS-II, DOE recognizes that EPA is the agency that will determine whether the WIPP project complies with EPA standards. Specifically, Section 1.4 of SEIS-II states that EPA has issued regulations to certify and determine whether the WIPP site can adequately isolate TRU waste in compliance with that agency's regulations and criteria. Section 1.5 also discusses the CCA and notes that the final CCA was submitted to EPA in October 1996. Chapter 6 of SEIS-II lists EPA as the agency responsible for certifying WIPP's compliance with 40 CFR Part 194.

The footnote in Section 1.1 has been deleted. Section 1.4 clearly acknowledges that EPA has the authority to determine whether the WIPP site can adequately isolate TRU waste in compliance with that agency's regulations and criteria.

**10.03 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-032 | 3 | Robert S. Light | New Mexico Representative (District 55) |
| V1 | 3 | Ed Stein | |

**Comment:**
Two commenters asked whether DOE provides funding or would continue to provide funding to EEG, the Carlsbad Environmental Monitoring and Research Center, and interest groups such as the Southwest Research and Information Center if WIPP opened.

**Response:**
DOE funds the EEG to conduct independent reviews and evaluations pertaining to the WIPP project. If the WIPP facility opened for disposal operations, the need for continued EEG oversight may be diminished and funding would be decided on a year-to-year basis. DOE has a long-term commitment to continue to provide funds to the Carlsbad Environmental

Monitoring and Research Center. The operations of organizations such as the Southwest Research and Information Center are not funded by DOE.

**10.03 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 2 | David Shepard | |

**Comment:**
"Has Mark Wilder had any input on this [WIPP]? Because he's the Secretary [of the New Mexico Environment Department]. Can the governor stop it [WIPP], like in Idaho?"

**Response:**
The New Mexico Environment Department has submitted comments on SEIS-II, although they were not signed by Mr. Weidler. DOE must obtain a RCRA Part B Permit from the State of New Mexico Environment Department before it can operate WIPP as a TRU waste disposal facility.

**10.03 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-132 | 6 | Keith Tinno | Shoshone-Bannock Tribes |
| DE1 | 46 | Kay Mack | |

**Comment:**
One commenter stated that numerous political, environmental, and legal battles on rules and regulations were still pending and still probable. The commenter said that DOE could not certify compliance with future requirements. Another commenter stated that the Shoshone-Bannock Tribes reserve the right to take appropriate actions with respect to nuclear material that may in any way impact their reservation.

**Response:**
DOE's policy is to work in good faith with all of its stakeholders. If WIPP were approved for the disposal of TRU waste, DOE would comply with all applicable laws and regulations.

**10.03 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 6 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"While several EEG documents are cited, there are a number of relevant EEG publications that the SEIS-II authors have either ignored or are not familiar with that are directly relevant to the environmental impact of WIPP."

**Response:**
The EEG has published a number of documents that are relevant to the environmental impacts of WIPP. In its analysis of environmental impacts in SEIS-II, DOE has referenced those documents that it believes are the most applicable and relevant.

**10.03 (10)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB6 | 79 | Judy Pratt | |

**Comment:**
"So then the Attorney General caved in and negotiated a consultation and compliance agreement with the Feds, which essentially made the state helpless in the face of this project."

**Response:**
The DOE National Security and Military Applications of Nuclear Energy Authorization Act of 1980 (Public Law 96-184), which authorized WIPP, directed DOE to consult and cooperate with the appropriate officials of the State of New Mexico with respect to the public health and safety concerns. In 1981, the State of New Mexico brought suit against DOE to address four main concerns. The District Court ordered a stay of the suit in recognition that the State and DOE had entered into a "Stipulated Agreement Resolving Certain State Off-Site Concerns Over WIPP." The Stipulated Agreement has 14 provisions, the principal one being that DOE and the State execute a "consultation and cooperation agreement" to provide "timely exchange of information" about WIPP. A "Working Agreement" for the C&C Agreement, included as Appendix A to the agreement, has 11 major articles. Among other items, it provides for DOE to give prior written notice to the State before the occurrence of 17 "key events" or "milestones" during the life of the project, up to and including decontamination and decommissioning. The Stipulated Agreement was supplemented in 1982, which completed the lawsuit settlement process. The C&C Agreement and the Working Agreement have been modified several times by mutual agreement. Additional information can be found in Section 10.3.2.1 of SEIS-I.

## 10.04 WIPP Decommissioning

### 10.04 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 57a | Jeff Radford | Business People Concerned about WIPP |
| ALB3 | 3 | David Shepard | |
| ALB6 | 11 | Catherine O'Neill | |
| E-050 | 3 | No name provided | Citizens for Alternatives to Radioactive Dumping |

**Comment:**
Commenters questioned how and when the WIPP site would be decommissioned and whether ownership of the land would revert to the state.

**Response:**
Under any alternative in SEIS-II, the WIPP site would be decommissioned in a manner that would allow for safe, permanent disposition of surface and underground facilities, consistent with applicable regulations in effect at that time. After disposal operations, little contamination of facilities would be expected, although any facilities would be decontaminated as appropriate. Usable equipment would be removed and recycled or salvaged, and surface facilities would be dismantled. A berm would be constructed around the perimeter of the closure area, and surface areas would be restored. The decommissioning period would start at the cessation of disposal operations and last for as long as 10 years. Planned closure and decommissioning activities are discussed in Section 3.1.3.5 of SEIS-II.

If the WIPP site were not used as a disposal site for TRU waste, management of the site would likely be transferred to the Department of the Interior, which originally managed the land for the federal government. If the WIPP site were closed after being used as a waste repository in accordance with the LWA, DOE or its successor agency would likely continue to manage the site for the federal government for the foreseeable future.

### 10.04 (02)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-095 | 5 | K. K. S. Pillay | |

**Comment:**
"The accumulation of large quantities of plutonium at one location also poses a proliferation problem that has not been addressed in the SEIS-II document. Both the environmental and proliferation issues are more significant because no institutional controls or care of WIPP will be required after 100 years."

**Response:**
The material currently proposed for disposal in the WIPP repository has been designated TRU waste, because it is not feasible to recover the low quantities and low concentrations of TRU

radionuclides, including plutonium. Thus, there are no nuclear nonproliferation issues associated with this material. Further, the WIPP repository is nearly half a mile underground, and retrieving the material would be very difficult.

Although DOE in its planning does not rely on institutional controls for more than 100 years, the Department would apply institutional controls for as long as they are needed and DOE is able to do so. In addition, a permanent marking system would be put in place to provide passive control of access to the site and convey information regarding the presence of dangerous waste material and the potential consequence of intrusion into the waste repository to future generations. The permanent marking system would involve the use of surface monuments, small subsurface warning markers, buried rooms, and large earthen structures marking the WIPP repository footprint on the surface. Messages in the six official United Nations languages (English, French, Spanish, Chinese, Russian, and Arabic) and Navajo would be inscribed on the permanent markers. A brief description of the closure and marking systems is found in Section 3.1.3.5 of SEIS-II.

**10.04 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 155 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 5-142. Lines 7-9. The assumption (for No Action Alternative 1) that DOE would indefinitely maintain institutional control at all of the storage sites is inconsistent with regulatory requirements at WIPP. Active institutional control may be allowed by EPA for 100 years at WIPP and credit (or partial credit) for up to 600 additional years of passive institutional control may be allowed. An assumption of perpetual institutional control for a No Action Alternative unfairly biases its comparison with the Proposed Action."

**Response:**
No Action Alternative 1 was added to SEIS-II as a result of the public comments obtained during the scoping process. During scoping, many commenters expressed the desire to see TRU waste maintained in monitored, retrievable storage for long periods of time. Under No Action Alternative 1, to respond to the commenters who called for an analysis of long-term storage of waste, DOE assumed TRU waste would be stored for an indefinite period of time, despite the inherent problems in ensuring institutional control for the 10,000-year period addressed under the EPA disposal regulations. DOE analyzed the impacts resulting from storage under No Action Alternative 1 for 100 years and left the reader to extrapolate these impacts for as many years as it would be reasonable to continue TRU waste storage. DOE has highlighted this in the "Comparing Alternatives" text box at the beginning of Chapter 5 in SEIS-II and will consider this fact in reaching its final decision based on the SEIS-II analyses.

## 10.05 WIPP Mission

### 10.05 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-013 | 12 | Jennifer Salisbury | New Mexico Radioactive Waste Consultation Task Force |
| ALB2 | 29 | Sean Asghar | |
| ALB2 | 56 | Jeff Radford | Business People Concerned about WIPP |
| ALB2 | 77 | Charles Hyder | |
| ALB3 | 104 | Lois Pribble | |
| ALB4 | 24 | Jeri Rhodes | |
| ALB5 | 11 | Robert H. Neill | Environmental Evaluation Group |
| ALB6 | 89 | Debra Tenney | |
| BO1 | 33 | Delbert Farmer | |
| BO1 | 36 | Delbert Farmer | |
| BO1 | 95 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| C-005 | 1 | Len and Jeanne Kunko | |
| C-012 | 1 | Eleanor Ponce | |
| C-025 | 2 | James F. Mesite, Jr. | |
| C-032 | 3 | Joan O. King | |
| C-058 | 3 | George L. Miller | |
| C-059 | 3 | Sam Volpentest | Tri-City Industrial Development Council |
| C-072 | 2 | Carl W. Buckland | |
| C-076 | 2 | Mary Brissenden | |
| C-080 | 6 | Mike Dempsey | |
| C-094 | 1 | Robert Frie | |
| C-095 | 6 | K. K. S. Pillay | |
| C-104 | 5 | Bob Slay | Savannah River Site Citizens Advisory Board |
| C-129 | 4 | Richard A. Kenney | Coalition 21 |
| C-132 | 7 | Keith Tinno | Shoshone-Bannock Tribes |
| C-132 | 13 | Keith Tinno | Shoshone-Bannock Tribes |
| C-132 | 20 | Keith Tinno | Shoshone-Bannock Tribes |
| C-132 | 21 | Keith Tinno | Shoshone-Bannock Tribes |
| C-141 | 14 | Margret Carde | Concerned Citizens for Nuclear Safety |
| C-152 | 7 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 15 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 47 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 65 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 68 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 74 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 75 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 78 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 84 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 162 | Robert H. Neill | Environmental Evaluation Group |
| C-163E | 23 | No name provided | Citizens for Alternatives to Radioactive Dumping |
| C-163G | 5 | Jeff Radford | Business People Concerned about WIPP |
| CA1 | 23 | Don Gray | |
| CA1 | 40 | Christen Nuget | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| CA1 | 55 | Mike Garringer | |
| CA1 | 82 | John Heaton | |
| CA1 | 106 | Cliff Stroud | |
| DE1 | 42 | Kay Mack | |
| DE1 | 80 | Benjamin Corbett | |
| DE1 | 141 | Kenneth Worth | |
| E-002 | 1 | Mike Lawrence | Mobile Characterization Services |
| E-050 | 4 | No name provided | Citizens for Alternatives to Radioactive Dumping |
| E-056 | 4 | Linda Hibbs | |
| E-056 | 58 | Linda Hibbs | |
| NA1 | 4 | Todd Crawford | |
| NA1 | 6 | Todd Crawford | |
| NA2 | 5 | Lee Poe | |
| OR1 | 39 | Bob Peele | |
| OR2 | 14 | Barbara A. Walton | Oak Ridge Reservation Local Oversight Committee |
| RL1 | 5 | F.R. Cook | |
| RL1 | 7 | F.R. Cook | |
| RL1 | 9 | F.R. Cook | |
| RL1 | 10 | F.R. Cook | |
| SF2 | 17 | Tai Bixby | |
| SF3 | 9 | Cathy Swedlund | |
| SF3 | 85 | Sasha Pyle | Religious Society of Friends |
| SF4 | 14 | John Heaton | |
| SF5 | 84 | Michael Collins | |
| SF6 | 37 | Pamela Baumgertel | |
| SF6 | 60 | Anna Hansen | |
| SF6 | 73 | Garland Harris | |
| SF6 | 80 | Garland Harris | |
| SF8 | 83 | Quinn Evans | |
| V1 | 11 | Mike Dempsey | |

**Comment:**
Many commenters expressed concerns about the waste disposal mission of WIPP. Because of the alternatives analyzed, some said they were concerned that the mission might be expanded to accommodate other types and amounts of TRU waste (e.g., commercial, nondefense, additional RH-TRU waste), while others said they were concerned that other types of waste (e.g., Greater-than-Class-C, low- and high-level waste, spent nuclear fuel, fissile materials, and highly-enriched uranium or spent nuclear fuel from foreign countries) might be disposed of at the WIPP facility. On the other hand, some commenters stated that the WIPP repository would be an ideal candidate for the disposal of all TRU waste and other waste types.

**Response:**
In 1980, the WIPP project was authorized by Congress (Public Law 96-164) to demonstrate the safe disposal of radioactive waste resulting from U.S. defense activities and programs. In 1981, DOE issued a ROD to proceed with the phased development of the WIPP site for the disposal of up to 175,600 cubic meters (6.2 million cubic feet) of defense CH-TRU waste and

7,080 cubic meters (250,000 cubic feet) of defense RH-TRU waste. The C&C Agreement with the State of New Mexico also limits RH-TRU waste for disposal to 7,080 cubic meters (250,000 cubic feet). Based on SEIS-I, DOE issued a ROD in 1990 to proceed with the phased development of WIPP.

With the passage of the LWA (Public Law 102-579) in 1992, Congress modified the defense TRU waste disposal mission of the WIPP project by reducing the total amount of TRU waste that may be disposed of to 175,600 cubic meters (6.2 million cubic feet) and by providing restrictions on the disposal of defense RH-TRU waste (see Appendix A.1 for additional information). The LWA (section 12) also prohibits the disposal of spent nuclear fuel and high-level radioactive waste at WIPP; the Yucca Mountain site in Nye County, Nevada, is under consideration as a geologic repository for spent nuclear fuel and high-level radioactive waste pursuant to the Nuclear Waste Policy Act, as amended. For these reasons, DOE has no plans to expand the mission of WIPP to dispose of any other waste types.

Accordingly, the Proposed Action is consistent with the 1981 and 1990 RODs, the enabling legislation, and the LWA, and the SEIS-II analyses are generally limited to the disposal of TRU waste (with the exception of the cumulative impacts in Section 5.9). However, CEQ regulations and guidance require federal agencies to examine reasonable alternatives, even when they may be outside the scope of the agency's authority (see 40 CFR Section 1502.14). Because DOE needs to dispose of all TRU waste in a manner that protects human health and the environment, it is reasonable to consider alternatives that would dispose of all TRU waste.

As noted in Sections 2.1 and 3.2.1 of SEIS-II, legal restrictions would prevent DOE from fully implementing the action alternatives, although all could be partially implemented without violating the prohibitions on the types of TRU waste (i.e., limited to defense) or exceeding the limits on waste emplacement imposed by the LWA or the C&C Agreement with the State of New Mexico. In addition, given the conservative TRU waste estimates of the Proposed Action, current restrictions would prevent DOE from completely disposing of all defense TRU waste, although more recent estimates contained in the *TRU Waste Management Plan* show that WIPP does have the capacity to dispose of all defense TRU waste currently stored and to be generated during its planned operational lifetime. It should be recognized that DOE is not aware of any technical barriers to expanding the WIPP facility to accept additional TRU waste (capacity or source), providing the waste meets the WAC. In the absence of any changes to current restrictions, DOE will continue to study the management of TRU waste that cannot be disposed of at the WIPP site.

**10.05 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 107 | Zelda Gatuskin | |
| ALB3 | 17 | Bruce Trigg | New Mexico Public Health Association |
| ALB3 | 18 | Bruce Trigg | New Mexico Public Health Association |
| ALB4 | 88 | Wendy Cory | |
| BO1 | 21 | Brian Whitlock | |
| BO1 | 84 | Rebecca A. Nebelsick | |
| C-090 | 9 | Linda Ewald | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-104 | 6 | Bob Slay | Savannah River Site Citizens Advisory Board |
| C-131 | 14 | Don Hancock | Southwest Research and Information Center |
| C-131 | 17 | Don Hancock | Southwest Research and Information Center |
| C-131 | 20 | Don Hancock | Southwest Research and Information Center |
| C-135 | 3 | William Fulkerson | Friends of Oak Ridge National Laboratory |
| C-141 | 5 | Margret Carde | Concerned Citizens for Nuclear Safety |
| C-151 | 2 | Don Moniak | Serious Texans Against Nuclear Dumping |
| C-151 | 3 | Don Moniak | Serious Texans Against Nuclear Dumping |
| C-151 | 6 | Don Moniak | Serious Texans Against Nuclear Dumping |
| C-151 | 9 | Don Moniak | Serious Texans Against Nuclear Dumping |
| C-166 | 3 | Elliott H. Libman, MSW | |
| C-166 | 4 | Elliott H. Libman, MSW | |
| NA1 | 2 | Todd Crawford | |
| OR1 | 1 | Don Hancock | Southwest Research and Information Center |
| SF1 | 103 | Tom Udall | Attorney General of New Mexico |
| SF2 | 49 | Barbara Card | |
| SF5 | 34 | Louise Baum | |
| SF5 | 78 | Michael Collins | |

**Comment:**
A variety of comments addressed the sources and volumes of TRU waste. Some commenters stated that the WIPP repository does not have the capacity to dispose of all TRU waste (e.g., all RH-TRU waste), either as estimated by SEIS-II or for waste that may continue to be generated after WIPP halts disposal operations in the year 2033. A few commenters stated that only a portion of the waste to be disposed of at the WIPP repository has been generated, that TRU waste generation should cease, or that the capacity of WIPP far exceeds the available TRU waste. Other commenters stated that (1) the TRU waste inventory of SEIS-II should be modified to incorporate the TRU waste that will result from new missions (e.g., processing of plutonium in scrub alloy), given DOE's recent decisions (e.g., RODs based on the EISs for stockpile stewardship and management and for storage and disposition of weapons-usable fissile materials) and (2) DOE should reissue the Draft SEIS-II for public comment on that basis.

**Response:**
As discussed in Section 3.1 and Appendix A.1 and used in the analyses throughout SEIS-II, TRU waste inventory estimates include many conservative assumptions to ensure that maximum reasonably foreseeable impacts are estimated. For example, SEIS-II relies on BIR-3, which likely overestimates TRU waste volumes by including projections from decontamination and decommissioning of facilities. Whether this waste will be generated and whether it will be CH-TRU or RH-TRU waste is uncertain. Also, estimates of previously buried waste assume that all such waste will be excavated and become newly generated waste that will meet WAC. This also is unlikely, as some sites will undergo in-ground remediation or will be found to contain low-level waste.

On the basis of the conservative inventory presented in Chapter 2 and Appendix A of SEIS-II, the analyses of the Proposed Action were predicated on the base capacity of the WIPP facility (175,600 cubic meters [6.2 million cubic feet]). Because of the capacity limitations established in the C&C Agreement with the State of New Mexico, the Proposed Action assumed that some waste would remain in storage, such as RH-TRU waste at ORNL and the Hanford site. In addition, since there are no technical barriers to increasing WIPP's disposal capacity, the action alternatives assumed that WIPP could be expanded to accommodate the disposal of the entire TRU waste inventory estimated in Appendix A.

Although DOE's national defense mission has changed significantly in recent years, TRU waste will continue to be generated by a variety of activities, such as nuclear weapons research and dismantlement, decontamination and decommissioning of facilities, environmental restoration of contaminated sites, and waste characterization and treatment. However, meaningful projections of the amount, sources, and characteristics of some TRU waste or of TRU waste that may be generated beyond the year 2033 are not yet available or are far too uncertain to be used in analysis. Since the inventory estimates used in SEIS-II are based on conservative assumptions and estimating practices and because of the unavailability or uncertainty associated with other TRU waste-generating sources or activities, DOE believes that the SEIS-II analyses provide maximum reasonably foreseeable environmental impacts because they are based on estimates in Appendix A, which probably overstate the volume of waste. In response to these comments, Section 1.5 of SEIS-II has been modified to update the status of other relevant DOE planning documents, and new Appendix J of SEIS-II has been prepared to address other TRU waste inventory planning estimates. Based on these inventory planning estimates, DOE believes that the capacity of the WIPP repository may be sufficient to accommodate the disposal of all defense TRU waste currently in storage and TRU waste that would be generated in the DOE complex (by means other than remediation of buried waste) for the foreseeable future.

The RODs for the *Storage and Disposition of Weapons-Usable Fissile Materials Final Programmatic Environmental Impact Statement* and the *Final Programmatic Environmental Impact Statement for Stockpile Stewardship and Management*, which were issued after approval of the Draft SEIS-II, are summarized in Chapter 1 of the Final SEIS-II. Also, the Final SEIS-II cumulative impacts analysis takes into account the impacts from these EISs. DOE does not intend to reissue SEIS-II as a draft EIS.

**10.05 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-001 | 2 | Michael Jansky | United States Environmental Protection Agency Region 6 |
| A-010 | 4 | Justin P. Wilson | State of Tennessee |
| A-012 | 1 | Kathleen E. Trever | State of Idaho Oversight Program |
| A-012 | 2 | Kathleen E. Trever | State of Idaho Oversight Program |
| A-012 | 9 | Kathleen E. Trever | State of Idaho Oversight Program |
| A-013 | 7 | Jennifer Salisbury | New Mexico Radioactive Waste Consultation Task Force |
| BO1 | 6 | Governor Phillip Batt | State of Idaho |
| BO1 | 7 | Governor Phillip Batt | State of Idaho |
| BO1 | 8 | Governor Phillip Batt | State of Idaho |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| BO1 | 13 | Congressman Mike Crapo | State of Idaho |
| BO1 | 18 | Senator Larry Craig | State of Idaho |
| BO1 | 20 | Brian Whitlock | |
| BO1 | 43 | Charles Rice | Citizens Advisory Board Idaho National Engineering and Environmental Laboratory |
| BO1 | 62 | John Commander | |
| C-087 | 2 | Charles Rice | Citizens Advisory Board Idaho National Engineering and Environmental Laboratory |
| C-130 | 2 | Susan L. Gawarecki | Oak Ridge Reservation Local Oversight Committee |
| C-153 | 2 | Martin Huebner | Federation of Western Outdoor Clubs |
| OR1 | 49 | Fred Maienschein | |

**Comment:**
Many commenters said that SEIS-II and the Proposed Action and action alternatives do not recognize the requirements established by consent orders or other agreements to remove all TRU waste from certain DOE sites. In some cases, these orders and agreements establish schedules for TRU waste removal. Commenters also encouraged DOE to evaluate the potential impacts associated with noncompliance with the orders and agreements.

**Response:**
DOE is fully cognizant of the terms and conditions of the consent orders and is making every effort to ensure that disposal operations begin as scheduled and that all TRU waste in storage is treated, packaged, and removed as required. As noted by the commenters, current restrictions would prevent DOE from completely disposing of all TRU waste (e.g., nondefense TRU waste), and TRU waste would remain at some of the current sites. However, because the estimates in Appendix A are conservative (i.e., overestimate volumes), updated information suggests that the capacity of the WIPP repository would be sufficient to accommodate the disposal of all defense TRU waste currently in storage and TRU waste that would be generated by operations in the DOE complex for the foreseeable future (see updated TRU waste projections in Appendix J). WIPP also has additional capacity for some TRU waste that was buried before 1970 should that waste need to be excavated. Though WIPP does not currently have capacity for all of the waste buried prior to 1970, DOE does not believe excavation of all of that waste would be necessary. The potential environmental impacts of TRU waste remaining in storage, either under the action alternatives or no action alternatives, were estimated in Chapter 5 of SEIS-II.

Orders and agreements that provide TRU waste removal schedules are discussed in Section 2.1.3 of SEIS-II. Appendix J has been added to SEIS-II to address various waste planning estimates and associated issues.

**10.05 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| V1 | 25 | George Chandler | |

**Comment:**
"Under the proposed action, only defense TRU waste from a certain time frame is stored at WIPP. Other wastes in the alternatives are considered but not stored because it extends the operation of WIPP 100 years. What will happen to this waste? Is there a potential to store these wastes at WIPP?"

**Response:**
Under No Action Alternatives 1 and 2, the TRU waste that has been proposed for disposal at the WIPP facility would be treated, consolidated at several generator sites, and stored at those sites indefinitely (see Sections 3.2.5 and 3.2.6 of SEIS-II). DOE did not analyze long-term storage of TRU waste at WIPP in SEIS-II. Instead, only disposal at WIPP was analyzed.

DOE is still considering how to dispose of TRU waste that may not be disposed of at WIPP and will consider its disposition in a future NEPA document, as necessary. Options that may be explored in the future for this waste could include on-site storage, disposal in a new repository, or a research program to discover better ways of disposing of TRU waste.

**10.05 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 73 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 2-1. Lines 9 through 19. The Geography of the nuclear weapon complex is described. States that contain the 10 additional sites are identified in Identification of Additional TRU Waste Generator Sites. It appears that the TRU waste generated at the 10 additional sites is not defense TRU waste and is thus not eligible for disposal at the WIPP under the current law."

**Response:**
The tables in Section 2.1.3 provide a specific listing of the referenced additional sites; as indicated in the tables and their footnotes, some of the waste is not of defense origin.

**10.05 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF2 | 44 | Elliott Skinner | |

**Comment:**
“A new mission for the DOE could be one of education. That would be a tremendous effort on the DOE's part to educate the public about these issues, making use of people to speak and to look at this situation as a grave public problem that we have in this country.”

**Response:**
In addition to describing the potential environmental impacts associated with the operation of WIPP in SEIS-II, DOE’s continuing commitment to its stakeholders includes a comprehensive public outreach program for WIPP. Specifically, the WIPP public affairs staff has (1) prepared technical, regulatory, and financial materials for the interested public, agencies, organizations, and local educational interests; (2) ensured continued availability of information to the public through the establishment and maintenance of various electronic links (e.g., WIPP Internet home page, toll-free phone number); (3) encouraged and conducted public tours of the WIPP facility; and (4) prepared and conducted other media-related information such as press releases and interviews.

**10.05 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-132 | 22 | Keith Tinno | Shoshone-Bannock Tribes |

**Comment:**
“Pg. [Summary] S-14, last bullet - it is stated that ‘For the purpose of analyses in SEIS-II, the volume of the drum or cask is used.’ But, for actual storage of waste in WIPP, will the maximum capacity volume be based on waste only or on the containers containing the waste?”

**Response:**
The law allows disposal of a specific volume of waste. Even though many of the containers would have void spaces, the SEIS-II analyses assumed that the waste volume would be equal to the volume of the containers in which the waste is stored (i.e., that each waste container is full).

**10.05 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF3 | 14 | Myla Reason | |

**Comment:**
"They (Santo Domingo and La Bajada communities) came to understand that WIPP would somehow remediate, immediately remediate, their environment and take away the plutonium that's reached the aquifer. Is WIPP going to address that? How much of the contamination is going to be mitigated by WIPP?"

**Response:**
TRU waste from environmental restoration activities could be disposed of at the WIPP repository; however, it is beyond the scope of SEIS-II to identify specific environmental remediation activities or to assess the environmental impacts of those activities.

**10.05 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB6 | 33 | Dan Kerlinsky | |

**Comment:**
"Our group retains very strong concern about remote-handled waste that may be coming to WIPP. Hearing about the intense radioactivity of this waste, we feel it's really inappropriate for that to be part of the treatment plan for the transuranic wastes, most of which is much lower in radioactivity."

**Response:**
While RH-TRU waste presents some handling and management problems due to high external dose rates, it does not present a significantly larger risk to the public than CH-TRU waste, as demonstrated by the human health effects analyses of SEIS-II (see Section 5.1.9.1 for an example). RH-TRU waste is highly radioactive and would be dangerous for people in the immediate vicinity of the waste if no radiation shielding (steel or concrete) were present. Such shielding, however, would be present at WIPP.

**10.05 (10)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-129 | 3 | Richard A. Kenney | Coalition 21 |

**Comment:**
"WIPP can take 175,000 cubic meters. The SEIS-II should state the amount of volume reduction required for WIPP to accept all of this nation's foreseeable TRU waste. It should

also explain (when the WIPP becomes operational) how much its capacity would need to be expanded to take all of this nation's TRU waste without treatment, including any TRU waste generated during the next 35 years."

**Response:**
SEIS-II describes the changes in waste volume that would result from treatment to meet the WAC and LDRs (see Sections 3.2.2 and 3.2.3). However, it would not be possible to reduce the total waste volume (including nondefense waste, future generated environmental restoration waste, and PCB-commingled waste) to fit within the current legal limits of the WIPP facility. One purpose of examining alternatives that involve disposal of all TRU waste, including that generated by environmental restoration activities, is to inform Congress and decisionmakers of the consequences of disposing of all TRU waste at the WIPP facility. DOE will continue to study the issue of what to do with future TRU waste that cannot be disposed of at WIPP.

**10.05 (11)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-131 | 25 | Don Hancock | Southwest Research and Information Center |

**Comment:**
"The D-SEIS-II contains no information about the 'derived wastes' that DOE intends to dispose of at WIPP that are created at WIPP and not at any of the 25 storage sites. Such waste cannot be stored or disposed at WIPP without an adequate NEPA analysis."

**Response:**
Derived waste from the operation of WIPP would consist of mostly industrial solid waste and some hazardous waste. DOE would dispose of these wastes off-site in permitted facilities and in accordance with all applicable laws and regulations. Sanitary wastes would continue to be disposed of in a permitted on-site facility. The impacts of disposing of this waste were analyzed in the 1980 FEIS.

**10.05 (12)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-135 | 5 | William Fulkerson | Friends of Oak Ridge National Laboratory |

**Comment:**
"All of the Action Alternatives require that RH-TRU from other sites be received and treated at Oak Ridge. In addition, Oak Ridge now treats mixed wastes from other places at the TSCA incinerator. We believe that the acceptance of these wastes from elsewhere for treatment in Oak Ridge will be opposed more actively by people in local communities and across the state (as evidenced by articles in the Nashville *Tennessean*) when there is no quid pro quo. In our opinion, none of the alternatives provide an adequate quid pro quo, and particularly the preferred option does not. That is, the overall problem of permanently sequestering RH-TRU wastes stored at Oak Ridge will not have been solved in any reasonable time frame.

Consequently, DOE may well be faced with an increasingly hostile public and likely uncooperative Tennessee regulators."

**Response:**
The treatment locations for RH-TRU waste will be decided in the ROD for the WM PEIS. Under the preferred alternative for TRU waste treatment and storage in the WM PEIS, ORNL would receive RH-TRU waste from SRS (but not other sites), and SRS would receive CH-TRU waste from Oak Ridge. This information is reflected in SEIS-II; however, the ROD for SEIS-II will not decide treatment or storage locations.

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# 11.0 NEPA PROCESS

## 11.01 General

### 11.01 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| BO1 | 108 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| C-133 | 5 | Bonnie Bonneau | Legions of Living Light |
| DE1 | 172 | Tom Marshall | Rocky Mountain Peace and Justice Center |

**Comment:**
Some commenters said that a different process for solving nuclear waste issues needs to be developed.

**Response:**
DOE is confident that it has analyzed the WIPP site sufficiently to make a decision on whether to open it for the disposal of TRU waste. DOE also believes that an adequate process of scientific inquiry and public involvement has been ongoing for approximately 20 years and that SEIS-II is simply the latest step in that process.

During this period, the WIPP characterization and experimental program has been overseen by state and federal regulatory agencies, the EEG, the NAS, and others. The peer review program has included the following:

- Waste characterization analysis
- Reviews of conceptual models
- Engineered alternatives costs/benefits
- Engineered systems data qualification
- Natural barriers data qualification
- Waste form and disposal room data qualification
- Passive institutional controls

In addition, the following groups and organizations have conducted peer reviews:

- NAS reviews (12 reports)
- Performance Assessment Peer Review Panel
- Shaft seal design independent review
- Engineered Alternatives Task Force Report peer review

- Blue Ribbon Panel peer review
- Advisory Committee on Nuclear Facility Safety review (two reports)
- Performance Assessment review team
- INTRAVAL (international organization)
- WIPP Conceptual Model Uncertainty Group review
- EEG reviews (15 reports)
- Fracture Expert Group review
- Fanghänel review
- Independent Technical Review of the Bin and Alcove Test Programs, Performance Assessment Reviews

The results of these peer review efforts have been incorporated into the long-term performance analyses of SEIS-II.

In any case, DOE is not the sole decisionmaker as to if and when the WIPP facility should open for disposal operations. DOE would not begin disposal operations until it obtained approval from the New Mexico Environment Department and EPA and met applicable DOE internal requirements. DOE must, at a minimum, (1) receive a RCRA Part B Permit from the State of New Mexico to operate WIPP as a storage and disposal facility, and satisfy any relevant permit conditions; (2) receive CCA certification from EPA (i.e., a finding that there is a reasonable expectation that TRU waste would be contained), as well as satisfy any conditions issued pursuant to 40 CFR Parts 191 and 194; (3) complete SEIS-II and issue a ROD to begin disposal operations; (4) comply with the transportation emergency response and preparedness provisions of the LWA; and (5) complete any other relevant operating requirements pursuant to DOE orders (e.g., DOE Order 425.1, which contains guidance on operational readiness reviews).

**11.01 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-008 | 6 | Tom Udall | Attorney General of New Mexico |
| C-131 | 6 | Don Hancock | Southwest Research and Information Center |
| SF1 | 98 | Tom Udall | Attorney General of New Mexico |

**Comment:**
Two commenters stated that DOE has prejudiced its decision on the WIPP project by awarding contracts for development of a mixed waste treatment facility at INEEL.

**Response:**
It is correct that DOE is planning a thermal treatment facility for TRU waste at INEEL, and it has issued a contract to begin development of that facility. DOE will not make a decision on construction of this facility until it has done the required environmental analysis. Even if DOE had made the decision to construct the INEEL treatment facility, that would not prejudice any of the decisions that DOE intends to make on the basis of SEIS-II, because the treatment options examined are not mutually exclusive (e.g., waste can be thermally treated and still meet the WAC, and thermally treated waste could be shredded and grouted, or waste could be thermally treated but DOE could decide not to open WIPP).

**11.01 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 11 | Bruce Trigg | New Mexico Public Health Association |

**Comment:**
"Congress [is urged] to direct the EPA to develop and implement, with public involvement, standards that assure the safe operation of nuclear waste repositories."

**Response:**
Such standards have been developed under a process that included opportunities for public involvement and were issued as 40 CFR Parts 191 and 194.

**11.01 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| V1 | 1 | Al Brooks | |

**Comment:**
"Where did the 10,000 years requirement come from?"

**Response:**
EPA established the 10,000-year requirement in its regulations issued as 40 CFR Parts 191 and 194.

**11.01 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB6 | 155 | James Bartosch | |
| ALB6 | 157 | James Bartosch | |

**Comment:**
One commenter requested information about short-term utilization of resources and long-term benefits and adverse impacts.

**Response:**
The information requested by the commenter can be found in Section 5.11 of SEIS-II. Potential adverse impacts are identified in Chapter 5.

**11.01 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| BO1 | 12 | Mike Crapo | Congressman, State of Idaho |

**Comment:**
"I appreciate the good work that DOE has done so far to move quickly and to expedite this process, and I look forward to their encouraging prompt action on completing the project on schedule."

**Response:**
Thank you for your comment.

**11.01 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-012 | 9 | Eleanor Ponce | |

**Comment:**
"And I want a reply to this letter. I am tired of talking to vacuous faces and now into cyberspace with no response but a snore or a grunt. I want an intelligent, considered and thought out response to this from an intelligent, thoughtful and caring human being."

**Response:**
The number of comments received precludes providing individual replies to each comment letter. However, DOE has considered each comment received in the public comment period. DOE's responses to commenters' concerns are contained in Volume III of the Final SEIS-II.

**11.01 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 3 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 48 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 72 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
One commenter stated that the contents, assumptions, and methodology used in SEIS-II differed from those used in the CCA, BIR-3, and WIPP SAR. The commenter also stated that the importance of the WIPP SAR should be highlighted in SEIS-II and the differences between it and SEIS-II should be clarified.

**Response:**
The inventory in BIR-3 incorporates the information in BIR-2 and includes no changes in the volumes of waste reported. For the purposes of the SEIS-II analyses, the two inventories are nearly identical. References in the Final SEIS-II have been changed to BIR-3.

The analyses in SEIS-II are consistent with the analyses in the CCA. The same computer codes were used for these documents, although in SEIS-II DOE did not examine the entire range of inputs that were examined in the CCA. The methodology used for SEIS-II is consistent with the purpose of SEIS-II, which is to examine the reasonably foreseeable impacts resulting from disposal of TRU waste at WIPP; the purpose of the CCA is to demonstrate compliance with the disposal standards of EPA (40 CFR Parts 191 and 194), which requires the statistical compilation of a large number of analyses.

The WIPP SAR and the facility accident analysis portions of SEIS-II were prepared for different purposes. The SAR is a comprehensive, detailed examination of accident causes, processes, and consequences at the WIPP facility. The approach in SEIS-II was to examine a representative number from the spectrum of accidents that could occur across the alternatives, not just at WIPP. SEIS-II provides a basis for comparing accident impacts between alternatives and uses conservative assumptions to present the reasonable upper limit of impacts that could occur.

The intent and level of detail of the accident analyses in a SAR and a NEPA document such as SEIS-II differ greatly. The SAR provides a detailed identification, selection, and analysis of all potential accidents in a facility, from initiation to consequence, in order to identify areas where engineered barriers, safety systems, and controls are necessary to prevent accidents or mitigate their consequences. The SAR helps determine the level of system or control needed. While the SAR is very useful as a source of information, there is no need to duplicate WIPP SAR analyses in SEIS-II, and more information may be gained by not using previous analyses. The SEIS-II NEPA accident analyses are more broad-based, covering the entire scope (treatment, storage, disposal) of multiple alternatives, providing the public and decisionmakers with information on the relative and absolute consequences of a spectrum of potential accidents for each alternative. The SAR is more detailed for specific facilities, but the SEIS-II analyses use a prudently conservative approach to estimate a reasonable upper limit of potential accident consequences.

**11.01 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 49 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page S-4. Comprehensive Disposal Recommendations. The Comprehensive Disposal Recommendations (in preparation, schedule uncertain) document will recommend 'disposal options and the time tables for all TRU waste under DOE control.' It is unclear how the ROD that is expected with the Final SEIS-II will relate to the Comprehensive Disposal Recommendations. Are these expected before Final SEIS-II? If not, wouldn't the ROD be

preempting the Recommendations? Or, is SEIS-II the first step in preparing for the disposition of all TRU wastes under DOE control at WIPP?"

**Response:**
DOE does not plan to issue the Comprehensive Disposal Recommendations until after SEIS-II has been completed and a ROD has been issued. Although Congress eliminated the requirement for the Comprehensive Disposal Recommendations report, DOE will continue to study the issue of what to do with TRU waste that cannot be disposed of at the WIPP site and will make further recommendations based on that study in the future. If necessary, the ROD could be modified to reflect these recommendations.

**11.01 (10)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 82 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 2-5. Footnote. The text cites an August 1995 Draft PEIS which has not been issued in final form and an unidentified undated more recent estimate. Provide specifics."

**Response:**
The footnote has been deleted. Section 2.1.2 of SEIS-II discusses the use of 60 percent as the amount of TRU mixed waste in the inventory. The 60 percent was used to be slightly more conservative than the WM PEIS, although the SEIS-II analyses assumed that 100 percent of the inventory was TRU mixed waste.

**11.01 (11)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 112 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 3-44. Lines 2 through 8. Statement: 'While the *Storage and Disposition of Weapons-Usable Fissile Materials Programmatic Environmental Impact Statement* (DOE 1996b) considered this process to be a reasonable alternative for analysis, the relative large volume of TRU waste (compared to the volume of fissile material) would produce much more waste than the currently planned high-level waste repository could dispose of. This alternative would further delay TRU waste disposal until such a time as sufficient high-level waste repository space was available. In addition, transportation and safety concerns associated with high-level waste would need to be addressed.' The statement is not correct. Because of thermal loading constraints, a high-level repository is mostly empty space that may have to be back-filled. The currently planned high-level waste repository at Yucca Mountain will have over 100 miles of tunnel. However, a high-level waste repository is not expected to be operational for more than 10 years. The transportation and safety concerns associated with high-level waste will be addressed in the licensing of a high-level waste repository. The major

difficulty with this alternative is that a high-level waste repository will be licensed by the NRC and Congress does not want the disposal of defense TRU waste to be under the jurisdiction of the NRC."

**Response:**
This section has been revised in SEIS-II to reflect the technical difficulties of thermal loading in the repository due to high-level waste and the operational difficulties due to increased waste volume and delay in TRU waste disposal.

**11.01 (12)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-032 | 2 | Robert S. Light | New Mexico Representative (District 55) |

**Comment:**
"[The National Conference of State Legislatures urges DOE to] implement through DOE, a compensation program that recognizes equity considerations for state and local governments hosting a TRU waste repository and the federal government's obligation to provide such compensation."

**Response:**
The provision of funding, as suggested in this comment, is beyond the scope of the SEIS-II analyses. However, Congress has provided funding to the State of New Mexico pursuant to the LWA.

**11.01 (13)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-084 | 3 | Bill Lawless | Savannah River Site Citizens Advisory Board |

**Comment:**
"The problems with the Federal deficit may well drive the decision towards the No Action Alternative. The effects summaries in the document now support the No Action decision. The tables contained in the WIPP SEIS-II Summary (S-4, S-5, S-6, and S-7) do not support opening WIPP. The key concern is that a strong enough case has not been made to justify opening and using WIPP. The main justification for WIPP would be the consequences at the various sites if there was a loss of institutional control at each site."

**Response:**
DOE will decide whether to dispose of TRU waste at WIPP based on its evaluation of the environmental impacts and other factors, including budgetary and technical factors.

**11.01 (14)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF1 | 87 | Chris Moore | |

**Comment:**
"Originally there was supposed to be a ten-year test period for WIPP during which no Los Alamos National Labs waste would be transported through Santa Fe. Then one day that test period evaporated and we found out that, no, we don't have ten years, it's going to happen as soon as possible, according to the federal government."

**Response:**
DOE decided that necessary testing could be done more quickly and cost effectively in aboveground laboratories than below ground in the WIPP repository; therefore, the plans for underground tests were canceled. DOE believes it has derived sufficient information from the aboveground testing program to decide whether to dispose of TRU waste at WIPP.

**11.01 (15)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF8 | 42 | Virginia Ravndal | |

**Comment:**
"The reason why we're here is because we seem incapable to resolve conflict in a meaningful way, in a long-lasting way, and because we refuse to look at alternative energies."

**Response:**
The NEPA process is one way of solving such conflicts and DOE welcomes public input. Examination of alternative energy sources will not solve the near-term problem of TRU waste disposal and is not within the scope of SEIS-II.

**11.01 (16)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| V1 | 4 | Diane Albert | |

**Comment:**
"Is the public more concerned about transporting the waste or about storage of the waste at WIPP?"

**Response:**
As part of the overall NEPA process, DOE does not rank the magnitude of public concern for various aspects of the overall WIPP program. DOE has considered and has responded to all comments received on the Draft SEIS-II in Volume III of the Final SEIS-II.

**11.01 (17)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| V1 | 15 | Glen Lockhardt | |

**Comment:**
"DOE should change the name of the facility after the Record of Decision. There is automatic opposition whenever the name WIPP is mentioned. If the facility has a new name then people won't react in a conditioned manner."

**Response:**
DOE doubts that a name change by itself would have an effect on public perception regarding a TRU waste repository. Rather, DOE feels that continued educational efforts, research, and maintenance of high standards for all WIPP operations will do more to gain public confidence.

**11.01 (18)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| V1 | 20 | Wally McCorkle | |

**Comment:**
"The *Albuquerque Journal* published an article that identified WIPP as a pork barrel project because DOE is spending a lot of money and it is not being used."

**Response:**
The WIPP budget, which Congress provides in annual appropriations, is based on an expectation of DOE's needs to demonstrate compliance with the requirements that would allow disposal operations to proceed. DOE has used the appropriated funds for activities such as site characterization and experimental programs, the regulatory compliance program, site operations, operational safety and health, waste characterization activities, transportation planning and implementation, and administrative requirements. In each case, benefits from these expenditures will accrue throughout the disposal phase.

**11.01 (19)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-005 | 1 | Len and Jeanne Kunko | |

**Comment:**
"Open the site if:

"1. DOE has done their job and the WIPP site is indeed safe.

"2. Low-level waste only will be stored.

"3. Adequate roadways will be built."

**Response:**
DOE is authorized to dispose of only TRU waste at WIPP. The WIPP site would open and begin to receive TRU waste for disposal if several conditions are met. These conditions include, at a minimum, the following: (1) receipt of a RCRA Part B Permit from the State of New Mexico to operate WIPP as a storage and disposal facility, and satisfaction of any relevant permit conditions; (2) receipt of CCA certification from EPA as well as satisfaction of any conditions issued pursuant to 40 CFR Parts 191 and 194; (3) completion of SEIS-II and issuance of a ROD to begin disposal operations; (4) completion of transportation emergency response and preparedness provisions of the LWA; and (5) completion of any other relevant operating requirements pursuant to DOE orders (e.g., DOE Order 425.1, which contains guidance on operational readiness reviews).

As a matter of policy, DOE has determined that all shipments, regardless of whether they fall within the definition of highway route-controlled quantities (HRCQs) of radioactive materials as defined in 49 CFR Section 173.403(i), would use the preferred routes as defined in 49 CFR Part 397 Subpart D. The regulations require using the interstate system, or the shortest reasonable route when the interstate is unavailable, or other routes as designated by a state, tribe, or recognized routing authority. Additional information regarding the routing of TRU waste can be found in Appendix E of SEIS-II.

**11.01 (20)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-013 | 18 | Jennifer Salisbury | New Mexico Radioactive Waste Consultation Task Force |

**Comment:**
"Page 4-5: It is recommended that DOE specifically reference its WIPP Memorandum of Understanding (MOU) with the U.S. Interior Department's Bureau of Land Management, included as Appendix C of the *WIPP Land Management Plan*, DOE/WIPP 93-004. This MOU

is one of the key mechanisms for protecting the site from inadvertent human intrusion (e.g., drilling for oil/gas resources)."

**Response:**
The following language has been incorporated into Section 4.1.1: "The Land Management Plan incorporates the restrictions of the LWA and the DOE Memorandum of Understanding (MOU) with the Bureau of Land Management (BLM)."

**11.01 (21)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 157 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 5-148. Section 5.6.12. The discussion of why the Record of Decision (ROD) for the FEIS-I came to the conclusion that a No Action Alternative was 'unacceptable' is very good."

**Response:**
Thank you for your comment.

**11.01 (22)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 5 | Don Hancock | Southwest Research and Information Center |

**Comment:**
"The DOE has made a decision to use trucks to transport waste to WIPP. It has signed, over the years, two contracts with trucking companies, and has spent many of the taxpayers' dollars already on the truck option. The 1980 Final Environmental Impact Statement did say that most of the waste would be transported by train. But again, that's not the reality in terms of what the Department of Energy is doing."

**Response:**
DOE has undertaken many studies that evaluate the efficacy and environmental consequences of transporting TRU waste by rail. As an example, in SEIS-I, the environmental impacts of rail transportation were evaluated and discussed. In a 1994 study (*Comparative Study of Waste Isolation Pilot Plant (WIPP) Transportation Alternatives*, DOE/WIPP 93-058), DOE reported the transportation risks, the costs to transport TRU waste by rail, and emergency response capabilities and program planning to Congress. The inability to obtain suitable rail service (and, thus, the lack of any arrangements with rail carriers to move TRU waste) is explained in Section 3.1.2 of SEIS-II. As SEIS-II indicates in the context of identifying its Preferred Alternative, DOE recognizes the benefits of rail service and would continue to attempt to obtain such service if the Preferred Alternative is chosen. The fact that DOE has a trucking contract in no way prejudices any of the alternatives, since truck transportation would be required for some TRU waste storage sites (Los Alamos and Nevada) that do not have rail

access. Nothing in SEIS-II precludes DOE from making a decision in the ROD to use rail service in part or to the maximum extent possible.

**11.01 (23)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| OR1 | 6 | Don Hancock | Southwest Research and Information Center |

**Comment:**
"Could [SEIS-II] be used by the DOE decision makers to say that [DOE is] going to do treatment [at Oak Ridge] for waste going to WIPP?"

**Response:**
DOE has not decided on the type of treatment. As discussed in Chapter 3 of SEIS-II, one of the decisions that can be supported by the analyses in SEIS-II is which minimal level of treatment should be required in the WAC to meet disposal performance standards or storage requirements, prior to disposal or storage of TRU waste. The WM PEIS will support decisions on where TRU waste should be treated or stored. The RODs resulting from both SEIS-II and the WM PEIS will consider the potential environmental consequences, costs, public comments, and other issues in determining the minimum level of treatment and the locations of treatment and storage facilities.

## 11.02 CCA Interface

**11.02 (01)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 119 | Judy Kaul | |
| BO1 | 14 | Mike Crapo | Congressman, State of Idaho |
| BO1 | 27 | Robin Blaisdell | Snake River Alliance Education Fund |
| E-071 | 4 | Patricia Hall | |
| SF3 | 59 | Bill Gould | |
| SF4 | 22 | Bonita McCune | |

**Comment:**
Some commenters said that the EPA found the CCA to be incomplete and technically inadequate. Commenters also stated that DOE should supply EPA with requested information as soon as possible.

**Response:**
The EPA did not find the CCA to be incomplete or technically inadequate; however, it did request additional information, which DOE provided. EPA did find the application to be complete in May 1997.

**11.02 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-013 | 6 | Jennifer Salisbury | New Mexico Radioactive Waste Consultation Task Force |

**Comment:**
"Page 1-8: The two sections that discuss the Compliance Certification Application and the Resource Conservation and Recovery Act (RCRA) Part B Permit Application should be expanded to provide a more in-depth explanation of how these major compliance documents relate to the SEIS-II. Specifically, key assumptions taken from each application and used in the SEIS-II should be identified and discussed to the extent practicable. In addition, the discussion on the RCRA Part B application should clarify that the N.M. Environment Department is the regulatory agency; and that the N.M. Hazardous Waste Act and its implementing regulations is the State analog to the federal RCRA."

**Response:**
DOE believes that the explanation in Section 1.5 of the Draft SEIS-II is sufficient for the purpose of the document and that the more in-depth explanation requested by the commenter would be unnecessarily complex and potentially confusing. DOE has, however, added language to the discussion of the RCRA Part B Permit Application, to clarify that the New Mexico Environment Department is the state regulatory agency responsible for issuing the Part B Permit and that the New Mexico Hazardous Waste Act, and its implementing regulations, are the state analog to RCRA.

## 11.03 Decision on WIPP

**11.03 (01)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-002 | 5 | Gedi Cibas | New Mexico Environment Department |
| A-008 | 1 | Tom Udall | Attorney General of New Mexico |
| ALB1 | 7 | Mark Miller | |
| ALB1 | 30 | Eric James | |
| ALB1 | 66 | Jim Lewis | |
| ALB2 | 2 | Don Hancock | Southwest Research and Information Center |
| ALB2 | 3 | Don Hancock | Southwest Research and Information Center |
| ALB2 | 57b | Jeff Radford | Business People Concerned about WIPP |
| ALB2 | 142 | Zelda Gatuskin | |
| ALB6 | 73 | Tsosie Tsinhnahjinnie | |
| C-131 | 1 | Don Hancock | Southwest Research and Information Center |
| C-131 | 2 | Don Hancock | Southwest Research and Information Center |
| C-131 | 3 | Don Hancock | Southwest Research and Information Center |
| C-132 | 14 | Keith Tinno | Shoshone-Bannock Tribes |
| C-141 | 1 | Margret Carde | Concerned Citizens for Nuclear Safety |
| C-163G | 6 | Jeff Radford | Business People Concerned about WIPP |
| DE1 | 59 | Margret Carde | Concerned Citizens for Nuclear Safety |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF1 | 43 | Margret Carde | Concerned Citizens for Nuclear Safety |
| SF3 | 4 | Cathy Swedlund | |
| SF3 | 12 | Myla Reason | |
| SF3 | 30 | Jai Lakshman | SEVA Foundation |
| SF5 | 93 | Peggy Prince | |

**Comment:**
Some commenters stated that DOE had decided to proceed with the opening of the WIPP facility before the hearings were held or the NEPA process was completed. Some said the submission of the RCRA Part B Permit Application and CCA was evidence of this.

**Response:**
DOE has not decided whether to open the WIPP facility for TRU waste disposal and has not taken any actions that would prejudice its decision whether to open. In 1981, DOE issued a ROD that decided to proceed with the WIPP project at the Los Medaños site. The ROD also stated that construction would proceed on a phased basis, and that if significant new data resulted from the SPDV program or other project activities, the FEIS would be supplemented and the decision to proceed with phased construction and operation would be reexamined. SEIS-II is the second such reexamination undertaken (the 1990 SEIS-I was the first).

As part of the LWA amendments, Congress required DOE to submit the CCA to the EPA by October 31, 1996. Congress also stated that DOE should be ready to start disposing of TRU waste no later than November 30, 1997, "provided that before that date all applicable health and safety standards have been met and all applicable laws have been complied with." If DOE had waited until the WIPP ROD were issued to submit applications necessary for the CCA or the RCRA Part B Permit, it would be impossible to receive approvals by November 30, 1997, as envisioned by Congress.

Even absent congressional direction, the submission of the CCA and the RCRA Part B Permit Application is consistent with CEQ regulations. According to 40 CFR Section 1506.1, agencies are not precluded from performing work necessary to support an application for federal, state, or local permits.

The CCA and the RCRA Part B Permit are needed to support any of the alternatives in SEIS-II that involve disposal of TRU waste at WIPP, but DOE is not compelled to utilize any of these permits if it were to choose to implement one of the no action alternatives. In addition to being consistent with CEQ regulations, the submission of permit applications prior to or simultaneous with an EIS has the advantage of allowing the SEIS-II analyses to account for changes in impacts as the result of changes in the Proposed Action resulting from feedback from the regulators in the context of the permit application.

**11.03 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 2 | Mark Rudd | |
| ALB1 | 33 | Eric James | |
| ALB1 | 35 | Eric James | |
| ALB2 | 49 | Jeff Radford | Business People Concerned about WIPP |
| ALB2 | 112 | Zelda Gatuskin | |
| ALB2 | 118 | Judy Kaul | |
| ALB2 | 127 | Deborah Reade | |
| ALB3 | 31 | Robin Seydel | |
| ALB4 | 10 | Dory Bunting | |
| ALB4 | 45 | Jeri Rhodes | |
| ALB4 | 67 | Lawrence Carter-Long | |
| ALB4 | 81 | Shari Sommers | |
| ALB4 | 96 | Angela Wiebalk | |
| ALB6 | 103 | Dair Obenshain | |
| ALB6 | 110 | Dair Obenshain | |
| ALB6 | 130 | Patrick Tyrrell | |
| ALB6 | 162 | Rich Weiner | |
| ALB6 | 164 | Karen Bonime | |
| ALB6 | 165 | Karen Bonime | |
| BO1 | 111 | Michele Kresge | |
| C-024 | 1 | Barbara Conroy | |
| C-024 | 6 | Barbara Conroy | |
| C-026 | 2 | Tom and Nancy Florshein | |
| C-030 | 1 | Carole J. Suderman | |
| C-031 | 1 | Nina Johnson and H. Lopez | |
| C-033 | 1 | Kent Williamson | |
| C-075 | 1 | Louise Hess | |
| C-086 | 1 | Shelley T. Buonaiuto | |
| C-090 | 1 | Linda Ewald | |
| C-105 | 2 | Valerie Hookham | |
| C-111 | 1 | Scott W. Estep | |
| C-125 | 1 | Barbara H. Johnson | The Rio Grande Chapter of the Sierra Club |
| C-149 | 2 | Lindy Lyman | |
| C-151 | 23 | Don Moniak | Serious Texans Against Nuclear Dumping |
| C-151 | 29 | Don Moniak | Serious Texans Against Nuclear Dumping |
| C-154 | 3 | Tom Marshall, Jack Mento, et al. | Rocky Mountain Peace and Justice Center |
| C-157 | 1 | Wendy Lynne Botwin | |
| C-158 | 1 | Maureen Eldredge | Military Production Network |
| C-158 | 2 | Maureen Eldredge | Military Production Network |
| C-158 | 4 | Maureen Eldredge | Military Production Network |
| C-160 | 1 | Julie R. Sutherland | |
| C-163B | 11 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163G | 1 | Jeff Radford | Business People Concerned about WIPP |
| C-163H | 13 | David T. Snow | |
| C-163H | 14 | David T. Snow | |
| DE1 | 63 | Margret Carde | Concerned Citizens for Nuclear Safety |
| DE1 | 108 | Roy Young | |
| DE1 | 109 | Roberta Bregstone | |
| DE1 | 150 | James Ciarlo | |
| DE1 | 163 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| DE1 | 175 | Kathryn Becker | |
| DE1 | 187 | Scott Polanchyck | |
| DE1 | 189 | Miyabi Gladstein | |
| E-056 | 2 | Linda Hibbs | |
| SF1 | 110 | Mary Hall | |
| SF2 | 18 | Tai Bixby | |
| SF3 | 32 | Jai Lakshman | SEVA Foundation |
| SF3 | 33 | Jai Lakshman | SEVA Foundation |
| SF3 | 43 | Jai Lakshman | SEVA Foundation |
| SF3 | 70 | Bill Gould | |
| SF3 | 89 | Sasha Pyle | Religious Society of Friends |
| SF3 | 103 | Anhara Lovato | |
| SF3 | 132 | Norman Budow | |
| SF4 | 20 | Bonita McCune | |
| SF4 | 45 | Deborah Reade | |
| SF4 | 93 | Bonita McCune | |
| SF5 | 4 | Scott Shuker | |
| SF5 | 45 | Michael Buonaiuto | |
| SF6 | 18 | Susannah Harrison | |
| SF6 | 26 | Amy Stix | |
| SF6 | 32 | Mariel Kinsey | |
| SF6 | 43 | Ian Duncan | |
| SF6 | 53 | Janet Degan | |
| SF6 | 57 | Anna Hansen | |
| SF6 | 82b | Pia Gallegos | |
| SF7 | 7 | Carole Tashel | |
| SF7 | 19 | Suzanne Phillips | |
| SF7 | 52 | Eric Ericson | |
| SF7 | 148 | Retta Johnston | |

**Comment:**
Many commenters stated that the WIPP site is not safe for waste disposal, that too little is known about the site, or that the concept of geological burial of waste is not workable. Many said they were concerned that radiation would leak to the surface. Some commenters stated that DOE was ignoring the future safety of populations, that SEIS-II did not show that disposal at WIPP would be safe, or that SEIS-II indicated that the opening and operating of the WIPP facility would result in more fatalities than leaving waste at generator sites.

**Response:**
Section 2.1.4 of SEIS-II has been modified to provide information on why the WIPP site was selected and what WIPP's long-term performance is expected to be. The national site selection

process was based on an NAS committee report that noted the potential of salt deposits for radioactive waste disposal. The WIPP site selection process, described in Section 2.2 of the 1980 FEIS, included characteristics of the salt beds and surrounding geological layers, tectonics, hydrology, mineral potential, existing boreholes, population density, and land availability. DOE's decisions regarding the WIPP project, including proposals to dispose of TRU waste within the repository, have been supported by independent scientific work and documented in FEIS, SEIS-I, and SEIS-II. The RODs for FEIS and SEIS-I were based on the analyses presented in these respective documents, as well as other considerations such as budget limitations, executive guidelines, and legal mandates and restrictions.

Planning and investigation of the WIPP site have been ongoing for approximately 20 years. DOE has not been able to eliminate all uncertainties regarding parameters that could affect WIPP's performance as a repository. However, it is also not aware of any clearly demonstrated defects in design or construction and, based on ongoing analyses (including those in SEIS-II), DOE has a high degree of confidence that the WIPP repository would isolate TRU waste as it was designed to do. The SEIS-II analyses indicate that disposing of waste in a geologic repository such as WIPP would reduce the long-term risks from potential waste releases and would be more protective of public health than leaving it where it is currently stored. The SEIS-II analyses also indicate that WIPP is safe to operate, meets design parameters, and would perform as expected over the long term. DOE believes that it has sufficient information to make an informed decision whether to dispose of waste at WIPP.

DOE must demonstrate that WIPP can comply with the waste isolation requirements and criteria issued by EPA at 40 CFR Parts 191 and 194. EPA has stated that the requisite performance assessments need not provide complete assurance that the containment requirements would be met, primarily because of the 10,000-year period of regulatory interest and the inherent uncertainties in this compliance demonstration. EPA further indicates that proof of the future performance of a disposal system is not to be considered in the ordinary sense of the word, but instead requires a reasonable expectation that compliance would be achieved. The SEIS-II analyses (Sections 5.1.12, 5.2.12, 5.3.12, and 5.4.12 and Appendix H) show that isolation of TRU waste at WIPP is feasible, and DOE believes that the CCA demonstrates that the compliance requirements of 40 CFR Parts 191 and 194 would be met. In the CCA, DOE evaluated undisturbed performance, which is defined by regulation to exclude human intrusion and unlikely disruptive natural events. Evaluation of past and present geologic processes in the region indicates that none has a significant potential to breach the repository within 10,000 years. DOE also evaluated disturbed performance based on analysis of a variety of human intrusion scenarios. The results of this evaluation show that the WIPP facility will meet regulatory requirements. Discussion of this analysis is found in Chapter 6 of the CCA.

Before it could open WIPP, DOE must, at a minimum, (1) receive a RCRA Part B Permit from the State of New Mexico to operate WIPP as a storage and disposal facility and satisfy any relevant permit conditions; (2) receive CCA certification from EPA (i.e., a finding that there is a reasonable expectation that TRU waste would be contained), as well as satisfy any conditions issued pursuant to 40 CFR Parts 191 and 194; (3) complete SEIS-II and issue a ROD to begin disposal operations; (4) comply with the transportation emergency response and preparedness provisions of the LWA; and (5) complete any other relevant operating requirements pursuant to DOE orders (e.g., operational readiness review).

The salt repository at the WIPP site, chosen in the 1981 ROD based on the 1980 FEIS, would rely on geologic factors instead of active human control to isolate TRU waste. The long-term performance assessment (Section 5.1.12 for the Proposed Action) indicated that under undisturbed conditions, radionuclides in TRU waste would not reach the accessible environment during the 10,000-year period analyzed. Casual intruders and animals would not be impacted because TRU waste in the WIPP repository would be 655 meters (2,150 feet) beneath the land surface. A permanent marking system would be put in place to provide passive control of access to the site and to convey to future generations information regarding the presence of dangerous waste material and the potential consequence of intrusion into the waste repository. DOE will consider comments expressing opposition to the operation of the WIPP facility, along with other comments and SEIS-II analyses, in reaching its decision in the ROD.

**11.03 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 49 | Lisa Sparaco | |
| ALB1 | 60 | Lisa Sparaco | |
| ALB2 | 16 | Sean Asghar | |
| ALB2 | 31 | Virginia Kotler | |
| ALB2 | 154 | Rick Packie | |
| ALB3 | 9 | Bruce Trigg | New Mexico Public Health Association |
| ALB3 | 60 | David Mitchell | |
| ALB4 | 63 | Lawrence Carter-Long | |
| ALB5 | 26 | Susan Rodriguez | |
| ALB6 | 21 | Victoria Michelle | |
| ALB6 | 36 | Joan Robins | |
| BO1 | 70 | Fritz Bjornsen | |
| BO1 | 78 | Kerry Cooke | |
| C-039 | 1 | Jim Lysne | |
| C-110 | 5 | Rafaelita Bachicha | |
| C-118 | 15 | David Proctor | |
| C-163E | 2 | No name provided | Citizens for Alternatives to Radioactive Dumping |
| E-008 | 1 | Bruce Trigg | New Mexico Public Health Association |
| E-056 | 3 | Linda Hibbs | |
| E-056 | 25 | Linda Hibbs | |
| SF4 | 61 | Deborah Reade | |
| SF4 | 96 | Joseph Oliaro | |

**Comment:**
A number of commenters stated that tests being performed at the WIPP site should be completed before it is allowed to open. A few commenters said that the WIPP opening is being rushed. Others stated that more tests needed to be carried out because there are still too many unknown factors. Some commenters asked that appropriate waste containment and transportation standards be established.

**Response:**
DOE has been studying the WIPP site and TRU waste disposal since the late 1970s and believes it has done sufficient testing to demonstrate the suitability of the WIPP site as a TRU waste repository. DOE has a high degree of confidence that the data obtained are sufficient to support a decision on whether to open WIPP for TRU waste disposal.

The proposed transportation routes presented and analyzed in SEIS-II are based upon DOT regulations (49 CFR Part 171). The regulations require carriers to use the interstate highway system, to the extent possible and reasonable, as the preferred route for shipping hazardous material. Where no interstate highway exists, the shortest reasonable route must be used. States or other recognized routing authorities also may designate alternate routes in accordance with procedures stated in 49 CFR Part 171. In addition, TRU waste would be shipped in NRC-certified packaging.

DOE has conducted emergency response training for several communities along the transportation routes. DOE provides field incident/accident response exercises through its TRANSAX and WIPPTREX programs. The purpose of the TRANSAX program is to demonstrate that participating tribal, state, local, and DOE emergency preparedness systems are capable of responding cooperatively and effectively to a transportation emergency involving a TRUPACT-II transporter. The WIPPTREX program is designed to help states and tribes achieve readiness for response to WIPP transportation emergencies and to assure them of DOE's ability to provide specialized technical assistance. Training will continue as required by the LWA in order to ensure that all communities are adequately prepared to deal with potential emergencies.

As part of the amendments to the LWA, Congress stated: "it is the sense of Congress that DOE should complete all actions required…to commence emplacement of TRU waste underground for disposal at WIPP not later than November 30, 1997, provided that before that date all applicable health and safety standards have been met and all applicable laws have been complied with." In addition to receiving authorization from the State of New Mexico and EPA, DOE must complete SEIS-II and issue a ROD to begin disposal operations; comply with the transportation emergency response and preparedness provisions of the LWA; and complete any other relevant operating requirements pursuant to DOE orders (e.g., operational readiness review).

**11.03 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-005 | 1 | Steven H. Gunderson | State of Colorado Department of Public Health and Environment |
| ALB1 | 10 | Blaine Hadden | |
| ALB2 | 47 | Harry Kinney | |
| ALB6 | 115 | Glenna Voigt | |
| C-019 | 1 | Tom Sandford | |
| C-094 | 2 | Robert Frie | |
| C-144 | 1 | Robb Minor | |
| C-146 | 2 | W.L. Hampson | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| DE1 | 35 | Tim Holeman | |
| DE1 | 55 | Vince Likar | |
| SF2 | 3 | John Dendahl | |
| SF2 | 35 | Jay Shelton | |
| SF3 | 3 | Robert S. Light | New Mexico Representative (District 55) |
| SF6 | 1 | Louis Rosen | |

**Comment:**
Several commenters stated that WIPP is safe, that sufficient studies have been undertaken, and that WIPP should be opened.

**Response:**
DOE believes that SEIS-II adequately addresses health, safety, and environmental issues. DOE also believes, based on the SEIS-II analyses, that (1) isolation of TRU waste is feasible and (2) the CCA demonstrates that there is a reasonable expectation that the compliance requirements and criteria would be met.

**11.03 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 51 | Jeff Radford | Business People Concerned about WIPP |
| ALB2 | 120 | Janet Greenwald | |
| ALB2 | 149 | Rick Packie | |
| ALB4 | 112 | Virginia Corazon | |
| ALB5 | 52 | John McCall | |
| ALB6 | 124 | Alan Moskowitz | |
| ALB6 | 171 | Julie Ahern | |
| BO1 | 82 | Kerry Cooke | |
| BO1 | 92 | Beatrice Brailsford | |
| C-118 | 4 | David Proctor | |
| CA1 | 16 | Richard Boren | |
| DE1 | 122 | Judith Mohling | |
| DE1 | 157 | James Ciarlo | |
| SF1 | 35 | Lety Seibel | |
| SF1 | 58 | Dr. Alice Roos | |
| SF3 | 27 | Jai Lakshman | SEVA Foundation |
| SF3 | 45 | Jai Lakshman | SEVA Foundation |
| SF3 | 75 | Sasha Pyle | Religious Society of Friends |
| SF5 | 7 | Scott Shuker | |
| SF5 | 54 | Jeff Berg | |
| SF5 | 99 | Caroly Mae Lassiter | |
| SF6 | 82a | Pia Gallegos | |

**Comment:**
Some commenters said that decisions concerning WIPP are being driven by political, not scientific, considerations. Some stated that New Mexico does not have the political influence

to determine its future with regard to the WIPP project and that DOE is unresponsive to the desires of the people of New Mexico.

**Response:**
The national site selection process was based on an NAS committee report that noted the potential of salt deposits for radioactive waste disposal. The WIPP site selection process, described in Section 2.2 of the 1980 FEIS, includes characteristics of the salt beds and surrounding geological layers, tectonics, hydrology, mineral potential, existing boreholes, population density, and land availability. Section 2.1.4 of SEIS-II has been modified to provide information on why the WIPP site was selected and what WIPP's long-term performance is expected to be.

DOE's decisions regarding WIPP, including site selection and development, tests and analyses performed, and proposals to dispose of TRU waste within the repository, have been supported by independent scientific work and documented in the 1980 FEIS, the 1990 SEIS-I, and SEIS-II. The RODs for FEIS and SEIS-I were based on the analyses presented in these respective documents, as well as other considerations such as budget limitations, executive guidelines, and legal mandates and restrictions.

NEPA regulations mandate that the public be provided the opportunity to submit comments as part of the process of developing an EIS. The objective of the SEIS-II public hearings and comment period was to obtain public input on the document. DOE is also evaluating the environmental impacts of opening the WIPP repository as described in SEIS-II. The results of the SEIS-II analyses and the input from the public comment period are two of the factors that will be taken into consideration in the ROD to be issued after publication of the Final SEIS-II.

**11.03 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 141 | Deborah Reade | |

**Comment:**
"The DOE is not ready to bury waste at WIPP, because they are not prepared to bring the remote-handled waste to the repository. They have no facilities to characterize, treat or package that waste nor is their transport container ready. They do not expect to have the treatment facilities ready for the remote-handled waste until at least 2002. Since the remote-handled waste is supposed to be emplaced first in the walls, before the contact-handled waste is stacked on the floor of the waste rooms, WIPP will either have to be greatly modified or run at partial capacity until the remote-handled waste is ready."

**Response:**
The SEIS-II analyses note that a delay in RH-TRU waste receipt would either diminish the capacity of the WIPP repository for such waste or require some modification to the original WIPP plans for emplacement of RH-TRU waste. The impacts of each alternative in SEIS-II have been analyzed assuming all RH-TRU waste is emplaced, except for the Proposed Action in which RH-TRU waste is emplaced at the volume limit established in the C&C Agreement. In appropriate cases, SEIS-II alternatives include design changes (additional RH-TRU

waste-only panels) that are required to accommodate the disposal of increased volumes of RH-TRU waste.

**11.03 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF4 | 123 | Juan Montes | |

**Comment:**
"The EIS on the WIPP is fallacious. It is incomplete, it is inaccurate, and it is an injustice within itself."

**Response:**
Though DOE has not been able to eliminate all uncertainties in WIPP data, it believes that SEIS-II adequately addresses health, safety, and environmental issues. Furthermore, DOE has a high degree of confidence that the data obtained are sufficient to support a decision on whether to open the WIPP repository for TRU waste disposal.

**11.03 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| DE1 | 58 | Margret Carde | Concerned Citizens for Nuclear Safety |

**Comment:**
"I protest the process the Department of Energy is engaged in over WIPP. In every EIS--the sitewide EIS for Rocky Flats, the Waste Management PEIS, the programmatic environmental impact statement for the whole weapons complex, Los Alamos sitewide EIS--every single one of them predicates WIPP as a solution to their nuclear pollution problems."

**Response:**
Although the WIPP facility has been a part of DOE's strategic planning since 1980, the decision to open the WIPP facility has not been made and SEIS-II examines alternatives to opening WIPP. As discussed in Section 1.5 of SEIS-II, DOE is preparing project-level, site-wide, and programmatic NEPA documents that address TRU waste management activities throughout the DOE complex.

**11.03 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| DE1 | 1 | Jeffrey Pecka | |

**Comment:**
"I would like to see a process with an end result, not a constant cyclical reiteration that never produces a final product for the taxpayer."

**Response:**
DOE agrees. Its Preferred Alternative is to proceed with disposal at WIPP.

**11.03 (10)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163G | 12 | Jeff Radford | Business People Concerned about WIPP |

**Comment:**
"Since August 1990, the Quarterly Profile has consistently asked New Mexicans about their attitudes toward the Waste Isolation Pilot Plant (WIPP). The responses to the question were generally similar to those that have been recorded since 1990: only one-in-five New Mexicans said that WIPP was safe to open as-is, 46% said it needs minor or major changes, and 27% said it should never be opened. When asked whether they would vote to open WIPP if a referendum were held, 54% said they would vote to keep it closed, 41% would vote to open it, 4% were unsure, and 1% said they would not vote."

**Response:**
While a discussion of the results of various public opinion polls is beyond the scope of SEIS-II, public comments will be considered during preparation of a ROD based on SEIS-II. Also, a decision on whether to open WIPP or to modify its facilities or proposed operations is not solely a DOE decision, but also requires decisions by the State of New Mexico and EPA.

Before it could open WIPP, DOE must, at a minimum, (1) receive a RCRA Part B Permit from the State of New Mexico to operate WIPP as a storage and disposal facility and satisfy any relevant permit conditions; (2) receive CCA certification from EPA (i.e., a finding that there is a reasonable expectation that TRU waste would be contained), as well as satisfy any conditions issued pursuant to 40 CFR Parts 191 and 194; (3) complete SEIS-II and issue a ROD to begin disposal operations; (4) comply with the transportation emergency response and preparedness provisions of the LWA; and (5) complete any other relevant operating requirements pursuant to DOE orders (e.g., operational readiness review).

**11.03 (11)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-010 | 11 | Earl Leming | State of Tennessee Department of Environment and Conservation |

**Comment:**
"The document evaluates four different action options and two no action alternatives based on the Waste Management Programmatic Environmental Impact Statement. Recent EIS documents on the Nevada Test Site, Pantex, Stockpile Stewardship and Management, etc., have resulted in Records of Decisions for the proposed plan alternative. The proposed action alternative has been weighted heavier than the other options in this review."

**Response:**
Over the past 20 years, DOE has conducted an extensive site characterization and experimental program, waste characterization activities, and the construction of the waste handling and disposal facilities, the results of which have been incorporated into the Proposed Action. The CEQ regulations that implement NEPA require DOE to devote substantial treatment to each alternative considered in detail so that reviewers may evaluate their comparative merits. Much of the information presented for the Proposed Action has been incorporated into the alternatives, including the TRU waste inventory, disposal operations and facility decommissioning, and long-term performance analyses. For this reason, DOE believes that the analyses for each alternative are sufficient to satisfy the CEQ requirements.

**11.03 (12)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 78 | Janet Greenwald | |

**Comment:**
"It would be nice if George Dials would stay in here to hear testimony instead of just coming in during intermissions and going in and out. I wish he would stay here for each testimony because he's the one that can stop this project. He can put it on hold. He can slow it down. I know he can. He has the power to do that."

**Response:**
Mr. Dials was present for much of the testimony in New Mexico and when not in the hearing room generally was outside the room speaking with members of the public. As DOE's Manager of the Carlsbad Area Office, Mr. Dials has reviewed the Final SEIS-II (which includes all comments and responses). In addition, Mr. Dials will contribute to the development of DOE's ROD, consulting with the Secretary of Energy to identify the selected alternative, the basis for its selection, and appropriate commitments and mitigation measures. The final decision will be made by the Secretary of Energy.

**11.03 (13)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 4 | Don Hancock | Southwest Research and Information Center |
| C-131 | 4 | Don Hancock | Southwest Research and Information Center |

**Comment:**
One commenter stated that DOE has already made decisions on waste treatment and transportation, regardless of the outcome of SEIS-II.

**Response:**
DOE has not decided on the type of treatment, the location of the treatment facilities, or the mode of transportation. As discussed in Chapter 3 of SEIS-II, one of the decisions that can be supported by the analyses in SEIS-II is the minimal level of treatment that should be in the

WAC to meet disposal performance standards or storage requirements prior to the disposal or storage of TRU waste. The WM PEIS will support decisions on where TRU waste should be treated or stored. The RODs resulting from both SEIS-II and the WM PEIS will consider the potential environmental consequences, costs, public comments, and other issues in determining the minimum level of treatment and the locations of treatment and storage facilities.

Also, DOE has undertaken many studies to evaluate the efficacy and environmental consequences of transporting TRU waste by rail. For example, the environmental impacts of rail transportation were evaluated and discussed in SEIS-I. In 1994, DOE reported to Congress the transportation risks, emergency response capabilities and program planning, and costs to transport TRU waste by rail. The inability to obtain suitable rail service (and thus, the lack of any arrangements with rail carriers to move TRU waste) is explained in Section 3.1.2 of SEIS-II. As SEIS-II indicates, in the context of identifying its Preferred Alternative, DOE recognizes the benefits of rail service and would attempt to obtain such service if the Preferred Alternative is chosen. The fact that DOE has a trucking contract in no way prejudices any of the alternatives, since truck transportation would be required for some TRU waste storage sites that do not have rail access (Los Alamos and Nevada). Nothing in SEIS-II precludes DOE from making a decision in the ROD to utilize rail service in part or to the maximum extent possible.

**11.03 (14)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 73 | Charles Hyder | |

**Comment:**
“DOE has been studying the problems that will not occur; the things that will not interfere with their decision to put WIPP in.”

**Response:**
SEIS-II examined the entire range of reasonably foreseeable environmental impacts, including impacts that might occur (1) at the generator-storage and treatment sites, (2) during transportation of TRU waste, (3) as the result of waste handling, disposal, and decommissioning at WIPP, and (4) as the result of releases associated with repository closure, long-term disposal, and waste retrieval and recovery.

The potential impacts studied included those to land use and management, biological resources, air quality, water quality and water resources, noise, cultural resources, and socioeconomics (economic and environmental justice impacts). Geohydrological studies included characterization of surface and subsurface geology and hydrology, contaminant transport rates in critical aquifers, and the potential hydrologic effects of mining in the area.

**11.03 (15)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB4 | 113 | Virginia Corazon | |

**Comment:**
"Whatever decision is made about WIPP is something that really takes into consideration the coming generations and does it in a respectful manner, that says their life matters."

**Response:**
DOE will take future generations into account when preparing its ROD on SEIS-II.

**11.03 (16)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| BO1 | 26 | Robin Blaisdell | Snake River Alliance Education Fund |

**Comment:**
"A measure of the problems there is that this is the third environmental impact statement written on TRU waste disposal."

**Response:**
Each WIPP EIS was developed to meet a separate purpose and need during the lifetime of the WIPP project. The 1980 FEIS was developed to analyze the potential impacts of constructing the WIPP repository. The FEIS ROD, issued on January 28, 1981 (46 FR 9182), recorded a decision to proceed with the construction of the repository and an underground area for experiments designed to test the impacts of TRU waste storage. The ROD stated that if significant new environmental data resulted from the site and design validation activities, the FEIS would be supplemented by further NEPA review. In light of new data found, further review was conducted and published in SEIS-I. The SEIS-I ROD, issued on June 22, 1990 (55 FR 25689), included the decision to proceed with only the test phase and stated that a second supplemental EIS (SEIS-II) would be prepared prior to the decision on whether to proceed with the disposal phase of the WIPP project.

**11.03 (17)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-104 | 2 | Bob Slay | Savannah River Site Citizens Advisory Board |

**Comment:**
"Our belief is that the special properties of plutonium 238 (Pu-238) should prevent the No-Action Alternative 2 from being chosen."

**Response:**
Plutonium-238 is a particular concern at SRS. Plutonium-238 has high heat generation characteristics that can act as a driver to increase mobility of plutonium-238 in air. DOE recognizes the special properties of plutonium-238 but believes they are of principal concern in an occupational environment and would have less impact for long-term consequence analysis because of its relatively short half-life.

**11.03 (18)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 50 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page S-4. List of DOE Decisions. Although this is mentioned later, it would be helpful to mention here those potential decisions which could be made under current WIPP Authorization and those which would require new Congressional Authorization."

**Response:**
As noted in Sections 2.1 and 3.2.1 of SEIS-II, legal restrictions would prevent DOE from fully implementing the action alternatives, although all could be partially implemented without violating the prohibitions on the types of TRU waste (i.e., limited to defense) or exceeding the limits on waste emplacement imposed by the LWA or the C&C Agreement with the State of New Mexico. The SEIS-II Summary has been modified to clarify this point.

**11.03 (19)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 62 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page S-61 to S-68. Table S-7. This table summarizes all the calculated health and safety effects from transportation, routine treatment and disposal operations, and from accidents. Deaths from transportation and operational accidents, Latent Cancer Fatalities (LCFs) from radiation exposure, cancer incidence from hazardous chemicals, and fatalities from truck pollution are all considered. Presumably, this information will be used in deciding on alternatives. However, SEIS-II does not discuss the relative merits of the alternatives in light of these estimated health and safety effects. Neither is any indication given of how they will be used in decision making."

**Response:**
The Summary, Section 3.4, and Chapter 5 of SEIS-II provide an analysis of the potential health and safety consequences for each alternative. DOE will consider these and other environmental impacts, cost, public comments, and other factors in reaching its decision on whether to proceed to the disposal phase of the WIPP project. The ROD will explain the rationale underlying the final decision.

**11.03 (20)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 158 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 5-153. First paragraph. The estimated 2,325 radiological LCFs in 10,000 years from environmental releases at all storage sites is noted. The EPA-allowed limit for WIPP amounts to a maximum of 42 LCF's over 10,000 years. If the limit is met, the analysis indicates that disposal at WIPP is clearly more protective than storage at the generating sites."

**Response:**
This information was considered in determining the Preferred Alternative. It should be noted that, in response to other comments received on the Draft SEIS-II, DOE performed new calculations to estimate the number of LCFs under No Action Alternative 2; the revised aggregate impact is estimated to be approximately 800 LCFs, based on current population distributions.

**11.03 (21)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 246 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page I-1. Last paragraph. The statement is made that both the FEIS and SEIS-I records of decision (ROD) determined that the No Action Alternative was 'unacceptable' because of 'the potential impacts of natural, low-probability events and human intrusion at storage facilities after government control of the site is lost.' Presumably, this will also be the decision in the SEIS-II ROD. However, this Draft SEIS-II has not addressed the issue of whether it is appropriate to trade-off predictable early fatalities from accidents and routine radiation exposure against the threat of low-probability events far in the future. Nor is there an estimate of the probabilities that these future events will occur."

**Response:**
When making its decision, DOE will consider all environmental impacts, including those that are more predictably certain and those that are less likely to happen. SEIS-II provides estimated probabilities for most of the accidental events projected to occur. In the Final SEIS-II, DOE has added a text box discussing the probability of intrusion in Section 5.6.12.

**11.03 (22)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-161 | 3 | William L. Partain | |

**Comment:**
"DOE and government officials have bent over backwards to address the concerns of the public (many raised by people who want to curtail all industrial, government, and medical use of radionuclides by opposing all methods of waste treatment and secure emplacement). This has cost the taxpayers billions of dollars in delay costs."

**Response:**
According to NEPA regulations, the public must be given the opportunity to submit comments as part of developing an EIS. The results of the SEIS-II analyses and input from the public hearings are two of the factors that will be taken into consideration in the issuance of the ROD after publication of the Final SEIS-II. The public has shown a high level of interest and concern regarding the opening of the WIPP facility, and DOE will attempt to address these concerns before making a final decision.

**11.03 (23)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| CA1 | 72 | Richard Malcolm | |

**Comment:**
"I don't see that many of the comments that I've heard made by citizens over the years have been even noted. We all come forth and say our piece and the words are written down, and it's as if they had never been spoken. I don't see some substantial changes made to the project in response to comments of the citizens over the years."

**Response:**
Over the past 20 years, the WIPP characterization and experimental program has been overseen by state and federal regulatory agencies, the EEG, the NAS, and others. During the last several years, comprehensive stakeholder involvement activities have also served to more fully engage the interested public in DOE's activities. Knowledgeable and qualified stakeholders have often held opinions differing from those of DOE; in those instances, DOE's obligation has been to determine the merits of each scientific or engineering viewpoint and proceed accordingly. In many instances, DOE has embarked on additional site characterization or experimental activities (e.g., H-19 tracer study). For example, Appendix H.9 in SEIS-II addresses the alternative conceptual models and various viewpoints of disposal performance that are largely at odds with DOE's perspectives. Differing perspectives have also been incorporated into DOE's CCA, which is now undergoing appraisal by EPA. Thus, although DOE has sometimes taken scientific and engineering positions that were contrary to others, it has continued to solicit these viewpoints to determine whether its characterization and experimental programs provided sufficient information to demonstrate the reasonable

expectation that TRU waste can be isolated from the environment for at least 10,000 years. As another example, DOE has consulted with state, local, and tribal officials on transportation routes.

Also, as stated in the introduction to this volume of SEIS-II, all comments will be taken into account during preparation of the ROD for SEIS-II.

**11.03 (24)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| CA1 | 74 | Terry Marshall | |

**Comment:**
"It is absolutely essential that all WIPP documents submitted to Washington be accurate, complete, and unbiased, and presented in such a way that decision-makers unfamiliar with our community and WIPP history can reach an appropriate decision based solely on the written record."

**Response:**
One purpose of SEIS-II is to provide a fair and objective evaluation of the potential reasonably foreseeable impacts that may result from the implementation of the Proposed Action and alternatives. SEIS-II, coupled with the record of public comments, will be used to assist the Secretary in reaching a decision on whether to proceed to disposal operations at the WIPP site.

**11.03 (25)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| OR1 | 45 | James Phelps | |

**Comment:**
"I guess my concerns are how clearly have you presented to Congress through the years the importance and the need of getting a permanent repository open? How clearly have you presented the drastic danger of places like Hanford with their huge tanks, and how clearly is that information presented if you present stories like hydrogen development in the tank as an issue to put what might be called 'terrorist nets' over those tanks?"

**Response:**
Among other things, DOE circulates copies of its EISs, including the SEIS-II and the Hanford Tank Waste Remediation System EIS, to cognizant members of Congress; the Final SEIS-II, which also will be given to Congress, identifies the Department's Preferred Alternative as the disposal of TRU waste at WIPP.

**11.03 (26)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF1 | 47 | Margret Carde | Concerned Citizens for Nuclear Safety |

**Comment:**
"Because of the inadequacies at the site, because DOE has to overcome the presumption that WIPP is not a good site because it is a natural resource rich environment and because of the waste characterization problems, the fact that we really don't know the curie content and the exact volumes of waste that will go to WIPP, it seems intuitively obvious that we must treat this waste and make it safer before it should ever be shipped or permanently disposed of."

**Response:**
Although DOE believes that it has sufficient information regarding the waste isolation qualities of the WIPP site and the characteristics of TRU waste, one purpose of SEIS-II is to support the decisions to determine the minimum level of treatment needed to meet disposal performance standards or storage requirements. DOE will consider the environmental consequences described in SEIS-II and other factors to determine whether and how to treat TRU waste.

**11.03 (27)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF2 | 2 | John Dendahl | |

**Comment:**
"As a taxpayer, I'm outraged that this project was not in full operation long ago."

**Response:**
DOE's Preferred Alternative is to dispose of TRU waste at WIPP.

**11.03 (28)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF2 | 23 | Benny Atencio | |

**Comment:**
"As you fight amongst yourselves to determine acceptable levels of safety for your communities and for the WIPP site, understand that every minute of delay condemns us."

**Response:**
DOE's Preferred Alternative is to dispose of TRU waste at WIPP.

**11.03 (29)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF2 | 41 | Elliott Skinner | |
| SF3 | 122 | Anna Katherine | |

**Comment:**
Two commenters said that a public referendum should be held on whether to open the WIPP facility for waste disposal.

**Response:**
In making decisions regarding whether to open WIPP, DOE is following legal requirements that include opportunities for public input.

**11.03 (30)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF2 | 51 | Mary Barr | |
| V1 | 9 | Glen Graves | |
| V1 | 19 | Wally McCorkle | |

**Comment:**
Several commenters stated that DOE has not adequately explained the complexities of WIPP in terms that the lay person can easily understand. One of the commenters stated that the information and conservative scenarios available on WIPP are buried, complex, and difficult to access for concise answers. Another commenter said those who oppose WIPP do not fully understand that the level of risk involved is low. He said DOE needs to explain its process for assessing risk, preferably in a less formal environment than a public hearing. Another commenter stated that the NEPA process forces DOE to consider the most conservative scenarios and that DOE needs to explain this conservatism in everyday terms so that people can understand it.

**Response:**
DOE recognizes that, because of the detailed analyses required to determine the consequences of technically complex issues, it is often difficult to arrive at concise answers and to present the information and analyses in terms readily understandable by all readers. To assist in overcoming these difficulties, DOE typically structures its documents to facilitate public review. For SEIS-II, a summary presents a tabular comparison of impacts (see the Summary and Section 3.4), and the more complex issues and analyses are relegated to appendices. A glossary, list of acronyms and abbreviations, and measurements and conversions section also are provided. Throughout SEIS-II, text boxes are provided in an attempt to capture complex issues and information in a manner that all readers can easily understand. As an example, several text boxes in Section 5.1.8 address the process of estimating radiological impacts. DOE agrees that the issues surrounding SEIS-II are complex and has attempted to explain these complexities to the best of its ability.

**11.03 (31)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-013 | 2 | Jennifer Salisbury | New Mexico Radioactive Waste Consultation Task Force |
| ALB1 | 71 | Jim Lewis | |
| ALB4 | 120 | Jon Thomas-Weger | |
| ALB6 | 166 | Julie Ahern | |
| C-017 | 2 | James F. Van Hecke, Jr. | |
| C-113 | 2 | Victor Holm | |
| C-118 | 6 | David Proctor | |
| C-127 | 3 | Thomas M. Rauch | |
| E-008 | 4 | Bruce Trigg | New Mexico Public Health Association |
| SF4 | 111 | Jennifer Salisbury | New Mexico Radioactive Waste Consultation Task Force |
| SF5 | 19 | Chris Chandler | |

**Comment:**
Commenters said that specific agreements, commitments, and requirements such as adequate emergency response preparation, road improvement, and bypass construction must be met before operations began. Other commenters stated that SEIS-II is inadequate.

**Response:**
SEIS-II addresses health, safety, and environmental impacts. DOE would conduct waste management and disposal operations at WIPP in a manner that would reduce the risks to the public and the environment. Numerous agencies, training programs, and administrative controls would oversee the handling of the radioactive and hazardous waste at WIPP, and numerous studies have been completed that illustrate that waste containment would not be compromised during the handling and disposal of the waste containers on the site.

DOE would work with States and Native American tribes along the transportation corridors concerning emergency response and preparedness training, among other things, as required by the WIPP LWA. Federal funding for road improvement and bypass construction has been provided. Already, DOE has conducted emergency response training for several communities along the transportation routes. DOE provides field incident/accident response exercises through its TRANSAX and WIPPTREX programs. The purpose of the TRANSAX program is to demonstrate that participating tribal, state, local, and DOE emergency preparedness systems are capable of responding cooperatively and effectively to a transportation emergency involving a TRUPACT-II transporter. The WIPPTREX program is designed to help states and tribes achieve readiness for response to WIPP transportation emergencies and to assure them of DOE’s ability to provide specialized technical assistance. Training will continue as required by the LWA in order to ensure that all communities are adequately prepared to deal with potential emergencies.

**11.03 (32)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-167 | 10 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"The EEG has submitted detailed comments on the CCA to the EPA and plans to publish a report (EEG-65) outlining these concerns, in the near future. These concerns should be taken into account before a record of decision is developed.

"Some of the EEG concerns published in our review of the draft CCA (EEG-61) have been incorporated in Section H-8 of this Appendix. The discussion in this section shows that most of these issues remain unresolved. We recommend, therefore, that no decision on the basis of SEIS-II analysis be made until these concerns are resolved in the process of the CCA review and the EPA's certification rule-making process."

**Response:**
All public comments will be taken into account before a ROD is developed. Some of EEG's concerns published in EEG-61 have been resolved since publication of the Draft SEIS-II and to the degree they remain unresolved, responsible opposing views are described in Section H.9 (which was Section H.8 in the Draft SEIS-II). Appendix H has been updated for the Final SEIS-II.

**11.03 (33)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 64 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"The Health and Safety aspect of the decision on alternatives would seem to basically reduce to the trade-off between a few expected deaths during the disposal period and a possibility of a much larger number of future LCFs from accidents or environmental releases. A secondary consideration is whether some types of death (e.g. a transportation accident fatality rather than a radiation caused LCF) and the effects on some population groups (workers versus the general public) are more acceptable than others. In making this decision one needs to keep in mind the uncertainty in these comparative estimates. Also, these various alternatives are not identical and provide different levels of assurance."

**Response:**
DOE acknowledges that these are important considerations in making a decision and will consider these factors in the ROD for SEIS-II.

## 11.04 Hearings

### 11.04 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-014 | 1 | Thomas J. Fronapfel | Nevada Department of Transportation |
| ALB1 | 43 | Janet Greenwald | |
| ALB1 | 72 | Janet Greenwald | |
| ALB2 | 1 | Don Hancock | Southwest Research and Information Center |
| ALB2 | 123 | Deborah Reade | |
| ALB5 | 1 | Robert H. Neill | Environmental Evaluation Group |
| BO1 | 37 | Delbert Farmer | |
| BO1 | 60 | George Freund | |
| BO1 | 67 | Martin Huebner | Federation of Western Outdoor Clubs |
| C-061 | 1 | Robert Bobo | Shoshone-Bannock Tribes of the Fort Hall Reservation |
| C-102 | 1 | Thomas E. Jennings | |
| C-131 | 43 | Don Hancock | Southwest Research and Information Center |
| C-151 | 1 | Don Moniak | Serious Texans Against Nuclear Dumping |
| C-152 | 1 | Robert H. Neill | Environmental Evaluation Group |
| C-153 | 5 | Martin Huebner | Federation of Western Outdoor Clubs |
| CA1 | 18 | Don Gray | |
| CA1 | 53 | Jon Tully | |
| E-071 | 1 | Patricia Hall | |
| SF1 | 4 | Robert Neill | Environmental Evaluation Group |
| SF1 | 120 | Stan Rosen | |
| SF3 | 25 | Jai Lakshman | SEVA Foundation |
| SF3 | 28 | Jai Lakshman | SEVA Foundation |
| SF3 | 133 | Norman Budow | |
| SF4 | 110 | Jennifer Salisbury | New Mexico Radioactive Waste Consultation Task Force |
| SF5 | 17 | Chris Chandler | |
| SF5 | 69 | Michael Collins | |
| SF6 | 40 | Pamela Baumgertel | |
| SF6 | 50 | Janet Degan | |
| SF6 | 54 | Anna Hansen | |
| V1 | 5 | Charmian Schaller | |
| V1 | 21 | Wally McCorkle | |
| V1 | 27 | Glen Lockhardt | |

**Comment:**
Some commenters stated that the Draft SEIS-II hearings were held at inconvenient times and/or in too few locations. Others stated that a 60- or even a 90-day comment period was inadequate. Some commenters said that electronic linkages should have been used at multiple locations to reach a greater audience.

**Response:**
DOE initially established a 60-day public comment period that included the public hearing process. In response to public requests for more time to study the Draft SEIS-II, DOE subsequently extended the public comment period to 90 days. During this time, the public was

provided the opportunity to comment at a series of public hearings held in the following locations: Albuquerque, Santa Fe, and Carlsbad, New Mexico; Denver, Colorado; Richland, Washington; Boise, Idaho; North Augusta, South Carolina; and Oak Ridge, Tennessee. These public hearings were scheduled after the holiday season to afford more people the opportunity to attend them. In addition, DOE staff attended meetings in New Mexico, Oregon, and Idaho to give presentations on SEIS-II.

Recognizing that not every individual, organization, or agency could or would attend a public hearing, DOE invited comments on the Draft SEIS-II by mail, facsimile, the Internet, and electronic mail. DOE believes that this comprehensive approach, which exceeded relevant DOE and CEQ regulations, provided a more than adequate opportunity for the interested public to comment on the Draft SEIS-II. It is also important to note that DOE gives equal consideration to all public comments received through any forum.

**11.04 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB4 | 27 | Jeri Rhodes | |

**Comment:**
"Today's paper shows nothing about these hearings. So, are the people of New Mexico being informed?"

**Response:**
DOE undertook an advertising campaign designed to ensure that the interested public, organizations, and agencies had advanced notice and multiple opportunities to provide comments on the Draft SEIS-II, either orally at the public hearings or by submitting written comments during the 90-day public comment period. This campaign included publication of the hearing locations, dates, and times in the *Federal Register* and publication in newspaper display ads in each city in which hearings were to be held. These display ads appeared in 28 newspapers in 28 communities. In addition, DOE purchased radio air time (380 spots on 18 stations in 13 communities) to advertise the public hearings. Media releases were sent to key media in the communities concurrent with the publication of the *Federal Register* notice and, immediately prior to the hearings, members of the local media were contacted to encourage interest in, provide information about, and invite advance and follow-up coverage of the hearings.

**11.04 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB5 | 60 | Lilly Rendt | |

**Comment:**
"If we're going to have hearings, every person who attends that hearing should have the latest information. I saw one environmental impact statement floating around here that I've never

seen. Somebody came up to me and asked me how do I get hold of this book by CARD. It should also be universally available so that each side knows what the other side is thinking."

**Response:**
DOE distributed more than 1,000 copies of the Draft SEIS-II to individuals, agencies, and organizations. Notice of the availability of the document was provided in the *Federal Register* and on DOE's WIPP home page on the Internet. The Draft SEIS-II was also available to the public by request via the Internet, by calling the toll-free phone number, by fax, or upon request at the SEIS-II public hearings. Although the distribution of stakeholder materials is not the responsibility of DOE, space was provided at the public hearings to facilitate the distribution of materials from various public interest groups.

**11.04 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB5 | 64 | Janet Greenwald | |

**Comment:**
"When I tried to sign up people in Albuquerque to speak for this afternoon, I was told that there were 23 spots this afternoon that were being taken up by Carlsbad people who were being bused up here by the Carlsbad Chamber of Commerce. Now these people are not here, and the people who wanted to speak from Albuquerque can't speak. And I feel it's a real regrettable situation. I checked, and none of these people had signed up in Carlsbad for the Carlsbad hearings, that have signed up both in Albuquerque and in Santa Fe for a whole afternoon.

"You know, some people have tight schedules, business people and so forth. And they only can do like Tuesday afternoon at 2:15 or sometime close to lunch. I really feel that it should be a DOE policy that the people in each area should be able to speak before people from other towns that already have hearings, especially when those people are not signed up to speak in their own towns."

**Response:**
Preregistration for the SEIS-II public hearings was open to everyone on a first-come, first-served basis, and individuals who signed up at the hearing were allowed to speak during available timeslots. DOE does not believe it should institute rules that prefer the testimony of one group over another. It is also important to note that participation at the public hearings was only one vehicle for submitting comments on SEIS-II; written comments submitted via the mail, facsimile, the Internet, and electronic mail were also given equal consideration.

**11.04 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB5 | 65 | John McCall | |

**Comment:**
"I parked in the Convention Center garage. Usually when you park in the city parking buildings here you can get your tickets comp'd. And in the future I would suggest that maybe you could make arrangements with the city to comp people's parking if they park in the city facilities."

**Response:**
DOE will take that request into consideration.

**11.04 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF2 | 40 | Elliott Skinner | |

**Comment:**
"I'm hoping, since you have been generous to provide us three days here, that we'll have time to break this sort of lock-step format of five minutes or ten minutes, one after another, with no interaction."

**Response:**
The large number of speakers at the WIPP SEIS-II public hearings precluded a less structured format. As a result, DOE had to limit public comments to five minutes for individuals and ten minutes for organizations. In sessions with a smaller number of attendees, commenters were able to sign up for more than one timeslot.

**11.04 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| V1 | 6 | Charmian Schaller | |

**Comment:**
"Also, when you come to public meetings such as this you should be adequately prepared, such as having the address of where to send public comments handy."

**Response:**
DOE agrees that the appropriate information should be available for all public meetings and hearings.

**11.04 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF6 | 66 | Garland Harris | |

**Comment:**
“I'm really ambivalent about this [hearing] arrangement. I think it's a very poor arrangement, with my back to the people that are here to hear what I have to say. I certainly wish you had a podium so I could put my papers down. This is not set up in the way that it ought to be.”

**Response:**
DOE had a large table at the public hearings where individuals could sit comfortably and deliver their comments at a microphone so that the audience could hear the comments and the court reporter could record the transcript. In larger rooms, a floor microphone was also provided for commenters who wished to stand while making their comments. DOE is open to other arrangements for public meetings and will consider this suggestion for future WIPP-related public meetings.

**11.04 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-072 | 3 | Carl W. Buckland | |

**Comment:**
“Santa Fe is the worst possible location to conduct your public hearings. There is a certain segment of Santa Fe who are vociferous and negative to anything nuclear.”

**Response:**
The object of the public hearing process is to obtain public input on SEIS-II, regardless of the nature of that input. The fact that many residents near Santa Fe are interested in WIPP issues made it a desirable hearing location.

**11.04 (10)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-041 | 1 | Nina Zelevansky | |

**Comment:**
“Please ‘try’ to schedule public meetings in chemically safer environments so that they are accessible to all.”

**Response:**
DOE attempts to schedule meetings in buildings and at locations that provide adequate opportunities for the public to comment. DOE does not knowingly schedule meetings in places

that restrict the participation of the public or that pose a safety risk to participants. DOE recognizes that some interested members of the public are not able, for various reasons, to attend the public meetings; therefore, DOE provides other opportunities for both obtaining information and for submitting comments, including by mail, facsimile, the Internet, and electronic mail.

## 11.05 NEPA Regulations

### 11.05 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| NA1 | 7 | Todd Crawford | |

**Comment:**
"In the examination of Table S-7 in the summary, I was overwhelmed by the data that the apparent best thing to do is no alternative action under Table 2. It is only when one reaches the few lines on page 7 of the 8-page table that deal with human intrusion after institutional control stops, which is in 2133 for the treatment sites and 2143 for WIPP, does one see a benefit of the Proposed Action. My concern is that others who have to provide funding during this time of reducing the federal deficit will conclude it is not worth going ahead with WIPP at this time, and that the plutonium waste will just stay here at SRS. This is of particular concern here, as much of the plutonium waste at SRS is from Pu-238, which is more hazardous than Pu-239. So the benefit of WIPP during the period of passive control needs to be emphasized much more clearly in the SEIS-II."

**Response:**
SEIS-II analyzes the long-term impacts of continued storage. These impacts were considered in DOE's selection of the Proposed Action as its Preferred Alternative.

Although plutonium-238 has a higher specific activity (curies per gram) than plutonium-239, it also has a shorter half-life. On a per-activity basis, plutonium-239 has a greater exposure-to-dose conversion factor than plutonium-238 for both inhalation and ingestion (external exposure is not a contributing pathway for these plutonium isotopes). Plutonium-238 is of particular concern at SRS. Plutonium-238 has high heat generation characteristics that can act as a driver to increase the mobility of plutonium-238 in air. DOE recognizes the special properties of plutonium-238 but believes they are of principal concern in an occupational environment and would have less impact for environmental release scenarios.

**11.05 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF3 | 55 | Bill Gould | |
| SF7 | 120 | Lee Lysne | |

**Comment:**
Two commenters said that DOE has not addressed unresolved issues from SEIS-I.

**Response:**
Any applicable unresolved issues that resulted from SEIS-I have been discussed in SEIS-II. DOE considers that all issues raised during the public comment period were adequately addressed in the comment responses published with SEIS-I.

**11.05 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| DE1 | 60 | Margret Carde | Concerned Citizens for Nuclear Safety |

**Comment:**
"We need to go through the process that says we need to evaluate this facility fairly."

**Response:**
DOE's decisions regarding the WIPP project (i.e., site selection and development, tests and analyses performed, proposals to dispose of TRU waste within the repository) have been supported by independent scientific work and documented in the1980 FEIS, the 1990 SEIS-I, and SEIS-II. The RODs for FEIS and SEIS-I were based on the analyses presented in these respective documents and comments received by the public, interest groups, and government representatives.

**11.05 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-133 | 3 | Bonnie Bonneau | Legions of Living Light |

**Comment:**
"Battelle has at least one site with waste destined for WIPP and is a perennial DOE contractor which cannot provide independent review or [a] non-prejudiced decision on an issue of this import. There seems to be a conflict of interest here!"

**Response:**
Battelle Memorial Institute has determined that it has no financial interest in the outcome of SEIS-II and has prepared the SEIS-II analyses under the direction of DOE. Battelle's work on the SEIS-II was reviewed by DOE staff. In addition, the EEG and several agencies, including

the EPA and the New Mexico Environment Department, have reviewed and commented on the Draft SEIS-II. Decisions concerning SEIS-II will be made by the DOE in a ROD, to be issued after the Final SEIS-II is complete.

### 11.05 (05)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF7 | 127 | Lee Lysne | |

**Comment:**
"Why do you continue to insist that WIPP should be opened before you can even handle remote-handled waste?"

**Response:**
The 1996 Defense Appropriation Authorization, Public Law 104-201, encourages DOE to begin WIPP operations in November 1997. All reasonable efforts are being made to comply with this sense of Congress.

### 11.05 (06)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 10A | Don Hancock | Southwest Research and Information Center |

**Comment:**
"And as the Council on Environmental Quality has said, there must be, quote, 'substantially similar analyses of all the alternatives.' You certainly don't have substantially similar analyses of the impacts of any of the Action Alternatives, as would be necessary in order to use this document as a basis to adopt any of those alternatives."

**Response:**
DOE disagrees with the commenter. The analyses conducted for each alternative were based on similar assumptions, and similar methodologies were used.

## 11.06 Adequacy of SEIS-II

### 11.06 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-002 | 6 | Gedi Cibas | New Mexico Environment Department |
| A-005 | 2 | Steven H. Gunderson | State of Colorado Department of Public Health and Environment |
| A-008 | 2 | Tom Udall | Attorney General of New Mexico |
| A-008 | 15 | Tom Udall | Attorney General of New Mexico |
| C-131 | 16 | Don Hancock | Southwest Research and Information Center |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-131 | 40 | Don Hancock | Southwest Research and Information Center |
| CA1 | 25 | Don Gray | |
| SF1 | 11 | Robert Neill | Environmental Evaluation Group |
| SF1 | 19 | Robert Neill | Environmental Evaluation Group |
| SF1 | 74 | Don Hancock | Southwest Research and Information Center |
| SF1 | 94 | Tom Udall | Attorney General of New Mexico |
| SF1 | 103 | Tom Udall | Attorney General of New Mexico |
| SF1 | 107 | Tom Udall | Attorney General of New Mexico |
| SF4 | 10 | Terry Marshall | |

**Comment:**
Some commenters stated that the risks evaluated in SEIS-II were not consistent with risks presented in other DOE documents or were presented inadequately. Some commenters also said that analyses presented in SEIS-II were incomplete and too inaccurate for NEPA standards or used poor or nonconservative assumptions (e.g., a 35-year maximum period for TRU waste production, leading, in some cases, to inaccurate projections; errors and nonconservative assumptions made in analyses of WIPP operations, transportation, and no action alternatives). Other commenters stated that environmental impacts were understated for the WIPP site, transportation routes, and the generator-storage sites and that SEIS-II documentation was lacking or relied inappropriately on draft documents.

**Response:**
Although DOE has not been able to eliminate all uncertainties regarding TRU waste disposal at the WIPP facility, it believes that SEIS-II adequately addresses health, safety, socioeconomic, and other environmental issues. DOE has a high degree of confidence that the data obtained are sufficient to estimate potential environmental impacts. DOE's decisions regarding the WIPP project, including site selection and development, tests and analyses performed, and proposals to dispose of TRU waste within the repository, have been supported by independent scientific work and documented in the1980 FEIS, the 1990 SEIS-I, and SEIS-II.

DOE has used conservative assumptions (i.e., the greatest reasonable impact possible for the circumstances under present conditions) where appropriate; thus, the analyses have a tendency to overestimate impacts. Although it is difficult to accurately project periods in excess of 100 years, DOE believes that the use of conservative estimates bound the impacts for the projected time period. Significant social and/or technological changes may, of course, require reevaluation of the WIPP project's mission and operations in the future.

SEIS-II does not assume that TRU waste generation would continue for only 35 years. Its analyses are limited to total TRU waste volumes that are currently in storage and are projected to be generated in the next 35 years, based on the lack of data needed to make reliable TRU waste projections for time periods beyond 35 years. DOE will reexamine TRU waste volume projections, as necessary, in any future WIPP NEPA documents.

The Draft SEIS-II was based on the data and analyses presented in several other draft documents. The Final SEIS-II has been coordinated with the most recent DOE documents to ensure that it is based on the best available information.

## 11.07 Waste Management PEIS

### 11.07 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-008 | 12 | Tom Udall | Attorney General of New Mexico |
| A-010 | 26 | Earl Leming | State of Tennessee Department of Environment and Conservation |
| ALB5 | 9 | Robert H. Neill | Environmental Evaluation Group |
| ALB5 | 21 | Robert H. Neill | Environmental Evaluation Group |
| ALB5 | 27 | Susan Rodriguez | |
| ALB6 | 39 | Joan Robins | |
| BO1 | 126 | Dallas Gudgell | |
| C-125 | 10 | Barbara H. Johnson | The Rio Grande Chapter of the Sierra Club |
| C-131 | 18 | Don Hancock | Southwest Research and Information Center |
| C-131 | 19 | Don Hancock | Southwest Research and Information Center |
| C-152 | 13 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 60 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 116 | Robert H. Neill | Environmental Evaluation Group |
| C-156 | 10 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |
| CA1 | 31 | Don Gray | |
| OR1 | 31 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |
| SF1 | 15 | Robert H. Neill | Environmental Evaluation Group |
| SF1 | 104 | Tom Udall | Attorney General of New Mexico |

**Comment:**
Several commenters questioned the results from the Draft WM PEIS, which indicate that leaving waste at the generator-storage sites would be cheaper and safer than disposal at the WIPP repository. Commenters said that some impact analyses were based on the Draft WM PEIS and not the final version. Other commenters stated that similar analyses in the WM PEIS and in SEIS-II constitute segmentation of analysis.

**Response:**
The WM PEIS did not examine the impacts of leaving TRU waste at sites indefinitely; it analyzed the impacts of only 20 years of continued storage at the generator sites. As noted on page 8-18 of the Final WM PEIS:

> "Under the No Action Alternative, DOE would continue to characterize, process, and package newly generated TRUW to meet current WIPP-WAC for storage at sites where existing or planned facilities are available. DOE would continue to store TRUW in existing storage facilities indefinitely. The impacts of these storage activities are analyzed for 20 years based on the scope of this PEIS. The impacts of storage beyond 20 years are analyzed as part of the No Action Alternatives in the WIPP SEIS-II."

The Draft SEIS-II relied on the analysis presented in the Draft WM PEIS because it was the best information available at the time the Draft SEIS-II was prepared. The Final WM PEIS has been released and contains updated information that has been included in the Final SEIS-II. DOE does not believe that preparation of SEIS-II, separate from the WM PEIS, constitutes segmentation. As noted in SEIS-II, the two documents have different purposes, meet different needs, and are independently justified. DOE has addressed the relationship between the two documents in Section 1.5 of SEIS-II. DOE regularly updates its records on TRU waste volumes and radioactivity but, because of the time required to produce an EIS, some documents may not reflect the most current waste volume information. In SEIS-II, every effort has been made to include the most current and updated information.

The commenters are correct in pointing out that SEIS-II did not examine the health impacts of retreiving waste disposed of before 1970. DOE will not decide, based on the SEIS-II analyses, whether to retrieve any pre-1970 waste; it is only examining the disposal options for that waste should it be retrieved. These impacts would not be a result of DOE's Proposed Action here, but rather of site-specific decisions made in the context of the cleanup process under CERCLA, RCRA, or other applicable statutes.

**11.07 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-005 | 3 | Steve Gunderson | State of Colorado Department of Health and Environment |

**Comment:**
"Page 3-4: The CH-TRU map on Figure 3-1 shows the TRU waste from Teledyne-Brown Engineering in New Jersey being shipped to Oak Ridge National Labs for consolidation. Based upon information received last year from DOE's Carlsbad Area Office and from the Rocky Flats Office, it is our understanding that this waste will be consolidated at Rocky Flats."

**Response:**
Since publication of the Draft SEIS-II, the TRU waste from Teledyne-Brown Engineering was shipped in a TRUPACT-II to RFETS. The volumes and figures in the Final SEIS-II have been updated to reflect this fact.

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# 12.0 WIPP FACILITIES

## 12.01 General

### 12.01 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 50 | Jeff Radford | Business People Concerned about WIPP |

**Comment:**
"How long does it take to walk a quarter of a mile or drive that? It's really not a huge distance, as it's pointed out to be. I'd also like to point out that everyone talks about 2,100 feet below the surface; that's less than a quarter of a mile."

**Response:**
The WIPP repository is located 655 meters (2,150 feet), or about 0.6 kilometer (0.4 mile) below the surface. As discussed in Appendix H and Sections 5.1.12, 5.2.12, 5.3.12, and 5.4.12 of SEIS-II, the combination of natural barriers (e.g., depth, extent, and thickness of the bedded salt formation) and engineered barriers (e.g., shaft seals, magnesium oxide backfill), coupled with the characteristics of the waste itself, would isolate TRU waste for 10,000 years. In addition, it is not valid to compare 655 meters (2,150 feet) on the earth's surface, which would be a relatively easy walk or drive, with the 655 meters (2,150 feet) to the subsurface WIPP waste repository. Unlike traversing 655 meters (2,150 feet) on the surface, traversing 655 meters (2,150 feet) to the waste repository at WIPP would require extensive drilling or excavating. The potential impact to the public and the environment would be small.

### 12.01 (02)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 50 | David Mitchell | |

**Comment:**
"This drawing of the planned view of the WIPP underground facility [Fig 2-4]. And underneath the north arrow there's a scale, graded from zero to 400 feet. The word feet appears above it, and then just underneath the scale it says, 'Not to Scale.'"

**Response:**
Certain figures were electronically scanned for inclusion in SEIS-II. In some cases, the scanning process may have distorted the proportions of the images, and the caption "Not to Scale" was inserted to reflect that possible inaccuracy. Figure 2-4 has been revised to say "May Not be to Scale."

**12.01 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-058 | 1 | George L. Miller | |

**Comment:**
"It is understood that the WIPP is an old abandoned salt mine. Should waste be stored there? What is the depth of this old mine? Will it be stored in containers (barrels) which will eventually rust and then leak because of the salt content? Will the containers be stored inside another container; or a vault of some type? What type of material is the container or vault constructed from? And how is it constructed?

"What is the projected completion date of the storage system?

"Could the waste be stored permanently at Rocky Flats utilizing the same system which will be used at WIPP? Why or Why not?"

**Response:**
The WIPP facility is not an old abandoned salt mine, but a facility excavated in salt that was specifically designed for disposal of TRU waste. The WIPP underground facility is 655 meters (2,150 feet) below the land surface in a bedded salt and anhydrite formation ranging in thickness from 530 to 610 meters (1,740 to 2,000 feet). It was constructed to demonstrate the safe disposal of TRU waste from DOE defense programs and activities. TRU waste would arrive in a variety of packages (for example, 55-gallon steel drums, standard waste boxes, and canisters). RH-TRU waste would be emplaced in the walls of the excavated rooms; CH-TRU waste would be stacked on the floors of the rooms. Magnesium oxide would be added to the walls of the rooms and arrayed around the waste stacks to reduce the mobility of radionuclides in brine. Panels, comprising seven rooms, would be sealed after waste was emplaced. The four shafts (waste handling, air intake, exhaust, and salt handling) also would be sealed. Over time, the salt would move, or creep, and crush the waste containers, thereby entombing the waste.

DOE believes that the combination of natural features (e.g., bedded salt, depth below groundwater) and engineered barriers (e.g., magnesium oxide backfill) would provide adequate waste isolation in compliance with the applicable regulations. The projected completion date of the repository depends upon the alternative selected, in general, keeping pace with TRU waste generation, certification, and shipment. Additional information can be found in Chapters 1, 2, and 3 of SEIS-II.

RFETS does not possess the necessary geological and hydrological characteristics to provide long-term waste isolation in a geologic repository.

**12.01 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-160 | 3 | Julie R. Sutherland | |

**Comment:**
"The waste brought to WIPP in steel drums would be placed in direct contact with salt beds that could corrode the containers in a matter of years."

**Response:**
The fundamental premise of long-term behavior of the WIPP facility is that salt creep would ultimately encapsulate the waste and provide a long-term barrier to migration of waste-contaminated brine to the accessible environment. Over a long period of time, relatively small amounts of brine in the immediate vicinity of the repository would be expected to seep into the repository and come into contact with waste materials. This would result in at least some corrosion of the waste containers. DOE believes that the combination of natural features (e.g., bedded salt, depth below groundwater) and engineered features (e.g., magnesium oxide backfill) would provide adequate waste isolation in compliance with the applicable regulations.

**12.01 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| CA1 | 65 | Charles M. Loftus | |

**Comment:**
"I was brought over here from California to make sure that this site was completed per plans and specifications. Many problems were encountered and DOE and Westinghouse said they could not operate the site without these problems being resolved. I resolved all problems that were on plans and specifications. The other major problems brought to our attention were not resolved, as they were not on the plans, and I could not have the contractor do what Westinghouse and DOE wanted done without going to Congress and asking for more money, which we did. Congress said, 'You're not getting any more money. Complete the site as shown on plans.' Until two years ago, WIPP could not pass the safety tests held by many inspection groups. They could not pass electrical code until a year and a half ago. But all along they kept saying, 'We're ready. Give us the wastes.'"

**Response:**
An operational readiness review is being conducted, and any defects (including any variances from code requirements) would be corrected before WIPP could open. If WIPP opened for disposal operations, it would continue to be subject to active oversight by the State of New Mexico and EPA. Other agencies, such as the Mine Safety and Health Administration, also would continue to provide oversight (for example, by inspecting the underground workings and worker safety features). Thus, the operation of WIPP would continue to be subject to extensive external scrutiny designed to promptly and independently detect and correct any potential problems.

**12.01 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| CA1 | 67 | Charles M. Loftus | |

**Comment:**
"In the waste handling building, they can only use half of the building, because they know and I know that the area they are to use to handle the medium and hot wastes cannot be used without major changes and repairs."

**Response:**
The waste handling facilities within the Waste Handling Building have been designed and constructed to accommodate a variety of CH-TRU and RH-TRU waste packages. Assuming that WIPP received all internal and external approvals in 1997 and 1998, CH-TRU waste containers (e.g., 55-gallon drums, standard waste boxes) could be removed from arriving TRUPACT-IIs, moved to the underground, and emplaced in the waste disposal rooms. Since RH-TRU waste disposal is not scheduled to begin until 2002, an RH-TRU waste-specific SAR, as well as other activities (including any modifications or repairs) necessary to comply with DOE orders, must still be accomplished.

**12.01 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF4 | 26 | Bonita McCune | |

**Comment:**
"An earthquake, which exceeds design projections, is considered a low probability."

**Response:**
For engineering design purposes, the intensity of an earthquake is considered in terms of the maximum acceleration, expressed as a fraction of the acceleration due to gravity (g), of ground movements during shaking caused by the earthquake. Based on probability analyses and the WIPP site's seismic history, the strongest earthquake acceleration expected at WIPP would be 0.075g. This is below the conservative design level of 0.1g. An earthquake of this magnitude would be expected to occur once every 1,000 years (see Section 4.1.3.1 of SEIS-II and Section 7.3.6 of the 1980 FEIS).

# 13.0 WIPP WASTE ISOLATION PERFORMANCE

## 13.01 General

### 13.01 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 26 | Eric Rajala | |
| ALB1 | 34 | Eric James | |
| ALB1 | 68 | Jim Lewis | |
| ALB2 | 155 | Rick Packie | |
| ALB3 | 4 | Don Schrader | |
| ALB3 | 41 | Harry Willson | |
| ALB3 | 103 | Lois Pribble | |
| ALB4 | 37 | Jeri Rhodes | |
| ALB4 | 38 | Jeri Rhodes | |
| ALB4 | 48 | Lawrence Carter-Long | |
| ALB4 | 84 | Wendy Cory | |
| ALB4 | 106 | Merida Wexler | |
| ALB4 | 122 | Jon Thomas-Weger | |
| ALB6 | 123 | Alan Moskowitz | |
| ALB6 | 148 | James Emmett Garrity | |
| C-012 | 5 | Eleanor Ponce | |
| C-020 | 2 | Brian V. Ellison | |
| C-024 | 3 | Barbara Conroy | |
| C-107 | 2 | Deborah M. Brink | |
| C-110 | 4 | Rafaelita Bachicha | |
| C-121 | 4 | Bob McEnaney | |
| C-133 | 19 | Bonnie Bonneau | Legions of Living Light |
| C-151 | 11 | Don Moniak | Serious Texans Against Nuclear Dumping |
| C-156 | 6 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |
| C-163A | 20 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |
| CA1 | 110 | Don Kidd | |
| DE1 | 8 | Leroy Moore | |
| DE1 | 9 | Leroy Moore | |
| DE1 | 48 | Kay Mack | |
| DE1 | 77 | Sam Cole | |
| DE1 | 97 | Laura Kriho | |
| DE1 | 134 | Andrew Thurlow | |
| DE1 | 191 | Victor Holm | |
| OR1 | 42 | Karl Shendall | |
| SF1 | 40 | Tom Seibel | |
| SF1 | 61 | Virginia Miller | |
| SF1 | 95 | Tom Udall | Attorney General of New Mexico |
| SF2 | 20 | Tai Bixby | |
| SF2 | 30 | Shawn Sigsredt | |
| SF3 | 23 | Eleanor Ponce | |
| SF3 | 40 | Jai Lakshman | SEVA Foundation |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF3 | 130 | Norman Budow | |
| SF4 | 21 | Bonita McCune | |
| SF4 | 57 | Deborah Reade | |
| SF4 | 80 | Bonita McCune | |
| SF4 | 98 | Joseph Oliaro | |
| SF5 | 36 | Louise Baum | |
| SF5 | 44 | Michael Buonaiuto | |
| SF5 | 48 | Sarah Cowan | |
| SF5 | 68 | Sharon Laurie | |
| SF6 | 6 | Sheldon Herman | |
| SF6 | 46 | Burleigh Shepard | |
| SF6 | 58 | Anna Hansen | |
| SF7 | 47 | Marvin Mattis | |
| SF7 | 135 | Dominique Mazeaud | |
| SF8 | 61 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**
A number of commenters questioned DOE's ability to predict the long-term performance and risks of WIPP over 10,000 years or longer.

**Response:**
DOE believes that the methods, parameter values, and assumptions used in SEIS-II to assess WIPP's long-term performance produced calculated results that represent (1) a reasonable upper limit of the extent of radionuclide migration from the repository and (2) the possible resultant impact that reasonably could be expected. The scenarios evaluated include (1) an undisturbed repository; (2) a postulated future exploratory borehole that penetrates the repository and subsequently encounters a pressurized brine reservoir, allowing brine into the repository; and (3) an exploratory borehole where repository radioactive waste is transported directly to the land surface, locally exposing a member of a drilling crew and a well site geologist to radioactive materials. These scenarios are evaluated in the performance assessment sections of Chapter 5 (5.1.12 for the Proposed Action) and in Appendix H. The CCA presents more detailed information on long-term performance assessment.

**13.01 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 51 | Lisa Sparaco | |
| ALB2 | 11 | Maurice Weisberg | |
| ALB2 | 12 | Maurice Weisberg | |
| ALB2 | 33 | Virginia Kotler | |
| ALB2 | 75 | Charles Hyder | |
| ALB2 | 85 | Janet Greenwald | |
| ALB4 | 21 | Andy Lenderman | |
| ALB4 | 97 | Angela Wiebalk | |
| ALB4 | 104 | Merida Wexler | |
| ALB4 | 106 | Merida Wexler | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB6 | 31 | Dan Kerlinsky | |
| ALB6 | 56 | David Pace | |
| ALB6 | 80 | Judy Pratt | |
| ALB6 | 104 | Dair Obenshain | |
| BO1 | 97 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| C-036 | 1c | Sarah Stout | |
| C-088 | 6 | Victoria Parrill | |
| C-123 | 2 | Carol Merrill | |
| C-127 | 2 | Thomas M. Rauch | |
| C-133 | 18 | Bonnie Bonneau | Legions of Living Light |
| C-139 | 3 | Judy Herzl | |
| C-148 | 1 | Landi Fernley | |
| C-151 | 10 | Don Moniak | Serious Texans Against Nuclear Dumping |
| C-151 | 11 | Don Moniak | Serious Texans Against Nuclear Dumping |
| C-154 | 4 | Tom Marshall, Jack Mento, et al. | Rocky Mountain Peace and Justice Center |
| C-157 | 2 | Wendy Lynne Botwin | |
| C-158 | 6 | Maureen Eldredge | Military Production Network |
| C-162 | 3 | Kathleen Sullivan | |
| C-163A | 17 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 81 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163D | 7 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163H | 1 | David T. Snow | |
| C-165 | 2 | Steven M. Herman | Stan A. Huber Consultants, Inc. |
| CA1 | 123 | Dan Funchess | |
| DE1 | 22 | Kathleen Sullivan | |
| DE1 | 34 | David Measom | |
| DE1 | 107 | Roy Young | |
| DE1 | 151 | James Ciarlo | |
| E-056 | 24 | Linda Hibbs | |
| SF2 | 8 | Kathleen Sullivan | |
| SF3 | 87 | Sasha Pyle | Religious Society of Friends |
| SF4 | 79 | Bonita McCune | |
| SF4 | 90 | Bonita McCune | |
| SF5 | 33 | Louise Baum | |
| SF5 | 71 | Michael Collins | |
| SF6 | 47 | Burleigh Shepard | |
| SF6 | 71 | Garland Harris | |
| SF8 | 33 | Ame Solomon | |
| SF8 | 55 | Katherine Lage | |

**Comment:**

A number of commenters said that the WIPP site is not technically sound or safe. Specifically, several commenters said that the Pecos River and other bodies of water, including groundwater, will become contaminated.

**Response:**
DOE investigations over the past 20 years have shown that the WIPP site is suitable for long-term geologic disposal of TRU waste and that the WIPP design will keep radioactive material from reaching the Pecos River. WIPP is sited in thick salt beds about 655 meters (2,150 feet) below the land surface. It is well isolated from water-bearing formations above and below the facility horizon. The most significant water-bearing hydrogeologic unit that may be considered in a scenario involving off-site migration of radioactive contaminants to the Pecos River (about 24 kilometers [15 miles] southwest of the WIPP site) is the much-investigated Culebra Dolomite of the Rustler Formation, about 440 meters (1,440 feet) above the repository.

The long-term performance assessment analyses in SEIS-II have indicated that no impacts to local groundwater and the Pecos River from an undisturbed WIPP repository, via the Culebra Dolomite or otherwise, would be expected for at least 10,000 years. DOE also analyzed the consequences of a potential future intrusion that penetrates the repository and subsequently encounters a pressurized brine reservoir. The analysis showed that in an intrusion borehole case, contamination may reach the Culebra Dolomite, but transport modeling showed that only very small amounts of contaminants would migrate from the point of release over 10,000 years. At a stock well 3 kilometers (2 miles) from the point of release, under the most severe case analyzed, no human health impacts (less than $10^{-20}$ probability of an LCF) would result. Results of these analyses are detailed in Chapter 5 and Appendix H of SEIS-II.

The impacts of releases from an unplugged borehole were not analyzed because current regulatory requirements and practices in the Delaware Basin would require some level of plugging at abandonment. The plugging scenario considered in the analysis is described in Appendix H.

**13.01 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 52 | Jeff Radford | Business People Concerned about WIPP |
| C-163G | 2 | Jeff Radford | Business People Concerned about WIPP |

**Comment:**
“How can the Department of Energy, Battelle refuse to accept the reality that New Mexico will be contaminated by WIPP when so many other nuclear facilities are contaminated? How can you reach any other conclusion but that WIPP will contaminate its surroundings?”

**Response:**
WIPP differs markedly in concept from other nuclear facilities. Many nuclear facilities with surface and near-surface contamination were once production facilities, operated under less stringent regulations, where operations were carried on at the land surface, where handling mishaps sometimes resulted in surface contamination, and where no long-term waste disposal options were available. WIPP is the first DOE site to be evaluated in detail for disposal of TRU waste and is the first DOE site chosen specifically because of its suitability as a TRU waste disposal site. WIPP was expressly designed for disposal of TRU waste in bedded salt 655 meters (2,150 feet) beneath the surface. Stringent procedures for protecting workers and

the environment have been put in place to ensure that the transfer of containers from the transportation vehicle to the underground storage areas would occur without incident.

DOE believes that the combination of natural features (e.g., bedded salt, depth below groundwater) and engineered barriers (e.g., magnesium oxide backfill) would provide adequate waste isolation in compliance with the applicable regulations. Additional information can be found in Chapter 5 and Appendix H of SEIS-II.

**13.01 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 55 | Jeff Radford | Business People Concerned about WIPP |

**Comment:**
"Some of the project's fatal flaws were known from the outset. Others, like pressurized brine below the depository chambers, were revealed as progress has continued."

**Response:**
The WIPP site was initially selected for consideration as a deep geologic repository in the early 1970s. The concept of long-term performance of WIPP was based on the understanding that (1) bedded salt deposits were dry, (2) the natural creep of the salt would encapsulate the waste, (3) salt had favorable heat-dissipation properties, and (4) the northern Delaware Basin had predictable geology that would be amenable to repository construction and predictions of performance. The initial siting process and the eventual site characterization and development have led to many changes in these initial concepts to the current conceptual models that provide the basis for SEIS-II and the CCA long-term performance analyses. The results of these analyses are consistent; they indicate that the WIPP site is geologically suitable and that the long-term performance of the WIPP facility would meet current regulatory requirements for disposal of TRU waste.

Section 2.1.4 of SEIS-II has been modified to provide information on why the WIPP site was selected. Section 4.1.3 has also been modified to include additional information on brine reservoirs in the vicinity of WIPP.

**13.01 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 61 | David Mitchell | |

**Comment:**
"Also, just as a comment, large-scale brine inflow experiments include vacuuming brine from natural sumps formed by depressions in the floor in preweighted amounts. Manually absorbing brine with sponges and vacuuming brine from prepared -- this doesn't sound like a large-scale brine inflow experiment.

"To me, a large-scale brine inflow experiment is to put up a mock plug between one of the panels and put 2,000 psi of brine behind it and see if it holds."

**Response:**
The type of experiment proposed by the commenter would not be very practical given the limited amount of brine flowing into the excavation. Conditions observed in the salt beds exposed by excavations in the WIPP underground provide evidence of this limited amount of brine inflow. For the most part, these observations indicate that, while the salt beds do contain brine within their intergranular pore spaces, the permeability and porosity of the salt are extremely low, significantly limiting the Salado Formation's ability to transmit any brine in its pore space. Evidence of these properties is indicated by the appearance of minor brine seeps and the occurrence of salt that has precipitated along bedding planes, cracks, and crevices.

**13.01 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB4 | 4 | Charles Goad | |

**Comment:**
"One tablespoon of cesium dumped into a gallon of water under a vacuum would wipe out the town of Albuquerque.

"Now, you're creating this down in that WIPP site. You're in potash. Whether it's been checked for cesium, I don't know, but it ought to be checked for cesium because what you're doing is creating a by-product, cesium, out of potash by the process you're working down there. Plus, you're putting it into a vacuum because you're sucking all the air out of there. In other words, you're creating one big large bomb right there if the cesium exists in that potash."

**Response:**
DOE believes that these impacts are not credible. The reaction of metallic cesium (one tablespoon to 28.05g, 0.211 moles) and water in a vacuum would not result in the formation of an explosion. The reaction would generate 2.26 liters (0.105 moles of hydrogen gas) and 0.211 moles of cesium hydroxide. A serious explosion would not occur because hydrogen would be formed without the presence of oxygen. Hydrogen is explosive if, and only if, oxygen or an oxidant is present.

It appears that the comment is also putting forth the possibility of metal cesium being formed from potash. That is also very unlikely, because potash is composed of a mixture of sodium and potassium carbonates, oxides, and hydroxides. Cesium may be present as the positive ion, but in very low quantities. No explosion would occur.

**13.01 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB4 | 49 | Lawrence Carter-Long | |
| BO1 | 73 | Steve Hopkins | |
| C-129 | 7 | Richard A. Kenney | Coalition 21 |
| E-069 | 3 | Pat Clark | Snake River Alliance |

**Comment:**
Several commenters stated that DOE could not demonstrate that WIPP operations would cause fewer than 1,000 deaths over 10,000 years, due to large uncertainties in predictions.

Another commenter said DOE should dispute claims of its inability to demonstrate that radiation releases from WIPP would result in fewer than 1,000 deaths in 10,000 years. The commenter said the SEIS-II evaluation shows “no impact on human health as long as the repository remains undisturbed by human activity.”

**Response:**
The SEIS-II analyses project that, once the waste is in place, disposal at WIPP would likely result in no radiation deaths over a 10,000-plus-year period, far fewer than 1,000 deaths. EPA will determine whether WIPP meets the applicable standards for disposal of radioactive waste in the context of the CCA submitted by DOE.

Analyses also showed that in an intrusion borehole case, contamination may reach the Culebra Dolomite, but transport modeling showed that only very small amounts of contaminants would migrate from the point of release over 10,000 years. At a stock well 3 kilometers (2 miles) from the point of release, under the most severe case analyzed, no human health impacts (less than $10^{-20}$ probability of an LCF) would result. Results of these analyses are detailed in Chapter 5 and Appendix H of SEIS-II.

**13.01 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| BO1 | 83 | Rebecca A. Nebelsick | |

**Comment:**
“The first Environmental Impact Statement on WIPP, completed in 1980, rejected transuranic waste in the salt caverns due to inability to completely seal and/or encase the waste against the underground water, possibly moving the waste and the pressurized brine that could push it to the surface.”

**Response:**
The commenter’s information is inaccurate. The following conclusion was reached in the Final EIS (1980, p. 1-10): “The...three [action] alternatives are predicted to have impacts that are

small both in the short term during construction and operation and in the more distant future, and none of them is so clearly superior environmentally to the others that it can be selected on environmental grounds alone; any of these three alternatives can be carried out in a safe and environmentally acceptable manner." It should be pointed out as well that TRU waste would be emplaced in an excavated repository, not in salt caverns.

The ROD of 1981, based in part on the 1980 FEIS, "decided to proceed with the WIPP project at the Los Medaños Site in the Delaware Basin of southeast New Mexico as directed by the U.S. Congress..." (46 FR 9162).

**13.01 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| BO1 | 130 | Joanie Fauci | |

**Comment:**
"I just find that it's very unfortunate that we spent all this money studying on WIPP and it's still a very questionable proposal in terms of its soundness and the risk of the nuclear wastes escaping in the future."

**Response:**
DOE has received annual appropriations to develop WIPP since its authorization by Congress in 1980 with passage of Public Law 96-164. Since that time, DOE has expended these funds on a site characterization and experimental program, development of performance assessment methods, and development of the WIPP facility. In October 1996, DOE submitted its CCA to EPA for a determination of compliance with the regulations and criteria of 40 CFR Parts 191 and 194. In addition, earlier in 1996, DOE submitted its RCRA Part B Permit application to the State of New Mexico for approval to operate WIPP. Based on the analyses in these compliance documents and those of SEIS-II, DOE believes that WIPP can be operated in an environmentally responsible manner and that TRU waste can be isolated for at least 10,000 years.

**13.01 (10)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| BO1 | 132 | Robert McEnaney | |

**Comment:**
"In 1970, the scientists went ahead and studied the problems at INEL and found that burying plutonium was quite the problem. A memo was issued, and they stopped burying plutonium. I think that's really ironic because we're going to go ahead and bury plutonium once again. And there's no reason to show that science proved that burying it five miles below the earth is any different than burying it ten feet below the ground. And I think we have to really look at the logic behind that situation."

**Response:**
Prior to 1970, TRU waste was disposed of in shallow burial pits at several sites. Disposal at that time was based more on convenience than on the qualities of the site (i.e., natural barriers to waste migration) or on the qualities of the engineered barriers (such as the pit liners) or structurally rigorous waste packages. Deep geologic disposal by today's standards requires a far more thorough evaluation and a much greater level of understanding of the waste, waste packages, and the natural and engineered barriers. The WIPP site, for example, was selected after several years of effort, and it has undergone about 20 years of site characterization and experimental programs.

**13.01 (11)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 141 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 5-42. 4th line from bottom. Reference is made to the 5-kilometer subsurface lateral boundary. The appropriate boundary of concern is the WIPP site boundary which is less than 3 km from the waste panels to the south (down gradient in the Culebra aquifer)."

**Response:**
40 CFR Parts 191 and 194 state that analyses are to be conducted for the accessible environment. The accessible environment is defined as 5 kilometers (3 miles) from the boundary of the repository rather than the distance to the Land Withdrawal Area boundary. In the Final SEIS-II, a well located at 3 kilometers (2 miles) was used.

**13.01 (12)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 145 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 5-48. Section 5.1.12.5 The statement is made that if all the stored excess RH-TRU waste were released, it would cause less than 2 deaths over a 10,000 year period but that if stored, it would result in less than 2 worker deaths per 100 years. This suggests that it would be better to release the waste than to store it! This section should go beyond the statement that population may increase around the sites and present a rationale for storing the waste."

**Response:**
SEIS-II has been revised. Using the updated waste volumes presented in Appendix J of the Final SEIS-II, there would be no excess RH-TRU waste to be stored under the Proposed Action.

**13.01 (13)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 147 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Thermal loading in the repository should not be a major problem. The excavated waste disposal area in the Proposed Plan is about 27 acres (for CH-TRU wastes). This would permit 270 Kw with the present criteria of 10 Kw/acre. The inventory in Appendix A (Tables A-31 and A-33) for Action Alternative 2 total less than 170 kilowatts."

**Response:**
The number of disposal panels required for each alternative is influenced by the design limit on heat load (10,000 watts per surface acre) for waste disposed of at WIPP. Consistent with the RCRA Part B Permit Application, an average heat load of 60 watts per acre per RH-TRU waste container is assumed for the Proposed Action and action alternatives (the actual heat load has been calculated at about 1 watt per container). Because of the assumed volume reduction of about 65 percent associated with the thermal treatment process used in Action Alternative 2, the average heat load for RH-TRU waste containers for this alternative would be about 170 watts.

**13.01 (14)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163A | 74 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**
"The natural equilibrium of the Castile brine reservoir (or of brine inclusions in the Salado anhydrite marker bed) could be upset by the emplacement of heat-emitting radioactive waste, particularly the high-level waste. If brine reaches the waste canisters, it will accelerate the corrosion of the canisters and the leaching of the waste (DEIS, 1979, p. 9-137)."

**Response:**
By regulatory restriction, only defense-related TRU radioactive waste would be accepted at WIPP, precluding any possibility of high-level waste being disposed of at WIPP. Based on thermal impact studies, the planning-basis WAC include thermal loading design limits of 10 kilowatts per surface acre that would preclude any significant thermal impacts from emplaced TRU waste in WIPP. A potential thermal impact to brines found 240 meters (800 feet) below WIPP in the Castile is not plausible. DOE has found that the average increase in temperature due to radioactive decay of emplaced CH-TRU and RH-TRU waste would be less than 2ºC (3.6ºF), which is insufficient to induce significant thermal convection and thermal stresses and strains or to substantially modify anticipated chemical reactions. Increased temperatures from heat of geothermal origin ("from the center of the earth") and compression of gas as a result of salt creep inward are predicted to be similarly insignificant. A text box has been added to

Appendix A to provide information on key processes considered but not analyzed in detail in SEIS-II. Additional information can be found in the CCA, Appendix SCR.

**13.01 (15)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163A | 77 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| CA1 | 69 | Richard Malcolm | |

**Comment:**
Two commenters said they were concerned that the WIPP site would not be monitored for releases after repository closure.

**Response:**
The nature of deep disposal in the bedded salt of the Salado Formation would make it unnecessary to actually monitor the waste in the repository after closure. DOE would take measures to ensure that the repository remains undisturbed. Active controls, such as monitoring of groundwater quality and subsidence, would be maintained over the site. A permanent marking system would be put in place to provide passive control of access to the site and the repository. Additional information regarding passive and active institutional controls can be found in Section 3.1.3.5 of SEIS-II and in Chapter 7 of the CCA.

**13.01 (16)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-165 | 2 | Steven M. Herman | Stan A. Huber Consultants, Inc. |

**Comment:**
"Depleted Uranium (DU) would not be accepted because it may be soluble in water. If this is a concern at WIPP, then a greater concern should be the actual salt walls dissolving, and the whole WIPP facility would also be unsafe for TRU waste."

**Response:**
Depleted uranium would not be sent to WIPP since it is not technically considered TRU waste. This type of uranium is also an insoluble form of uranium.

The fundamental premise of successful waste isolation at the WIPP facility is that salt creep would ultimately encapsulate the waste and provide a long-term barrier to migration of brine contaminated with radionuclides and hazardous chemicals to the accessible environment. Over a long period of time, relatively small amounts of brine in the immediate vicinity of the waste disposal rooms and disturbed rock zone would be expected to seep into the repository and come into contact with waste materials. This would result in at least some corrosion of the waste containers. Because only small quantities of brine would be anticipated, it is unlikely that a slurry of brine and waste would form. On this basis, the long-term performance assessment analysis in SEIS-II indicates that no impacts to the environment would be expected from an undisturbed WIPP facility for at least 10,000 years.

**13.01 (17)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| CA1 | 1 | Al Hickerson | |

**Comment:**
"I have a great deal of confidence in the rock salt section. I have a great deal of confidence in its impermeability because if it won't leak propane, then it ain't going to leak anything. Now, propane is easy. They have 2,000 pounds of pressure on that propane in that down there. So if it would leak, it would leak."

**Response:**
The long-term performance analyses of SEIS-II indicate that no impacts to the environment from releases from WIPP would be expected to occur for at least 10,000 years. Additional details on these analyses can be found in Chapter 5 and Appendix H.

**13.01 (18)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| CA1 | 66 | Charles M. Loftus | |

**Comment:**
"We do not know that the pressure buildup when the ceilings collapse will blow the salt blocks right out and contaminate the whole site. Until this test is run, WIPP should not open."

**Response:**
There is no evidence suggesting that a salt slab dropping from the ceiling of a waste storage room would cause a build-up of pressure sufficient to breach the repository and release contamination. To date, salt slabs have detached and fallen on three different occasions. These incidents occurred in old rooms constructed in the early to mid-1980s as a part of the SPDV program. All three occurrences were anticipated, and no "ground control" measures were taken to prevent them. While some vibration was felt in the excavation, the integrity of the repository was not jeopardized and no catastrophic consequences resulted.

After closure, salt creep would proceed and shrink the underground openings. This would happen slowly; the walls would converge, as would the floor and ceiling, and salt fragments may drop occasionally. However, the distance that a roof slab could drop would be minimized, as would the time needed to seal the repository, since the waste would be stacked and the storage rooms would be well filled.

**13.01 (19)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| CA1 | 116 | Carroll Leavell | |

**Comment:**
"The WIPP site itself has proven to be a safe repository for the wastes. The repository is almost one-half mile deep in a 225-million-year-old salt formation. Tests have shown that the wastes cannot be carried out of the repository by natural process. After the waste is in place, the natural process is for the salt to press around it and seal it in place. The salt formation will close in around the waste and lock it."

**Response:**
The analyses of Sections 5.1.12, 5.2.12, 5.3.12, 5.4.12, and Appendix H show that WIPP would isolate TRU waste.

**13.01 (20)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| DE1 | 113 | Foster Goodwill | |

**Comment:**
"The WIPP area is not contaminated at this point. It will be extremely contaminated at some time in the future, and it's going to be irretrievable."

**Response:**
WIPP differs markedly in concept from other nuclear facilities. Many nuclear facilities with surface and near-surface contamination were once production facilities, operated under less stringent regulations, where operations were carried on at the land surface, where handling mishaps sometimes resulted in surface contamination, and where no long-term waste disposal options were available. WIPP is the first DOE site to be evaluated in detail for disposal of TRU waste and is the first DOE site chosen specifically because of its suitability as a TRU waste disposal site. WIPP was expressly designed for disposal of TRU waste in bedded salt 655 meters (2,150 feet) beneath the surface. Stringent procedures for protecting workers and the environment have been put in place to ensure that the transition of containers from the transportation vehicle to the underground storage areas would occur without incident.

DOE believes that the combination of natural features (e.g., bedded salt, depth below groundwater) and engineered barriers (e.g., magnesium oxide backfill) would provide adequate waste isolation in compliance with the applicable regulations. Additional information can be found in Chapter 5 and Appendix H of SEIS-II, including discussion of the retrieval of the waste should it be necessary.

**13.01 (21)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-084 | 1 | Bill Lawless | Savannah River Site Citizens Advisory Board |

**Comment:**
"What would the consequences be after 100 years if there were a loss of institutional control of the TRU waste (Pu-238 and Pu-239)?"

**Response:**
As noted in Appendix H, long-term performance analyses were "timed" to estimate the maximum health impacts to exposed individuals 100 years after repository closure. SEIS-II analyzed the ability of WIPP to isolate TRU waste over 10,000 years in the event that (1) an exploratory borehole breached the repository and (2) an exploratory borehole encountered a pressurized brine pocket after penetrating an individual panel. The analyses of an intrusion borehole that would penetrate the repository and one that would penetrate both the repository and a pressurized brine reservoir show that there would be a direct release of materials to the land surface with only minor health effects to the drilling crew. The analyses of Sections 5.1.12, 5.2.12, 5.3.12, 5.4.12, and Appendix H in SEIS-II show that WIPP would isolate TRU waste.

Analysis also showed that in an intrusion borehole case, contamination may reach the Culebra Dolomite, but transport modeling showed that only very small amounts of contaminants would migrate from the point of release over 10,000 years. At a stock well 3 kilometers (2 miles) from the point of release, under the most severe case analyzed, no human health impacts (less than $10^{-20}$ probability of an LCF) would result. Results of these analyses are detailed in Chapter 5 and Appendix H of SEIS-II.

Evaluation of the effects of potash mining that would increase the hydraulic properties of the Culebra Dolomite in areas above known potash reserves near WIPP showed that groundwater flow paths in the Culebra would change from current high zones of transmissivity to the south and east to lower zones of transmissivity to the west. As a result, migration of key radionuclides downgradient of WIPP would be reduced to below rates postulated for unmined scenarios, and, as in the case of the unmined scenarios, no off-site radiological impacts via the groundwater pathway are postulated.

**13.01 (22)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF4 | 91 | Bonita McCune | |

**Comment:**
"Bacteria have recently been found at great depths in groundwater at WIPP. That raises the question as to whether the bacteria could absorb some wastes and then transport them to outside locations. What biological consequences could there be?"

**Response:**
It is well recognized that microbial processes would play a key role in the long-term degradation of waste disposed of at WIPP, but no credible evidence is available to support the hypothesis put forth by the commenter.  Microbial processes and their effects on the degradation of waste and waste containers disposed of in the WIPP facility are considered in the long-term performance assessment calculations performed for SEIS-II (Section H.5).

**13.01 (23)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF7 | 20 | Suzanne Phillips | |

**Comment:**
"Radioactive material has unknown properties and cannot be contained.  No one knows where it will show up next."

**Response:**
A critical aspect of this SEIS-II analysis and the analyses that support the CCA involve having a thorough understanding of the fundamental behavior of radioactive substances found in TRU radioactive waste, including its rate of radioactive decay, the resulting progeny, and geochemical behavior and mobility in the WIPP environment.  DOE's current understanding of actinide behavior and mobility documented in SEIS-II and the CCA is based on a considerable number of studies, investigations, and experiments.  A detailed summary of this work is documented in Chapter 4 and Appendix SOTERM of the CCA.

**13.01 (24)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF8 | 4 | Jay Shelton | |
| SF8 | 5 | Jay Shelton | |

**Comment:**
One commenter asked if any neutral parties have done quantitative studies on WIPP or are familiar with the assumptions.

**Response:**
To DOE's knowledge, the most comprehensive and quantitative analyses of long-term performance of the WIPP site have been performed by either DOE or the EEG.  However, EPA has been performing some confirmatory long-term performance assessment analyses of WIPP to support its detailed review of the CCA.

In its regulatory review of the CCA, EPA is providing an unbiased review of all technical analyses and underlying assumptions that support long-term performance assessment analyses of WIPP.

As a part of current regulatory requirements as specified in 40 CFR Parts 191 and 194, DOE has also been required to conduct peer reviews of key critical conceptual models used in the CCA. These reviews are conducted to determine whether the conceptual models developed and selected by DOE reasonably represent future states. Details of peer reviews for conceptual models of natural barriers (flow and transport in the Salado and non-Salado units), engineered barriers (rock mechanics and shaft seal systems), and waste form characteristics and disposal room processes are summarized in Appendix PEER of the CCA.

In addition, the WIPP site would open only after several conditions are met. These conditions include, at a minimum, the following: (1) receipt of a RCRA Part B Permit from the State of New Mexico to operate WIPP as a storage and disposal facility, and satisfaction of any relevant permit conditions; (2) receipt of CCA certification from EPA as well as satisfaction of any conditions issued pursuant to 40 CFR Parts 191 and 194; (3) completion of SEIS-II and issuance of a ROD; (4) completion of transportation emergency response and preparedness provisions of the LWA; and (5) completion of other relevant operational requirements of DOE orders (e.g., operational readiness review).

**13.01 (25)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF8 | 38 | John Otter | |

**Comment:**
"DOE [would not have] to make unrealistic assumptions about the future in order to get WIPP approved, accepted by its criteria."

**Response:**
DOE must demonstrate that WIPP can isolate TRU waste for 10,000 years, based on requirements and criteria issued by EPA at 40 CFR Parts 191 and 194. In the preamble to the criteria regarding future-state assumptions, EPA "recognizes the inherently conjectural nature of specifications on future states and wishes to minimize such speculation in compliance applications. The Agency has found no acceptable methodology that could make reliable predictions of the future state of society, science, languages or other characteristics of future mankind. The Agency does believe that established scientific methods could make plausible predictions regarding the future state of three classes of natural processes, namely geologic, hydrogeologic, and climatic conditions." "DOE shall assume [in its compliance application] that all other present day conditions will exist in their present state for the entire 10,000-year regulatory time frame." Thus, DOE has incorporated this guidance into its long-term performance analyses of SEIS-II.

**13.01 (26)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF8 | 45 | Karin Salzmann | |

**Comment:**
"There is no present technique for predicting the already dubious durability of the WIPP site."

**Response:**
The method used by DOE to predict the ability of WIPP to isolate TRU waste is known as performance assessment. The performance assessment analyses must be quantitative and must consider uncertainties caused by all significant processes and events that may affect the disposal system, including inadvertent human intrusion into the repository in the future. Performance assessment uses reasonable, although in some cases conservative, conceptual models that are based on the scientific understanding of the behavior of the disposal system. Parameters used in the models are derived from experimental data, field observations, and relevant technical literature. Performance assessment also incorporates the results of independent peer review. In sum, performance assessment estimates releases of radionuclides and hazardous chemicals from the waste panels to the accessible environment by considering transport in groundwater through the shaft seal systems and the subsurface geology. Additional information can be found in Appendix H.

**13.01 (27)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-132 | 24 | Keith Tinno | Shoshone-Bannock Tribes |

**Comment:**
"Pg. [Summary] S-56, paras 4 & 5 - These statistics are often confusing. For example, paragraph four states that the LCFs 'for a hypothetical family farmer over the seven sites analyzed' are from .2 to 7. Yet, the next paragraph states that the 'estimated lifetime chance of an LCF to an MEI from environmental release of contaminants originating from buried and surface-stored wastes at the seven generator-storage sites is 8 x 10e-7 to 7 x 10e-3.' Would not the hypothetical farmer be the MEI in this scenario? So why the wide discrepancies in LCFs?"

**Response:**
The two ranges of impacts originate from two different exposure scenarios. The first range refers to the impacts from disturbing the waste from a drilling intrusion. The second range refers to the impacts from the undisturbed conditions and the resultant long-term release of contaminants to the accessible environment. Details of these results are presented in Section 5.6.12 and Appendix I.

**13.01 (28)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 250 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page I-11. Next to last paragraph. The dimensions given here (66-cm diameter and 91-cm height) for a 55-gallon drum differ from those used in WIPP Performance Assessment (60.2-cm diameter and 89.2-cm height). Use of the PA dimensions gives a surface-area-to-volume ratio of 0.11 cm."

**Response:**
The drum dimensions throughout the DOE complex differ slightly. Dimensions used for the SEIS-II No Action Alternative 2 analysis differ slightly from those used in the WIPP performance assessment. The volume of waste analyzed, though, is the same. The dimensions of individual drums have no impact on the results of the analyses.

**13.01 (29)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 254 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page I-17. Fourth Paragraph. Buried wastes are assumed to not release any wastes by surface erosion/dispersion mechanisms. Yet Table I-6 predicts that 6 of the 7 major sites will have enough surface erosion to expose wastes in less than 10,000 years. The assumption used may maximize groundwater contamination. Does it necessarily maximize total population dose?"

**Response:**
The last line in Table I-6 predicts that only LLNL and SRS will have enough soil erosion to expose waste within 10,000 years (1.2 meters [4 feet] or more of erosion). However, Section I.9 indicates that waste is not stored in a buried configuration at LLNL. The total erosion expected at SRS is 1.25 meters (4.1 feet), just slightly larger than the assumed soil layer depth of 1.2 meters (4 feet). Using the assumptions of the analysis, the waste would be exposed on the surface only the last few years of the 10,000-year time period. Therefore, the assumption that buried waste does not release any waste by surface erosion/dispersion mechanisms is appropriate. At SRS, it was assumed that 88.4 percent of the waste was stored on the surface (Table I-3). Even with this assumption, the dominant dose pathway for the population dose was water ingestion (Table I-11). The population dose is maximized under the current assumption.

**13.01 (30)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 255 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page I-27. Table I-7. Our calculations (for inhalation and soil ingestion only) of driller impacts at LANL and SRS gave values that were 1.6 and 3.1 times as high as the values in this table. We had to make several assumptions that should have been provided."

**Response:**
In generating the estimates of radiological and chemical impacts shown in Section I.9.1.1, DOE used the conservative assumption of intrusion immediately at loss of institutional control. The specific assumptions for both the drilling and gardening intrusions are given in Section I.2.1.

**13.01 (31)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 257 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page I-31. Figure I-4. Why are the lifetime doses for MEIs at all sites totaled? These are all different individuals and there is no significance to a total dose."

**Response:**
This recommended change has been incorporated.

**13.01 (32)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-084 | 4 | Bill Lawless | Savannah River Site Citizens Advisory Board |

**Comment:**
"The main difference in effects and the advantage of WIPP being opened, is after loss of institutional control. We believe that because of the high activity of $Pu^{238}$ at SRS the effects should be larger than listed in the WIPP SEIS-II. Loss of institutional control is the main rationale for WIPP and that scenario is not addressed on a comparative basis for WIPP and the alternatives. This is a big weakness in the argument for WIPP. How is $Pu^{238}$ evaluated in the loss of institutional control? Since $Pu^{238}$ has a much higher activity level than $Pu^{239}$ and decays to a dust-like consistency which does not absorb water, it is very difficult to contain. Savannah River Site experience with $Pu^{238}$ relative to $Pu^{239}$ is that $Pu^{238}$ is involved in almost 100 times more contamination incidents."

**Response:**
Estimates of the plutonium-238 at SRS used in SEIS-II are based on the most current estimates of stored and projected TRU waste provided by SRS and summarized in the WIPP BIR-3. These estimates are summarized in Appendix A of SEIS-II.

Analysis of long-term environmental consequences at SRS considered under No Action Alternative 2 showed that plutonium-238 is an important radionuclide when examining both human intrusion and long-term environmental releases. Results of the human intrusion analyses show that plutonium-238 is the dominant contributor to estimated radiological impacts.

**13.01 (33)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| NA2 | 13 | Lee Poe | |

**Comment:**
"I would like to comment that the approach used in Appendix I, which is the accident analysis for 10,000 years, I can follow the logic up to a point. And that point is here, but then I've got to make a leap of faith that you've done it correctly to get to the final answer that shows 2,000 deaths.

"I think that that section needs to be expanded enough so that some other analyst could follow the process should they need to."

**Response:**
The aggregate impact at all the sites over 10,000 years was estimated to result in approximately 800 LCFs. Additional information has been added to this section of Appendix I. More detailed information is included in the technical supporting document (Buck et al. 1997) referenced in Chapter 5 and Appendix I.

**13.01 (34)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 258 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Pages I-33, 34. Figure I-5 and Table I-11. The curves in Figure I-5 can be used to approximate the total of 2,325 LCFs over 10,000 years mentioned on page I-31. Our estimate was about 10% higher than this. It is interesting to compare these estimated LCFs with values that are permitted for geological disposal of TRU wastes in 40 CFR 191. However, in doing so, we realize that these estimates do not have the level of detail and justification required in 40 CFR 191. The standards in 40 CFR 191 (which apply to WIPP) were based on the assumption that a permissible limit of LCFs was 10 per million curies of alpha-emitting transuranic radionuclides with half-lives longer than 20 years. This scales to about 42 LCFs in 10,000 years for the various inventories listed in Appendix A. The estimate in this Appendix

of 2,325 LCFs for NA Alternative 2 is over 50 times higher than would be allowed at WIPP. A conclusion that long-term storage is much worse is site specific. If one uses the curves in Figure I-5 and the inventories in Tables A-36 and A-38 to determine the amount of activity stored at each site, it can be shown that wastes left at SRS, Hanford, and ORNL would be under the 40 CFR 191 limit. Again, there is the caveat that these calculations are less detailed and justified than would be required to show compliance with 40 CFR 191."

**Response:**
Title 40 CFR Part 191 requirements are not relevant to these calculations because the standards are applicable only to disposal of TRU waste, and DOE has no current plans to dispose of newly generated TRU waste at SRS, Hanford, or ORNL. The Final SEIS-II includes revised estimates of health impacts under No Action Alternative 2; such estimates do not reflect potential encroachment of populations onto (former) DOE sites or the impacts on intruders who may directly enter surface and near-surface facilities, which would likely result in higher impacts at SRS, Hanford, and ORNL.

**13.01 (35)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-159 | 10 | Susan Maret | Sierra Club National Nuclear Waste Task Force |

**Comment:**
"The General Accounting Office has found that over 60 percent of DOE's stored TRU waste also contains hazardous waste, requiring DOE to dispose of these wastes as defined under the RCRA land disposal restrictions (LDRs). The LDRs prohibit the disposal of untreated hazardous wastes unless the Agency makes a 'no migration' determination. DOE's selected alternative must clearly lay out that no migration of hazardous waste will occur as long as the waste remains hazardous."

**Response:**
The 1996 amendments to the LWA (Defense Authorization Act of 1996) made it unnecessary for the WIPP site to receive a "no migration" determination from EPA. However, performance assessment in SEIS-II shows no migration beyond the boundary.

**13.01 (36)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 88 | Karen Navarro | |

**Comment:**
"Deep geological burial of radioactive waste hasn't been tried anywhere in the world, and it shouldn't be tried."

**Response:**
Repositories for deep geological burial of radioactive waste are currently in operation in Europe.

**13.01 (37)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-167 | 4 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"[The SEIS-II states on] page 4-10 'Major tectonic activity (movements of the earth's crust) associated with the development of the Delaware Basin ended over 250 million years ago, and the WIPP site has been geologically stable ever since.'

"Since its deposition in the Delaware Basin in the late Permian times, the WIPP area has been uplifted, submerged, tilted, intruded by igneous dikes, deformed or dissolved by water, and eroded. In addition, according to Lambert and Canter (1984), Castile brine reservoirs were formed during the past 360,000 years to 800,000 years by an episodic process that 'could have resulted from an intermittent hydraulic connection between the Capitan Limestone and Castile anhydrites.' (SEIS-I, Vol. 1, p. 4-71).

"The WIPP site has not remained geologically stable for 250 million years."

**Response:**
The statement made in the Draft SEIS-II oversimplified the geologic stability of the WIPP site. A more detailed description of the site's geologic stability is provided in Section 2.1.5 of the CCA. The sentence to which the commenter referred has been deleted.

**13.01 (38)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-167 | 5 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Pages 4-18, 4-19 Salado Formation Hydrology. This section should describe the higher permeability of the Salado marker beds which act as conduits for flow of water and gas in the Salado.

"Also, the assumption of the Darcy Flow is not a conservative but a reasonable assumption. According to Beauheim, et al. (SAND-92-0533), 'An assumption of Darcy flow through the evaporites is thought to be a reasonable interpretive approach because Darcy-flow models are able to replicate the flow and pressure behavior observed during entire testing sequences involving different types of tests performed with different hydraulic gradients.'"

**Response:**
Section 4.1.3.2 has been revised to discuss the permeability and porosity of the Salado marker beds.

There are no references to Darcy's Law in the section describing Salado Formation hydrology. The assumption of the applicability of Darcy's Law is addressed in basic modeling assumptions discussed in Appendix H.

**13.01 (39)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-167 | 6 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Pages 4-19, 4-20 Castile Formation Hydrology. The discussion in this section is incorrect in certain aspects and incomplete in others. There are not two but at least thirteen reported boreholes at and near the WIPP site which encountered pressurized brine in the Castile Formation. When the borehole WIPP-12 encountered pressurized brine at the WIPP site in 1981, more than 1.14 million gallons (4.3 million liters) of brine 'unavoidably' flowed to the surface and was collected in a large pond on the surface before the well was brought under control. (See DOE report on Brine Reservoirs, WIPP/TME 3153, P.H-9). The pore volume of this brine occurrence was estimated by DOE to be 714 million gallons (2.7 million $m^3$). Accommodation of this volume requires the assumption that the brine reservoir intercepted by WIPP-12 spreads under the repository. The TDEM survey confirmed the existence of brine under the repository.

Assumption of four distinct brine reservoirs underlying the repository has no basis. A more justifiable assumption is that the pressurized brine reservoir encountered by WIPP-12 extends under the repository."

**Response:**
Sections of Chapter 4 have been revised to reflect the discussion of the hydrology of the Castile Formation as described in the CCA.

In the exploratory borehole intrusion analysis of SEIS-II, DOE has analyzed the impact of a borehole that penetrates both the repository and a hypothetical pressurized brine reservoir. In its analysis, DOE has assumed parameters based on observations made at WIPP-12, including a bounding volume of 1.06 billion gallons (4 million cubic meters), which is an assumption greater than the most current information as presented in the CCA. The analysis showed that in an intrusion borehole case, contamination may reach the Culebra Dolomite, but transport modeling showed that only very small amounts of contaminants would migrate from the point of release over 10,000 years. At a stock well 3 kilometers (2 miles) from the point of release, under the most severe case analyzed, no human health impacts (less than $10^{-20}$ probability of an LCF) would result. Results of these analyses are detailed in Chapter 5 and Appendix H of SEIS-II.

**13.01 (40)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163F | 4 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**
"All the geologic mechanisms necessary for complete failure of waste containment are present at the WIPP site and have been well known for ten years or more."

**Response:**
EPA, which established the regulations and criteria applicable to waste disposal at WIPP, stipulates that the compliance analyses are to include both natural and human-induced processes and events that can have an effect on the disposal system. The analyses are not to consider processes and events that have a probability of less than 1 in 10,000 of occurring during the 10,000-year period of interest. (However, EPA requires the effects of drilling events and excavation mining on waste isolation to be included in the compliance analyses.) Evaluation of past and present natural geologic processes (e.g., tectonics, earthquakes, faulting) in the region indicates that none has the potential to breach the repository within 10,000 years. A text box has been added to Appendix H to provide information on events and processes that were considered in SEIS-II.

**13.01 (41)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 92 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Third bullet. Assuming that 7,000 $m^3$ of RH-TRU will be emplaced in the repository, when the available capacity may be only 4,300 $m^3$, may overestimate the amount of actinides allowed to be released."

**Response:**
The actual amount emplaced may be less than the amount allowed by law. The calculations, however, are based on the maximum allowable by law to bound possible impacts.

## 13.02 Computer Models

**13.02 (01)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB5 | 15 | Robert H. Neill | Environmental Evaluation Group |
| ALB5 | 16 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 14 | Robert H. Neill | Environmental Evaluation Group |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 17 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 137 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 232 | Robert H. Neill | Environmental Evaluation Group |
| C-167 | 9 | Robert H. Neill | Environmental Evaluation Group |
| CA1 | 32 | Don Gray | |
| E-021 | 5 | Ruth Weiner | |
| E-024 | 1 | Robert H. Neill | Environmental Evaluation Group |
| SF1 | 17 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
A number of commenters stated that the data, information, and computer codes used in SEIS-II are based on the draft CCA and not the most current versions used in the CCA.

**Response:**
SEIS-II is consistent with the final CCA and the BIR-3. The Draft SEIS-II was consistent with the BIR-3 but used some near-final input from the CCA that underwent subsequent changes with minimal impacts on the SEIS-II results.

**13.02 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 23 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 237 | Robert H. Neill | Environmental Evaluation Group |
| E-016 | 1 | Robert H. Neill | Environmental Evaluation Group |
| E-024 | 3 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
One commenter said that the grid designs developed for the Action Alternatives violate the two-dimensional design aspects and underlying assumptions of the BRAGFLO grid used in the Proposed Action.

**Response:**
BRAGFLO is not a strictly two-dimensional code (refer to the BRAGFLO documentation cited in the Draft SEIS-II). It is a quasi-three-dimensional model that allows the two-dimensional cells to have varying volumes by assigning varying z-lengths to each cell. Among other uses, this allows a two-dimensional model not to treat a borehole as having full contact with a waste cell. A three-dimensional model would certainly be more accurate but computationally inefficient. Typographical errors identified in Table H-6 in the last row of numbers (totaling the cell volumes) have been corrected in the Final SEIS-II.

**13.02 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 21 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 138 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
One commenter stated that SEIS-II used the same parameter values for many of the model parameter values used in the median and 75th percentile simulation cases.

**Response:**
For the 75th percentile cases, the Draft SEIS-II analysis was based in part on selection of those parameters for which statistical distributions were developed at the time the long-term performance analyses were performed. This includes up to 52 different parameters as defined in the draft CCA database. For parameters without distributions, the deterministic single value was selected for use in the analysis.

SEIS-II and CCA analysts evaluated the impacts of changes to database parameters used in the CCA since that time to results developed for SEIS-II. The 75th percentile value cases used in the Final SEIS-II have been revised to reflect the statistical distributions used in the CCA.

**13.02 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163A | 80 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |
| C-163F | 3 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |
| C-163H | 3 | David T. Snow | |
| C-163H | 4 | David T. Snow | |
| C-163H | 5 | David T. Snow | |
| C-163H | 7 | David T. Snow | |
| SF8 | 60 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |

**Comment:**
A number of commenters stated that modeling of the Culebra Dolomite was not included in the SEIS-II analysis.

**Response:**
In a reanalysis for the Final SEIS-II of the impacts of exploratory borehole intrusion into the repository and a hypothetical pressurized brine reservoir, releases of radionuclides and hazardous metals were estimated for a few bounding cases of intrusion. As a result, computer modeling of groundwater flow and contaminant transport in the Culebra was conducted in the evaluation of off-site releases into the Culebra. The analysis showed that in an intrusion borehole case, contamination may reach the Culebra Dolomite, but transport modeling showed

that only very small amounts of contaminants would migrate from the point of release over 10,000 years. At a stock well 3 kilometers (2 miles) from the point of release, under the most severe case analyzed, no human health impacts (less than $10^{-20}$ probability of an LCF) would result. Results of these analyses are detailed in Chapter 5 and Appendix H of SEIS-II.

**13.02 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB5 | 18 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 11 | Robert H. Neill | Environmental Evaluation Group |
| E-024 | 2 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Unwarranted claims of conservatism for long-term performance calculations are made in the SEIS-II."

**Response:**
To fulfill the requirements of NEPA and facilitate a comparison of the Proposed Action with other alternatives, SEIS-II analysts selected a technical approach for long-term performance assessment that was based on using (1) computer codes being used to support the CCA analyses, (2) a selected number of deterministic computer calculations derived from median and 75th percentile values selected from model parameter distributions developed to support the CCA analyses, and (3) analyses of both undisturbed and disturbed scenarios (human intrusion scenarios involving drilling of exploratory boreholes and potash mining). This overall approach is somewhat consistent with the technical approach used to support long-term performance assessment analyses in SEIS-I.

In using this technical approach, SEIS-II has introduced conservatism into analysis results where warranted.

SEIS-II has adopted many of the underlying assumptions used to support the CCA, many of which are considered conservative. Examples, taken from Table Mass-1 from Appendix MASS, include the following:

- Radionuclide dissolution to solubility limits is instantaneous.
- Waste containers provide no barrier to fluid flow.
- Brine and waste in the repository will contain a uniform mixture of dissolved and solid state species. No microenvironments that influence the overall chemical environment will persist.
- Radionuclides are not retarded by the seals.
- The disturbed rock zone permeability is constant and higher than the intact Salado.
- Sorption of actinides in intrusion boreholes is not modeled.

- For intrusion boreholes, any actinides that enter the borehole are assumed to reach the land surface.

The use of 75th percentile parameter values in modeling long-term releases due to human intrusion will yield consequences that fall in the "upper tail of a full probabilistic analysis." For the 75th percentile cases, the Draft SEIS-II analysis was based in part on selection of those parameters for which statistical distributions were developed. This includes up to 52 different parameters as defined in the CCA database. For parameters without distributions, the deterministic single value was selected for use in the analysis. The Final SEIS-II has incorporated revisions in the model parameter databases used to support the CCA.

For all disturbed cases considered, SEIS-II does not consider the actual probability of occurrence by assuming a probability of one.

**13.02 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| BO1 | 55 | Representative Jack Barraclough | |

**Comment:**
"The predictive models of the repository performances are credible and well developed."

**Response:**
Thank you for your comment. Computer analysis of long-term performance is based on conceptual understanding of site characteristics and processes that have been measured and analyzed by DOE and its predecessors over a period of 20 years. During this period, the understanding of site features, processes, and events important to the long-term performance of the WIPP facility has been improved, refined, and incorporated into state-of-the-art computer models that have been customized to WIPP conditions. These models provide the basis for technical analyses included in the CCA, currently under review by EPA, and SEIS-II.

**13.02 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-141 | 23 | Margret Carde | Concerned Citizens for Nuclear Safety |

**Comment:**
"Failure to model colloidal velocity is not justified."

**Response:**
The formation of colloids, transport of colloids, and colloid retardation through filtration and sorption are accounted for in the performance assessment calculations being done by DOE. (A colloid is a suspension of particles in a liquid.)

In SEIS-II and in the CCA, colloid formation and stability are accounted for in long-term performance assessment calculations through estimates of colloid numbers in the disposal room based on prevailing chemical conditions in the repository. Detailed information on this topic is provided in Section 6.4.3.6 of the CCA.

Colloid sorption, filtration, and transport are considered in the transport model used for the Culebra in support of the CCA. In the Final SEIS-II, the same computer model of groundwater flow and contaminant transport in the Culebra was used to evaluate off-site releases into the Culebra resulting from analysis of selected bounding cases of inadvertent intrusion into the repository and a hypothetical pressurized reservoir within the underlying Castile Formation. Analyses showed that in an intrusion borehole case, contamination may reach the Culebra Dolomite, but transport modeling showed that only very small amounts of contaminants would migrate from the point of release over 10,000 years. At a stock well 3 kilometers (2 miles) from the point of release, under the most severe case analyzed, no human health impacts (less than $10^{-20}$ probability of an LCF) would result. Results of these analyses are detailed in Chapter 5 and Appendix H of SEIS-II.

**13.02 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-141 | 24 | Margret Carde | Concerned Citizens for Nuclear Safety |

**Comment:**
"RH-TRU waste has not been included in models and may significantly alter synergistic effects."

**Response:**
The inventory and volumes of RH-TRU waste have been considered in the long-term performance assessment analyses of the Proposed Action and all action alternatives. Relevant information on these waste inventories and volumes is provided in Appendix A. The analyses of Sections 5.1.12, 5.2.12, 5.3.12, and 5.4.12 and Appendix H show that isolation of TRU waste, including the disposal of RH-TRU waste, is feasible.

**13.02 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 143 | Robert H. Neill | Environmental Evaluation Group |
| C-159 | 6 | Susan Maret | Sierra Club National Nuclear Waste Task Force |

**Comment:**
Two commenters stated that the conclusion that the maximum consequences from inadvertent intrusion would occur at 100 years may be incorrect because the spallings model used in the calculations may not be valid. Another commenter said that the Conceptual Models Peer

Review Team had concerns with the current spallings model, as well as with the engineered chemical backfill.

**Response:**
The Conceptual Models Peer Review Team originally reported its reservations regarding the WIPP conceptual models associated with spallings and chemical engineered backfill (while expressing confidence in 22 other conceptual models). The team has reconvened and concluded, after viewing additional material and presentations by DOE, that the spallings volumes in the CCA are reasonable and conservative and that the spallings model overestimated the spalled volumes.

SEIS-II used the latest available spallings model at the time of analysis.

**13.02 (10)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 144 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 233 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
One commenter disagreed with the conclusion that no releases to the Culebra Dolomite were predicted in 10,000 years. The commenter said a significant fraction of the intrusion scenario realizations in the CCA showed releases to the Culebra.

**Response:**
Analyses for the Final SEIS-II were redone based on new parameters presented in the CCA after publication of the Draft SEIS-II. The new analyses show that if a borehole were drilled through the repository and into a brine pocket beneath the repository, contamination may reach the Culebra Dolomite. Transport modeling showed that only very small amounts of contaminants would migrate from the point of release over 10,000 years. At a stock well 3 kilometers (2 miles) from the point of release, under the most severe case analyzed, no human health impacts (less than $10^{-20}$ probability of an LCF) would occur to an exposed individual. Results of these analyses are detailed in Chapter 5 and Appendix H of SEIS-II.

**13.02 (11)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 234 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page H-24. Next to last paragraph. Contrary to the statement in this paragraph, the impacts of chemical retardation are being calculated in the PA for the CCA."

**Response:**
This discussion has been revised to reflect the modeling approach being implemented in the CCA.

**13.02 (12)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 235 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page H-30. Table H-7. These solubility values are from the DCCA. They are somewhat higher than those being used in the CCA because of the effect of MgO backfill. Final SEIS-II should use the CCA values."

**Response:**
These solubility values have been changed to reflect the values being implemented in the CCA.

**13.02 (13)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 236 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page H-34. Lines 1 through 6. Reference is made to Figure H-7 and to Table H-8. It is difficult to follow what the relationship is between Figure H-7 and the data in Table H-8. There is no explanation on how the last row of Table H-8, entitled Total Repository Volume, is obtained. It is not clear what the relationship is between Rest of Repository, Separately Modeled Panel Volume, and Total Repository Volume. Some additional clarification should be presented."

**Response:**
Some additional text clarification has been added.

**13.02 (14)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 239 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 243 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 245 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
One commenter posed several questions about pressure buildup and release during the post-closure period in the context of the intrusion scenario modeled at 100 years post-closure.

**Response:**
This pressure profile reflects an intrusion into an overall lower pressure repository regime created by the disposal of the thermally treated waste postulated in Action Alternative 2. This explanation is given in Appendix H.

**13.02 (15)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 241 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page H-55 and Later. Table H-24. No attempt was made to check the reasonableness of the assumptions and calculations of releases and doses to the driller. It is noted in Table H-24 that the value for Pu-240 is incorrect. It will be a few percent of the Pu-239 value, not less than 0.01%."

**Response:**
The release calculations summarized in Table H-25 (formerly H-24) and others were revised based on reanalysis of the direct intrusions into the repository using parameter distributions available in the CCA for the Proposed Action and action alternatives.

**13.02 (16)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 244 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page H-62. Table H-29. For the radionuclides of Am-241, Cm-244, Pu-238, Pu-239, Pu-240, Pu-241, U-233, and U-234, column 3, CH-TRU and RH-TRU Waste Panel, is the sum of column 1, CH-TRU Waste Panel, and column 2, RH-TRU Waste Panel. For other radionuclides such as Ac-227, Cm-243, Cs-137, Pa-231, Sr-90, and Y-90, column 3 is not the sum of columns 1 and 2. A more detailed explanation for columns 1, 2, and 3 should be provided in the accompanying text."

**Response:**
While it appears to be the sum of columns 1 and 2 in some cases, column 3 is not meant to be the sum of the releases of those two columns. Columns 1 and 2 reflect releases from panels containing only CH-TRU and RH-TRU waste, respectively. Column 3 reflects releases from a panel containing a homogenized mix of CH-TRU and RH-TRU waste. The text associated with these types of tables has been modified to clarify this point.

**13.02 (17)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 247 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page I-3. Section 1.2.1. The set of assumptions used for inadvertent human intrusion impacts are appropriately conservative."

**Response:**
Thank you for your comment.

**13.02 (18)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163H | 9 | David T. Snow | |

**Comment:**
"Monte-Carlo sampling is a legitimate tool for generating a functional statistic such as travel-time distribution, from such independent variables as fracture apertures and spacings that also have statistical distributions. But Monte-Carlo sampling does not work among competing conceptual models as it is now being incorrectly applied. Concept sampling merely produces a statistic that is an average of the statistics for each unique concept, and if the statistics differ greatly in magnitudes, the average will be biased. Consequently, Monte-Carlo processing of plural concepts leads to unreliability of derived dependent measures, such as the Complimentary Cumulative Distribution Function."

**Response:**
For the purpose of comparing the Proposed Action and the action alternatives as defined in SEIS-II, analysts involved in long-term performance assessment chose a simplified alternative to the Monte Carlo sampling approach. This approach examined the uncertainty in various parameters by using a limited set of deterministic analyses to reflect a median and enhanced long-term performance of WIPP over 10,000 years. The commenter is referred to Chapter 6 of the CCA for further information on the Monte Carlo approach used to support the probabilistic analysis of the CCA.

**13.02 (19)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF5 | 50 | Sarah Cowan | |

**Comment:**
"I feel very strongly that there are a lot of variables that cannot be put in a computer, that perhaps have not been thought of, that have not been included in this issue, and that concerns me a lot."

**Response:**
Computer analysis of long-term performance is based on conceptual understanding of site characteristics and processes that have been measured and analyzed by DOE and its predecessors over a period of 20 years. During this period, DOE's understanding of site features, processes, and events important to the long-term performance of the WIPP facility has been improved, refined, and incorporated into state-of-the-art computer models that have been customized to WIPP conditions. These models provide the basis for technical analyses included in the CCA, currently under review by EPA, and SEIS-II.

SEIS-II analyses showed that in an intrusion borehole case, contamination may reach the Culebra Dolomite, but transport modeling showed that only very small amounts of contaminants would migrate from the point of release over 10,000 years. At a stock well 3 kilometers (2 miles) from the point of release, under the most severe case analyzed, no human health impacts (less than $10^{-20}$ probability of an LCF) would result. Results of these analyses are detailed in Chapter 5 and Appendix H of SEIS-II. Analysis of a future intrusion that penetrates directly into the repository and subsequently encounters a pressurized brine reservoir showed that if generally accepted borehole plugging techniques and materials were used, brine that might mix with waste in the repository and move up the intrusion borehole would not reach the Rustler Formation horizon and seep into the Culebra Dolomite. Results of these analyses are detailed in Chapter 5 of SEIS-II and are supported by conclusions drawn in the CCA.

The impacts of releases from an unplugged borehole were not analyzed because current and future regulatory requirements and practices in the Delaware Basin would require some level of plugging at abandonment. The plugging scenarios considered in the analysis are described in Appendix H of SEIS-II.

Section 2.1.4 of SEIS-II has been modified to include information on why the WIPP site was selected and how DOE expects it to perform in the long term. The commenter is also referred to Section H.2 for a brief history of the development of models at the WIPP site.

**13.02 (20)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 238 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page H-49. Table H-22. The CCA used much smaller brine reservoir values than the volume estimated for WIPP-12. EEG has reservations about this CCA assumption. Also, the compressibility value shown should be for rock compressibility, not pore compressibility (pore compressibility = rock compressibility / effective porosity.)"

**Response:**
The larger brine reservoir volume used in the SEIS-II intrusion analysis was considered to be reasonable and conservative, since it was estimated from an actual, significant event. It is neither more nor less correct than the value used in the CCA analysis.

The value for rock compressibility has been incorporated into the intrusion analysis in SEIS-II.

**13.02 (21)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-071 | 6 | Patricia Hall | |

**Comment:**
"[The CCA states that] DOE understands the ground water flow in the area even though its models do not reflect actual measured flows."

**Response:**
It is extremely difficult, and usually impossible, to obtain actual measurements of flow rates in a hydrologic unit. There are, however, several approaches to calculating estimates of flow rates based on actual measurements used to derive hydrologic properties of the unit. These approaches usually involve drilling and installing one or more wells in the unit and performing tests (drawdown tests, falling head tests, multi-well pumping tests, etc.) to ascertain the properties (permeability, etc.) of the unit at the borehole(s). With this information, a flow model can be constructed that estimates quantities and velocities of flow wherever the well data exist, and the data can be reliably interpolated and extrapolated.

An element of uncertainty is usually introduced when properties that one would like to characterize cannot be measured directly. Over the past 20 years, DOE has focused its site characterization and experimental program on developing an adequate understanding of key elements of the natural barrier system (geology, hydrology) that would serve to isolate TRU waste from the environment. Key elements include, among other things, flow and transport in the Rustler Formation, including the Culebra Dolomite. Even after two decades of site characterization and experimentation, uncertainties remain due to the intrinsic variability from heterogeneities of the natural system. Uncertainties are also inherent in the events and processes necessary to determine the ability of WIPP to isolate waste. To overcome these uncertainties, various conceptual understandings of the natural system (models) have been advanced and considered, and parameter distributions have been developed as appropriate. In instances for which these uncertainties cannot be reasonably treated, conservative choices were made in selecting modeling assumptions and parameter values. Because of the extent of its site characterization and experimental program and the way in which uncertainties have been incorporated into its performance assessment analyses, DOE believes that it understands the natural barrier system sufficiently for purposes of demonstrating compliance with the regulations and criteria for isolating TRU waste from the environment. Specific to this comment, DOE believes that the recently completed analyses of the H-19 tracer study and the present three-dimensional modeling provide sufficient confidence in the Culebra "model" for purposes of compliance.

## 13.03 Engineered Barriers

### 13.03 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 55 | Lisa Sparaco | |
| ALB2 | 24 | Sean Asghar | |
| ALB2 | 140 | Deborah Reade | |
| ALB2 | 161 | Rick Packie | |
| ALB4 | 110 | Mary Steele | |
| ALB5 | 37 | Susan Rodriguez | |
| BO1 | 115 | Michele Kresge | |
| C-090 | 4 | Linda Ewald | |
| C-125 | 4 | Barbara H. Johnson | The Rio Grande Chapter of the Sierra Club |
| C-159 | 9 | Susan Maret | Sierra Club National Nuclear Waste Task Force |
| C-160 | 2 | Julie R. Sutherland | |
| C-163C | 40 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163C | 41 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-166 | 7 | Elliott H. Libman, MSW | |
| CA1 | 60 | Betty Richards | |
| E-056 | 37 | Linda Hibbs | |
| SF3 | 60 | Bill Gould | |
| SF6 | 70 | Garland Harris | |
| SF6 | 76 | Garland Harris | |

**Comment:**
A number of commenters expressed a lack of confidence in DOE's ability to ensure the performance of the engineered components (i.e., seals and backfill) of the WIPP facility over the long-term performance period.

**Response:**
DOE disagrees with the scenario proposed by one commenter on brine inflow and outflow up the shaft seal system. Using conceptual models and numerical simulations in support of the CCA endorsed by external peer review, estimates of radionuclide releases illustrate that brine would largely migrate outward and downward from the repository through underlying and overlying marker beds rather than move upward into the shaft seal system (see results for the Proposed Action and action alternatives summarized in Appendix H and Chapter 5).

The engineered barrier system that would be employed at WIPP consists primarily of shaft seals and magnesium oxide backfill (see Section 3.1 of SEIS-II). Shaft seals would play a key role in isolating TRU waste from the environment. Key properties that would affect shaft seal performance include the permeability of the seal materials and characteristics of the disturbed rock zone around each shaft. The pre-disposal seals program would include measurements of component characteristics and performance, shaft seal design, and shaft behavior characterization (including measurements of salt creep and disturbed rock zone development around the shaft). The seals program also would involve various seal materials, numerous small-scale in situ experiments using boreholes up to 97 centimeters (38 inches) in diameter, and emplacement techniques.

Magnesium oxide backfill would stabilize chemical conditions in the repository by reacting with carbon dioxide gas formed by microbial degradation; the carbonate formed would buffer the acidity of the brine present in the repository, thereby controlling actinide solubility. These chemical reactions are well understood and are based upon laboratory studies. Conservative assumptions have been employed in performance assessment analyses to bound existing uncertainties. These conservative assumptions can be found in Table Mass.1, Appendix MASS of the CCA.

The results of the shaft seals experimental program and relevant laboratory information regarding backfill effectiveness have been incorporated into performance assessment analyses presented in SEIS-II. As demonstrated in Section 5.1.12 and Appendix H, TRU waste would remain isolated from the environment. The shaft seal design and panel closure system design are discussed in Appendices SEAL and PCS in the CCA.

DOE has also evaluated the benefits and disadvantages of a series of engineered barriers. The results of this study are included in a modified Section 3.1.3.5. Additional details can be found in Appendix EBS of the CCA.

**13.03 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 140 | Deborah Reade | |
| ALB2 | 161 | Rick Packie | |
| ALB5 | 37 | Susan Rodriguez | |
| BO1 | 115 | Michele Kresge | |
| C-133 | 14 | Bonnie Bonneau | Legions of Living Light |
| C-141 | 20 | Margret Carde | Concerned Citizens for Nuclear Safety |
| C-151 | 26 | Don Moniak | Serious Texans Against Nuclear Dumping |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-158 | 7 | Maureen Eldredge | Military Production Network |
| C-163B | 2 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163C | 27 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163D | 3 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163E | 15 | No name provided | Citizens for Alternatives to Radioactive Dumping |
| C-163F | 7 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| E-056 | 35 | Linda Hibbs | |
| E-069 | 7 | Pat Clark | Snake River Alliance |
| OR1 | 23 | Don Hancock | Southwest Research and Information Center |
| SF3 | 71 | Bill Gould | |
| SF8 | 64 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**
A number of commenters raised concerns about the ability of DOE to seal shafts and boreholes.

**Response:**
DOE has completed a significant amount of research to develop appropriate sealing (plugging) approaches. Key properties that would affect seal performance include the permeability of the seal materials and characteristics of the disturbed rock zone around each shaft or borehole. Conducted over many years, the pre-disposal seals program included measurements of component characteristics and performance, shaft and borehole seal design, and shaft and borehole behavior characterization (including measurements of salt creep and disturbed rock zone development around the shaft). The seals program also involved testing with various seal materials (mainly commonly available materials), numerous small-scale in situ experiments using boreholes up to 97 centimeters (38 inches) in diameter, and emplacement techniques.

Based on this research, and as noted in Section 3.1.3.5 of SEIS-II, the seal design uses materials that include highly compacted crushed salt, clay, concrete, and asphalt. Because of the environment at depth, the shaft seal would limit radionuclides from reaching regulatory boundaries, restrict groundwater flow through the sealing system, use engineered materials possessing good long-term stability, protect against structural failure of system components, minimize subsidence, and use available construction methods and materials. A proposed shaft seal design, based on Appendix SEAL of the CCA, has been included in Section 3.1.3.5 of SEIS-II.

Also based on this research, DOE has assumed that current borehole plugging practices required by state and federal regulations yield acceptable performance. Shallow unplugged boreholes within the controlled area would be plugged in accordance with current state or federal regulations using materials shown to be compatible with the underground environment. Deep unplugged boreholes would be plugged according to State of New Mexico regulations governing the plugging and/or abandonment of oil or gas wells. Solid cement plugs would pass through the salt section and any water-bearing horizon to prevent liquids or gases from entering the hole above or below the salt section. The cement would be mixed with salt-saturated fluids made from salts from the horizon being plugged. DOE expects that boreholes located outside of the controlled area would be plugged using conventional techniques. Appendix H has been modified to provide information on borehole-plugging approaches.

The results of the shaft seals experimental program and shaft and borehole plugging designs have been incorporated into performance assessment analyses presented in SEIS-II. As demonstrated in Section 5.1.12 and Appendix H, TRU waste would remain isolated from the environment for at least 10,000 years. Section 3.1.3.5 has been modified to provide additional information on DOE's sealing program.

The shaft seal design is included in the CCA and is found in Appendix SEAL. This design was used in the CCA performance assessment calculations and is the design that DOE would use currently to seal the shafts. DOE does not preclude the possibility that future advances in science and technology will develop better seal designs and materials than those in the current design. DOE does not preclude the use of these advances in the seals that ultimately seal the repository at closure some 35 years in the future.

**13.03 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 44 | David Mitchell | |

**Comment:**
"First of all, on page S-13, I believe you need to make a correction in the SEIS. It's not magnesium oxide backfill. You need to change the word backfill to supplement, or something like that. Backfill implies, to me anyway, that it's going to fill in all the spaces, and some compactive effort is going to be applied. And that's not the case. It's sacks of magnesium oxide that would be placed around the barrels."

**Response:**
In SEIS-II, DOE has chosen to use the term "backfill" as it is in the CCA. DOE has chosen a magnesium oxide backfill to buffer the chemical composition of brine that may enter the repository over the 10,000-year regulatory period. Backfill would substantially delay the movement of radionuclides toward the accessible environment by limiting, through chemical means, the amount of actinides that can be dissolved in brines that enter the repository. The placement of backfill is described in Section 3.3.3 of the CCA, its design and functions are described in Appendix SOTERM of the CCA, and specific performance information on backfill is presented in Section 6.4.3 of the CCA. Magnesium oxide backfill would be placed in contact with the waste by positioning bags on top of the waste stack, within the seven packs, and along the ribs of the repository. Additionally, as room closure progresses, the waste and backfill would be further mixed via compression and consolidation of the waste and rupture of the waste drums and packaging.

A definition of the term "backfill" has been added to the SEIS-II Glossary. Based on this definition, and on the explanations regarding backfill described in SEIS-II and the CCA, DOE feels that there is minimal chance for confusion regarding the meaning of the term.

**13.03 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB6 | 28 | Dan Kerlinsky | |

**Comment:**
"Backfilling to reduce the solubility of the transuranic waste is a very significant improvement in the engineering of the repository, because it would be about a 50 percent reduction in solubility of the radioactive elements if water did get back into the site from just backfilling with the concrete and the magnesium."

**Response:**
Thank you for your comment.

**13.03 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-129 | 10 | Richard A. Kenney | Coalition 21 |

**Comment:**
"The SRA says that small boreholes would not remain sealed for more than 200 years. The SEIS II should explain that this escape path for radionuclides was dismissed because salt beds tend to be self-healing. For example, cracks and holes in salt deposits naturally fill in with salt."

**Response:**
This clarification has been added to the description of engineered features included in Appendix H of SEIS-II. DOE has identified existing unplugged boreholes that lie within the controlled area. Of these boreholes, four are deep boreholes that exceed the depth of the repository and the rest are shallow boreholes that do not reach the repository horizon. To mitigate the potential for migration of contaminants to the accessible environment, DOE has designed borehole plugs to limit the amount of water that could be introduced to the repository from overlying water-bearing units and to limit the volume of contaminated brine released from the repository to the accessible environment. These borehole plugs would be effective for some period of time and would eventually degrade, but the process of salt creep would seal the annulus of the boreholes as the existing borehole casing degraded and fell into the borehole.

**13.03 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-131 | 22 | Don Hancock | Southwest Research and Information Center |

**Comment:**
"It should consider the effects of shaft seal failure, especially since it assumes that boreholes can fail in 200 years."

**Response:**
The shaft seal system is designed to limit entry of water and release of contaminants through the four existing shafts after WIPP is decommissioned. Its design is much more sophisticated than conventional borehole plugging techniques that would be used to plug existing boreholes. The design approach applies redundancy to functional elements and specifies multiple, common, low-permeability materials to reduce uncertainty in performance. The system comprises 13 elements that completely fill the shafts with engineered materials possessing high density and low permeability. The use of the low-permeability materials (compacted clay and asphalt) with other selected materials (concrete, concrete-asphalt, and compacted salt) combined with expected salt creep closure of the shaft itself are critical components to creating a high-density, low-permeability shaft seal system capable of minimizing the possibility of failure over the regulatory period of 10,000 years. Details of the shaft seal system and supporting analyses are described in detail in Appendix SEAL in the CCA.

**13.03 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 99 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 3-12. Please provide information for a seal that would prevent water from entering the repository and impede gas and brine from migrating out."

**Response:**
As noted in Section 3.1.3.5 of SEIS-II, the seal design would use materials that may include highly compacted crushed salt, clay, concrete, and asphalt. The shaft seal would limit radionuclides from reaching regulatory boundaries, restrict groundwater flow through the sealing system, use engineered materials possessing good long-term stability, protect against structural failure of system components, minimize subsidence, and use available construction methods and materials. A proposed shaft seal design, based on Appendix SEAL of the CCA, has been included in Section 3.1.3.5 of SEIS-II.

**13.03 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 114 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 3-45. Lines 17 through 22. The following statement is made in the discussion entitled Alternative Engineered Barriers: 'The Department examined these as alternatives and determined based on the evaluation conducted in the *Engineered Alternatives Cost/Benefit Study Final Report* (DOE 1995c) that they were less effective than the engineered barriers examined in SEIS-II.' There is no discussion of engineered barriers in SEIS-II. However, of the 4 disposal options analyzed, Action Alternatives 2 and 3 include an engineered barrier (waste treatment)."

**Response:**
Section 3.1.3.5 of SEIS-II has been modified to provide additional details regarding the evaluation of various engineered barriers.

**13.03 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 118 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 4-6. The text states that salt backfill is not required for subsidence control or repository performance, but may be placed into the repository for final disposition. DOE committed to backfill with salt in the 1980 FEIS."

**Response:**
Since the 1980 FEIS, DOE has conducted extensive research into the potential benefits of various backfills. On the basis of this research, magnesium oxide backfill would be used to stabilize chemical conditions in the repository by reacting with carbon dioxide gas formed by microbial degradation. The carbonate formed would buffer the acidity of the brine present, thereby controlling actinide solubility. Salt may be returned to the underground for purposes of facility closure.

**13.03 (10)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-156 | 8 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |
| C-163C | 38 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**
Two commenters stated that DOE has not yet explained how the four shafts and area boreholes would be sealed.

**Response:**
The shaft seal system is designed to limit water entry and contaminant release through the four existing shafts after WIPP decommissioning. Its design is much more sophisticated than conventional borehole plugging techniques used to plug existing boreholes. The design approach applies redundancy to functional elements and specifies multiple, common, low-permeability materials to reduce uncertainty in performance. The system comprises 13 elements that completely fill the shafts with engineered materials possessing high density and low permeability. The use of low-permeability materials (compacted clay and asphalt) with other selected materials (concrete, concrete-asphalt, and compacted salt) combined with expected salt creep closure of the shaft itself are critical components to creating a high-density, low-permeability shaft seal system capable of minimizing the possibility of failure over the regulatory period of 10,000 years. Details of the shaft seal system and supporting analyses are described in Appendix SEAL in the CCA.

DOE intends to limit encroachment and intrusions into the WIPP site through the use of active controls over the first 100 years after site closure and passive controls that may reduce the likelihood of drilling over the next 600 years. Most future brine injection expected to be done near WIPP would target depths well below the repository horizon. If generally accepted plugging techniques are used, as would be expected for new exploratory drilling, brine injection would be expected to have no direct impact on undisturbed repository performance.

DOE has identified existing unplugged boreholes that lie within the controlled area. Of these boreholes, four are deep boreholes that exceed the depth of the repository; the rest are shallow boreholes that do not reach the repository horizon. To mitigate the potential for migration of contaminants to the accessible environment, DOE has designed borehole plugs to limit (1) the amount of water that could be introduced to the repository from overlying water-bearing units and (2) the volume of contaminated brine released from the repository to the accessible environment. These borehole plugs would be effective for some period of time then would eventually degrade, but the process of salt creep would seal the annulus of the boreholes as the existing borehole casing corroded, degraded, and fell into the borehole.

**13.03 (11)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163A | 69 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163B | 21 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**
One commenter said that seals would have to withstand the corrosive effects of the pressurized brine and hydrogen sulfide from a Castile brine reservoir breach, and that only "perfection of the unproven technology" of borehole and shaft plugging can accomplish this.

**Response:**
Of the identified boreholes, four are deep boreholes that exceed the depth of the repository; the rest are shallow boreholes that do not reach the repository horizon. To mitigate the potential for migration of contaminants to the accessible environment, DOE has designed borehole plugs to limit the amount of water that could be introduced to the repository from overlying water-bearing units and to limit the volume of contaminated brine released from the repository to the accessible environment. These borehole plugs would be effective some period of time and would eventually degrade, but the process of salt creep would seal the annulus of the boreholes as the existing borehole casing corroded, degraded, and fell into the borehole.

**13.03 (12)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163C | 28 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**
"Even if the engineered seal materials are of low permeability, and even if construction methods ensure a tight interface between with the surrounding rock, the disturbed rock zone will be a groundwater flow path (DOE/CAO 1996-2184, p. 3-25). In DOE's words: 'It is well known that a DRZ develops in the rock adjacent to the shaft immediately after excavation. After closure of the shaft this fractured zone is initially a major flow path regardless of the material placed within the shaft' because whatever seal components are used will be more permeable than intact Salado salt (DOE/CAO 1996-2184, pp. 3-23, 3-24). In the WIPP ventilation shaft, the disturbed rock zone includes five 'washed out zones' which had to be cased with liner plates to prevent further caving of the shaft wall (TME 3179, Figure 1)."

**Response:**
The development and subsequent healing of a disturbed rock zone in the rock mass surrounding the shafts are significant concerns in any shaft seal design. After closure of a shaft, the disturbed rock zone would initially be a major flow path, regardless of the material placed in the shaft, because the materials selected as seal components would possess very low intrinsic permeabilities and the intact Salado is essentially impermeable. This knowledge allows for design elements to help mitigate the effects of the disturbed rock zone. For example, low-permeability components (i.e., water stops) are included in the shaft seal design to intersect the disturbed rock zone. These water stops would be placed to alter the flow direction either inward toward the shaft seal or outward toward intact salt. Appendix SEAL of the CCA provides additional information and calculational estimates.

Section 3.1.3.5 of SEIS-II has been modified to include a description of the proposed shaft seal.

**13.03 (13)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163C | 29 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163C | 31 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163C | 32 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163C | 34 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163C | 36 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**
One commenter questioned the functionality of the proposed shaft seal design. The commenter said that compacted earth fill used in a part of the shaft seal will be more permeable than the surrounding rocks. He stated that bentonite clay used in a part of the shaft seal will have low permeability, and water will flow along the seal-rock interface and through the disturbed zone. The commenter also said an asphalt column planned for the shaft seal at the Rustler-Salado contact will result in Rustler water dissolving Salado salt and enlarging the disturbed rock zone.

**Response:**
The proposed shaft seal design would use an earthen fill that would extend from the shaft collar through surface deposits downward to the top of the Dewey Lake Redbeds. Locally available fill would be dynamically compacted over a shaft length of 136 to 148 meters (447 to 486 feet) to a density and permeability approaching that of the surrounding native materials. Fill near the surface (the upper 12 to 28 meters [40 to 92 feet]) would be compacted using common construction equipment, such as a sheepsfoot roller, resulting in lower soil densities and higher permeabilities.

Estimated permeabilities from the shaft seal have been incorporated into long-term performance analyses presented in SEIS-II. Using these estimates, as is demonstrated in Section 5.1.12 and Appendix H, TRU waste would remain isolated from the environment for at least 10,000 years. Additional information can be found in Appendix SEAL of the CCA.

**13.03 (14)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163C | 30 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163C | 33 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**
One commenter said DOE admits that the shaft will have to be grouted before removing the shaft lining because of potential structural instability of the shaft wall.

**Response:**
The proposed shaft seal design would emplace a 12-meter-long (40-foot-long) concrete plug that would be located near the surface and extend downward from the top of the Dewey Lake Redbeds. The shaft would be grouted before removal of the shaft lining to ensure structural stability of the shaft wall and provide safer working conditions; grouting is not considered a flow barrier within the shaft sealing system. Additional information can be found in Appendix SEAL of the CCA.

**13.03 (15)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163C | 35 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**
"A concrete plug will be emplaced through 23 feet of the Upper Salado. This is intended to fill 'irregularities in the shaft wall,' but will be ineffective because the disturbed rock zone will be continually enlarged by dissolution. Another 23-foot concrete plug will be emplaced near the top of the McNutt Potash Unit. Again, this will be unable to fill irregularities in a shaft wall undergoing active dissolution. Another 23-foot concrete plug, at the bottom of the salt column, will be unable to fill irregularities in the shaft wall."

**Response:**
The proposed seal design includes three concrete-asphalt water stop components, each composed of three elements: an upper concrete plug, a central asphalt water stop, and a lower concrete plug. Use of Salado mass concrete would fill irregularities in the shaft wall and ensure good bonding with the salt. Salt creep against the rigid concrete component would promote early healing of the shaft disturbed rock zone. The asphalt water stop would intersect the shaft cross section and the shaft disturbed rock zone. A kerf extending one shaft radius beyond the shaft wall would be cut into the surrounding salt. The kerf, which would cut through the existing shaft disturbed rock zone, would result in a new disturbed rock zone along its perimeter but, at these depths in the Salado, the new disturbed rock zone would heal shortly after construction. Dissolution of the Salado during emplacement would be minimal because of

the design of the water stop. Additional information can be found in Appendix SEAL of the CCA.

**13.03 (16)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163C | 37 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**
"A 560-foot column of crushed and compacted salt will extend from the concrete plug almost to the repository horizon. The crushed salt will be more permeable than the rock salt. DOE admits that salt column will offer 'limited resistance to brine migration' for about 100 years after emplacement."

**Response:**
The proposed seal design would include a length of compacted salt in each shaft. Each salt column would be constructed of crushed Salado salt that would be dynamically compacted to a density equivalent to about 90 percent of the average density of intact Salado salt. The salt column would offer limited resistance to brine migration immediately after placement but would become effective as a long-term barrier in less than 100 years when the remaining void space would be effectively closed by salt creep closure.

**13.03 (17)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163C | 42 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**
"Ever since WIPP tunnels were excavated, saturated brine from Salado marker beds has been seeping into the WIPP repository. This brine would be capable of flooding the WIPP tunnels, corroding the steel drums, and dissolving the waste, creating a radioactive slurry at the repository horizon. Because the brine is saturated it would not be capable of dissolving any more salt; and once the WIPP tunnels are filled, the contaminated brine would have no other place to go but up the WIPP shafts, in what is known as the 'undisturbed scenario.' It is CARD's position that the sealing of shafts and the plugging of boreholes are too important to be left to chance. The credibility of the WIPP site depends upon it. Until the technology is demonstrated, in the field, it is premature even to consider allowing WIPP to open."

**Response:**
The Department does not expect the events described in the commenter's scenario to occur. Small amounts of brine could seep into the repository, but studies have shown that the quantities of brine would not be enough to flood the repository.

The proposed shaft seal system would not be implemented for several decades; however, a shaft seal system has been designed in order to establish performance requirements at this time. Although the proposed design would adequately limit fluid flow in the shafts, it is not the only possible combination of materials and construction strategies that would do so. Therefore, future developments and/or technological improvements may change the design.

DOE has developed a disposal phase experimental program. A primary objective of this program is to support WIPP and national TRU waste system operations through maintaining compliance certification and enhancing operations. More specifically, work during the disposal phase would focus on refining and optimizing the seals design and construction-related technologies and on verifying those modeling parameters shown to be important to system performance. Appendix H of SEIS-II has been updated to reflect the status of key investigations or experiments relevant to performance assessment analysis.

**13.03 (18)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163C | 46 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**
"Engineered barriers in the form of improved waste containers could lengthen the period of time before waste in a geologic repository would come in contact with the host rock. In the FEIS (1980, pp. 9-159, 9-160), DOE hoped to develop a canister that could remain intact for 300 to 500 years, a span of time embracing ten half-lives of cesium-137 and strontium-90, which are the major heat-producers in HLW. Again, DOE does not consider improved waste containers for disposal of TRU at WIPP."

**Response:**
The comment is correct; however, on page 9-159 of the 1980 FEIS, it is also stated "There is, however, no incentive to design TRU-waste containers that will last for hundreds or thousands of years." This statement remains true today. The Department could theoretically design more robust containers for disposal of TRU waste, but even containers that would remain intact for 300 to 500 years would do little to improve performance over current containers over the period of 10,000 years. DOE does not consider that the additional cost of designing and procuring containers of this type would be warranted by the small improvement in repository performance.

**13.03 (19)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-056 | 33 | Linda Hibbs | |

**Comment:**
"Possibly of more concern, however, are the connections that have been made to the interbeds above and below the repository. The salt in which WIPP is excavated is not completely pure but is periodically interrupted by thin layers of clay and shale. These layers, called interbeds or sometimes marker beds, often stretch across the whole width of the Salado and can be pathways along which water can flow when they are fractured. If contamination from the repository reached one of these interbeds, it would be more likely that it could also be carried to the accessible environment. Anhydrite layer 'b' is an interbed 7 feet above the repository roof in Panel One and Marker Bed 139 is 5 feet below the floor. In describing the effects the stabilization system has had on the repository salt, the EEG has stated that '...the interbeds above the roof have been allowed to be fractured; at least 286 connections have been made between the room and the fractured anhydrite 'b' layer through roofbolts; and, the floor of the rooms is thoroughly fractured and connected with the underlying heavily fractured Marker Bed 139 through periodic milling of the floors.'"

**Response:**
The creation of the disturbed rock zone around the excavation and the disturbance of the anhydrite layers and marker beds above and below WIPP would alter the permeability and effective porosity around the repository, providing enhanced pathways for the flow of gas and brine between the waste-filled rooms and nearby interbeds. Detailed analyses of the rock mechanics associated with the development of WIPP have shown that the excavation of WIPP would create a pattern of fracturing and enhancement of permeability in the salt beds and anhydrite beds, up to and including the marker beds above and below the WIPP horizon.

After repository closure, successful isolation of TRU waste would rely on the process of salt creep to consolidate the crushed salt seal material and healing of the disturbed rock zone around the repository seal system (e.g., shaft seals, panel seals, and borehole plugging) to achieve a low-permeability barrier to release of waste from the repository. The healing process is not expected to be completely reversible but is expected to reduce the permeability and porosity of both surrounding halite and anhydrite beds within 200 years. However, the performance assessment treatment of the disturbed rock zone creates a permanent high-permeability zone that does not significantly impede the flow between the repository and affected interbeds.

Over the long term, a limited amount of brine in the immediate vicinity of the repository and the disturbed rock zone would be expected to seep into the repository and come into contact with waste materials. The waste materials and containers would be expected to degrade, leading to the generation of gas (primarily hydrogen and methane) at pressures that may approach lithostatic levels within a few hundred years after closure.

This development and long-term behavior of a disturbed rock zone are key components of the conceptual model used to evaluate the long-term performance of the WIPP facility. This conceptual model, which has been accepted as valid by the Conceptual Model External Peer Review panel (see p 9-14 of the CCA), does not support the lateral pattern of anhydrite bed fracturing scenario as proposed by the commenter.

## 13.04 Gas Generation

### 13.04 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 56 | Lisa Sparaco | |
| ALB2 | 11 | Maurice Weisberg | |
| ALB2 | 35 | Virginia Kotler | |
| ALB3 | 90 | Karen Navarro | |
| ALB5 | 33 | Susan Rodriguez | |
| ALB5 | 38 | Susan Rodriguez | |
| ALB6 | 68 | David Pace | |
| ALB6 | 141 | Tom Metcalf | |
| C-136 | 5 | N. Watson | |
| C-141 | 22 | Margret Carde | Concerned Citizens for Nuclear Safety |
| C-162 | 7 | Kathleen Sullivan | |
| C-163A | 75 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 76 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163E | 11 | No name provided | Citizens for Alternatives to Radioactive Dumping |
| C-163E | 16 | No name provided | Citizens for Alternatives to Radioactive Dumping |
| CA1 | 5 | Richard Boren | |
| DE1 | 23 | Kathleen Sullivan | |
| E-056 | 32 | Linda Hibbs | |
| E-056 | 36 | Linda Hibbs | |
| E-063 | 3 | Tom Moore | |
| E-063 | 4 | Tom Moore | |
| SF1 | 26 | Nausika Richardson | |
| SF1 | 64 | Virginia Miller | |
| SF2 | 12 | Kathleen Sullivan | |
| SF3 | 110 | Anhara Lovato | |
| SF3 | 115 | Anhara Lovato | |
| SF4 | 53 | Deborah Reade | |
| SF7 | 12 | Sister Penelope McMullen | |
| SF7 | 23 | Suzanne Phillips | |

**Comment:**
A number of commenters said DOE has not adequately addressed the occurrence or impact of gas generation, spontaneous combustion, fires, explosions, and nuclear criticality reactions on the operational safety and the long-term performance of WIPP.

**Response:**
DOE has come to understand the process of gas generation within the repository in the course of numerous experimental investigations. The fundamental premise of long-term performance at WIPP is that salt creep would ultimately encapsulate the waste and provide a long-term barrier to migration of waste-contaminated brine to the accessible environment. Over the long term, a limited amount of brine in the immediate vicinity of the repository and the disturbed rock zone would be expected to seep into the repository and come into contact with waste materials. The waste materials and containers would be expected to degrade, leading to the generation of gas (primarily hydrogen and methane) at pressures that may approach lithostatic levels within a few hundred years after closure. These processes and others are considered in long-term performance assessment analyses for the Proposed Action and action alternatives in SEIS-II. The results of these analyses indicate that brine contaminated with radioactive materials and hazardous chemicals and driven along pathways by elevated gas pressures would not reach the accessible environment. Section 2.1.4 of SEIS-II provides information on expected repository performance, including the impact of gas generation.

The potential for explosions (specifically, gas explosions) refers to possible explosions within WIPP of hydrogen and methane that may be generated by waste degradation. Such explosions are extremely unlikely in the long term because of the anoxic environment in the repository. Should such explosions occur, the effect would be limited to disruption of rock units in the immediate vicinity of the disposal region and possible creation of pathways for fluid migration above and below the waste. While this type of impact was not explicitly evaluated, simulations in SEIS-II that could potentially account for these conditions are those that sampled the high end of permeability distributions representing the disturbed rock zone (e.g., see Case 3 for the Proposed Action in Appendix H). The results from these analyses show no releases to the environment (e.g., see Section 5.1.12.1 for the Proposed Action).

With regard to nuclear criticality, the commenters are referred to the planning-basis WAC, which establish nuclear criticality criteria for TRU waste by defining the maximum allowable quantity of fissile material. These limits are defined in terms of plutonium-239 fissile-gram equivalents (e.g., 200 fissile-gram equivalents for a 55-gallon drum) and include a factor allowing for two times the measurement error when the waste packages are assayed. Because of these limitations, the formation of a critical mass in the correct geometry necessary to achieve a self-sustaining nuclear chain reaction in the WIPP environment is considered to be an “incredible” (i.e., infeasible) event. Additional information can be found in the text box of Section 5.1.

**13.04 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-167 | 1 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"[The SEIS-II text box on] page 4-9 [states] '...has resulted in confirmation of the Salado's extremely low permeability.'

"This statement is meaningless. The Salado pure salt has extremely low permeability, impure salt is more permeable, and the fractured anhydrite beds and the clay/anhydrite and clay/halite interfaces are permeable enough to transmit a substantial amount of brine for gas generation."

**Response:**
The reference made in the text box refers to the overall hydraulic characteristics of the Salado Formation. The points made by the commenter are reflected in the text of Section 4.1.3.2.

**13.04 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-167 | 2 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"[The SEIS-II text box on] page 4-9 [states] '...elevated gas pressure may slow down or stop brine inflow, thereby slowing gas-generating processes.'

"The important point is that sufficient gas is expected to be generated to result in lithostatic pressure in the repository. Once the pressure is dissipated through fractures, brine inflow is expected to resume."

**Response:**
No direct evidence exists that would support the commenter's conclusion that pressure would dissipate through fractures. Simulated results from the CCA and SEIS-II of the long-term undisturbed performance assessment of WIPP show that once pressures reached lithostatic levels, the pressures would remain at lithostatic levels for 10,000 years or longer.

## 13.05 Human Intrusion

**13.05 (01)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-008 | 3 | Tom Udall | Attorney General of New Mexico |
| ALB2 | 135 | Deborah Reade | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-131 | 21 | Don Hancock | Southwest Research and Information Center |

**Comment:**
Several commenters said that DOE has not adequately addressed the impact of multiple intrusions in the SEIS-II borehole intrusion analysis.

**Response:**
The human intrusion scenario used in SEIS-II was used to evaluate impacts from a single exploratory borehole into the repository. SEIS-II first examined the impacts of drilling intrusions at different points in time after closure, including intrusions after repository pressures reached their maximum pressures. The analyses indicated that although larger amounts of material would be released because of higher gas pressures at later times (i.e., several thousand years after closure), the maximum dose would occur at 300 years and 400 years. Appendix H of Final SEIS-II clarifies this point.

With regard to the likelihood of occurrence of drilling intrusion events, the probability of the event occurring at loss of institutional control was assumed to be one. With the use of active and passive controls, the probability of such an event actually occurring over the period immediately following the loss of institutional control is likely to be very low. DOE plans active institutional controls that are assumed to be completely effective in preventing oil and gas exploration and potential intrusions over the first 100 years after site closure. Based on assumptions made in the CCA, passive institutional controls would be effective in reducing drilling rates by two orders of magnitude for the 600 years that follow the 100 years after closure. Details of these controls are provided in Chapter 7 of the CCA.

The analysis presented in Appendix H illustrates how, after a single intrusion, the pressure in the repository would decline significantly following the period of intrusion. If the initial borehole could be effectively plugged, pressure in the repository would build up again over time as additional brine inflow and related waste degradation occurred.

For a multiple-intrusion scenario, the maximum impact would be seen in the first intrusion; less material would be released at any one borehole following the first intrusion because gas pressure would likely dissipate after the first intrusion.

A text box has been added to Appendix H to clarify the scenarios considered but not analyzed. Information on the number of intrusions that might be expected in the 10,000-year period and an overall estimate of how much radiation could be released have also been added in SEIS-II.

**13.05 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB5 | 17 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 10 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 22 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 139 | Robert H. Neill | Environmental Evaluation Group |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 140 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 255 | Robert H. Neill | Environmental Evaluation Group |
| CA1 | 28 | Don Gray | |
| CA1 | 123 | Dan Funchess | |
| SF1 | 13 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
A few commenters said that DOE has not adequately addressed the impacts of inhalation in the SEIS-II borehole intrusion analysis.

**Response:**
Inhalation impacts to the MEI were calculated in the 1990 SEIS-I and were shown to be very small, less than 1 millirem per year. DOE believes SEIS-II estimates of impacts from repository intrusion to a member of the drilling crew and a geologist represent the highest impacts that could be expected. DOE does not believe that further evaluation of potentially very small inhalation impacts from intrusion is warranted.

Calculated releases from the 1990 SEIS-I drilling intrusion analyses were examined and found to be higher than releases calculated in SEIS-II. The primary reason for these differences is the updated inventory information (including a reduced radionuclide content) considered in the SEIS-II analyses.

**13.05 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB5 | 22 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 20 | Robert H. Neill | Environmental Evaluation Group |
| C-163C | 17 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |
| CA1 | 33 | Don Gray | |
| SF1 | 18 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
A number of commenters said that the timing of the drilling intrusion at 100 years does not yield the worst consequence in the SEIS-II analysis. Another said that the calculated dose from RH-TRU waste due to human intrusion, 220 millirem, does not make sense when compared with the maximum allowable surface dose for an RH-TRU waste canister (1,000 rem per hour).

**Response:**
In the Final SEIS-II, the impacts of drilling intrusions at different points in time after closure (100, 200, 300, 400, 500, 800, 1,200, and 2,000 years after closure) were reexamined to determine the time of maximum consequences. The reanalysis indicated that larger amounts of materials were released at later times as gas was generated by waste degradation and corrosion and pressures increased to near lithostatic conditions (about 15 megapascal). Dose analysis of

material released at the selected times indicated that the maximum consequence would occur at 400 years for disturbed cases using median parameter values and 300 years for disturbed cases using 75th percentile parameter values.

In addition, for impacts for panel intrusions involving RH-TRU waste, the estimated radionuclide concentrations in the panel were based on the estimated inventory and specified volume of RH-TRU waste. This inventory is decay-corrected to 100 years after closure, and its surface radiation related to the amount of fission products is reduced well below the current level.

**13.05 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| CA1 | 61 | Betty Richards | |

**Comment:**
"And the DOE has admitted to a minimum number of incidents of human intrusion. There was already initial human intrusion when the site was drilled."

**Response:**
The SEIS-II performance assessment assumes human intrusion would take place in the future, despite any measures that would be put into place to prevent intrusion. However, with regard to existing boreholes and shafts that have already penetrated the repository, the SEIS-II analysis assumes that the proposed barrier system of shaft seals and extensive borehole plugging combined with the process of salt creep would be effective in the long-term isolation of TRU waste at WIPP.

**13.05 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| CA1 | 111 | Don Kidd | |

**Comment:**
"Human intrusion is a big buzz word nowadays, that it's going to happen to WIPP. Maybe over the next 10,000 years we will lose our language, maps will be done away with, who knows."

**Response:**
The SEIS-II performance assessment assumes human intrusion would take place, despite any measures that would be put into place to prevent intrusion.

**13.05 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| CA1 | 123 | Dan Funchess | |

**Comment:**
"Some argue that there is no way to predict or prevent human intrusion into the repository area, which could bring radionuclides to the human environment. The performance assessment done for the second supplemental environmental impact statement clearly shows that there would be no releases into the environment under any other scenarios considered except for the waste brought to the surface by multiple drilling. Even these amounts of waste materials do not exceed the radioactivity limits established by the EPA regulations. The DOE does not expect contaminants brought to the surface during drilling to adversely affect human health."

**Response:**
Thank you for your comment.

**13.05 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-021 | 4 | Ruth Weiner | |

**Comment:**
"Appendix H states (page H-90) that the intrusion scenario for the proposed action was analyzed at 100 years after closure and does not refer to intrusions over the 10,000-year regulatory period, although these are analyzed in the Draft Compliance Certification Application (DCCA), which is cited as a source document. Finally, and perhaps most important, the probability or rate of intrusion after closure is not considered. Inexplicably, the Draft SEIS implies that inadvertent intrusion into a sealed mine half a mile underground is as likely as intrusion into a shallow burial site or a surface facility, thereby obviating the whole reason for geologic disposal in the first place. In sum, if a real comparison is to be made between the proposed action and no-action Alternative 2, the comparison should meet two criteria: (1) the conceptual and computational model and modeling assumptions, should be as similar as possible, and (2) both alternatives should be assessed equally realistically."

**Response:**
The human intrusion scenarios used in SEIS-II were used to evaluate the impacts from a single exploratory borehole into the repository to facilitate the comparison of Proposed Action and action alternative impacts.

For the purposes of analyses, the probability of a borehole intrusion occurring at loss of institutional control was assumed to be one. With the use of active and passive controls, the probability of such an event actually occurring over the period immediately following the loss of institutional control is likely to be very low. DOE plans active institutional controls that are assumed to be completely effective in preventing oil and gas exploration and potential intrusions over the first 100 years after site closure. Based on assumptions in the CCA, passive institutional controls would be effective in reducing drilling rates by two orders of magnitude for the 600 years that follow the 100 years after closure. Details of these controls are provided in Chapter 7 of the CCA. Additional information on these controls has been added to Section 4.1.3.2.

DOE agrees with the commenter that the issue of the probability or rate of intrusion after closure should be considered when comparing the impacts of drilling intrusions at WIPP with those analyzed at the surface burial facilities at the generator sites. These differences in probabilities are discussed in Appendices H and I.

## 13.06 Pressurized Brine Reservoirs

### 13.06 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 62 | Jeff Radford | Business People Concerned about WIPP |
| ALB3 | 23 | Robin Seydel | |
| ALB6 | 53 | David Pace | |
| SF1 | 31 | Nausika Richardson | |

**Comment:**
A number of commenters stated that DOE did not adequately address the occurrence or impacts of pressurized brine reservoirs in the WIPP site selection process.

**Response:**
Initial site selection did consider brine reservoirs in the selection criteria. Appendix IRD of the CCA discusses the resource disincentive study that DOE performed in the site selection process. This appendix discusses the WIPP site selection and consideration of natural resources in Chapter 4.

Site selection efforts in the Carlsbad area were started by ORNL, the United States Geological Survey, and the Atomic Energy Commission (predecessor to DOE) in 1972. The first site selected had to be abandoned when studies showed that rock strata were shallower than originally expected, beds showed severe distortion, structural dips were as high as 75 degrees, and a pressurized brine pocket was encountered in the Castile Formation. It was later determined that the site was being influenced by the Capitan Reef, which caused the geologic character to vary from predictions. From data gained, and after further study, additional siting criteria were developed.

During the site characterization phase within the Los Medaños area, the WIPP-12 borehole (north of the current WIPP site) was deepened into the Castile Formation below the repository horizon and encountered large quantities of brine that flowed freely into the borehole and to the surface. The discovery of the brine reservoir prompted DOE to reconsider the layout of the repository waste panels, from the planned location north of the experimental area to its current configuration south of the shafts (see Section 2.1.4 in SEIS-II). This discovery also led to a geophysical program in the 1980s to investigate the possibility of brine reservoirs under the current site. In addition, the development of probabilistic performance assessments led to a significant effort to characterize the consequences of various combinations of natural and man-made events and processes (e.g., model analysis of multiple intrusions into the repository and a brine reservoir). The analyses contained in SEIS-II (Section 5.1.12 for the Proposed Action and Appendix H) demonstrate that TRU waste would remain isolated from the environment, even in the event of a borehole that would intersect the repository and a pressurized brine pocket.

Section 2.1.4 of SEIS-II has been modified to include a discussion of WIPP site selection. Section 4.1.3.2 has also been modified to include a more detailed discussion of brine reservoirs.

**13.06 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 75 | Janet Greenwald | |
| ALB2 | 62 | Jeff Radford | Business People Concerned about WIPP |
| ALB4 | 35 | Jeri Rhodes | |
| ALB4 | 53 | Lawrence Carter-Long | |
| ALB6 | 80 | Judy Pratt | |
| BO1 | 114 | Michele Kresge | |
| C-090 | 3 | Linda Ewald | |
| C-124 | 2 | Roy Young | |
| C-133 | 15 | Bonnie Bonneau | Legions of Living Light |
| C-151 | 25 | Don Moniak | Serious Texans Against Nuclear Dumping |
| C-152 | 238 | Robert H. Neill | Environmental Evaluation Group |
| C-158 | 6 | Maureen Eldredge | Military Production Network |
| C-163A | 18 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 19 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 68 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163B | 13 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163B | 14 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163B | 15 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163B | 16 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163C | 3 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163C | 15 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163D | 4 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163F | 6 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163G | 4 | Jeff Radford | Business People Concerned about WIPP |
| C-166 | 6 | Elliott H. Libman, MSW | |
| DE1 | 40 | Kay Mack | |
| E-056 | 20 | Linda Hibbs | |
| E-069 | 6 | Pat Clark | Snake River Alliance |
| SF1 | 27 | Nausika Richardson | |
| SF4 | 78 | Bonita McCune | |
| SF6 | 87 | Pia Gallegos | |
| SF7 | 84 | Bonnie Bonneau | Legions of Living Light |
| SF8 | 54 | Katherine Lage | |
| SF8 | 63 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**
A number of commenters said that DOE has not adequately analyzed the occurrence or impacts of pressurized brine reservoirs on the long-term performance of WIPP.

**Response:**
DOE recognizes that pressurized brine reservoirs may exist at depths below the WIPP site in the northern Delaware Basin. Appreciable amounts of brine have been produced from several brine reservoirs that appear be located in the fractured upper parts of the Castile Formation. The WIPP-12 was one well drilled within the WIPP Land Withdrawal Area that encountered such a brine reservoir where pressurized brine flowed up to the land surface.

Section 4.1.3 of SEIS-II has been modified to include additional information on brine reservoirs and their potential impact on WIPP.

Over a 10,000-year period, the probability of an exploratory borehole encountering a pressurized brine pocket after intersecting the repository is unknown, but it is likely to be less than 10 percent, based on a geostatistical interpretation of a large regional database (see Appendix SCR.3 of the CCA). To bound this potential impact, the impact of drilling an exploration well that would encounter a pressurized brine pocket after penetrating an individual waste panel was evaluated. This scenario would result in a direct release of waste materials from the repository to the land surface and exposures to the released materials by a member of the drilling crew and a well site geologist. Analyses showed that in an intrusion borehole case, contamination may reach the Culebra Dolomite, but transport modeling showed that only very small amounts of contaminants would migrate from the point of release over 10,000 years. At a stock well 3 kilometers (2 miles) from the point of release, under the most severe case analyzed, no human health impacts (less than $10^{-20}$ probability of an LCF) would result. Results of these analyses are detailed in Chapter 5 and Appendix H of SEIS-II.

**13.06 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-125 | 3 | Barbara H. Johnson | The Rio Grande Chapter of the Sierra Club |

**Comment:**
"The Environmental Evaluation Group (EEG), established in 1978 to perform an independent technical review of WIPP for the State of New Mexico, has told the EPA that there is insufficient basis for the selection of certain conceptual models, the spallings model being one of them. 'EEG finds no justification for assuming only an 8% probability of intercepting a pressurized brine reservoir in the Castile Formation, 800 feet below the repository.' EEG goes on to say that the repository has been relocated twice in response to encountering pressurized brine reservoirs. 'The EEG position is that a brine reservoir, most likely the same [one] that was encountered by WIPP-12, should be assumed to extend under the [current] repository...'"

**Response:**
The Conceptual Models Peer Review Team originally reported its reservations regarding the WIPP conceptual models associated with spallings and chemical engineered backfill (while expressing confidence in 22 other conceptual models). Since publication of the Draft SEIS-II, the Conceptual Models Review Team has reviewed additional information and presentations from DOE and expressed its confidence in these models as well.

SEIS-II makes no assumption concerning the probability of intercepting a pressurized brine pocket. It does present the results predicted for such an intrusion, should it occur, and further assumes that if a human intrusion occurred, it would intercept a brine pocket.

**13.06 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163A | 73 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**
"The pressure difference between the WIPP repository and an underlying geopressurized brine reservoir could force a connection along existing fractures between the brine reservoir and the ERDA-9 drill shaft (EEG-6, 1980, p. 47)."

**Response:**
There is no direct pathway from existing brine reservoirs to the repository and, by design, no drill holes through the area enclosed by the WIPP workings have been allowed to penetrate down to the stratigraphic interval potentially containing Castile brines. There is no evidence to support the scenario proposed by the commenter.

**13.06 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163C | 4 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**
"It is likely that the WIPP-12 brine reservoir extends directly underneath the WIPP waste emplacement panels (EEG-23, 1983, p. 31; Phillips, 1987, Figure 76; EEG-61, 1996, p. 2-3). Borehole ERDA-9 (located 320 feet from the center of the WIPP site) was never deepened; but less than 200 feet of vertically fractured anhydrite is all that separates the pressurized brine reservoir from ERDA-9, an existing pathway to the WIPP repository. The plan is to plug ERDA-9, but there is no proven technology for plugging boreholes in salt formations, and CARD doubts that it can be done successfully."

**Response:**
As required by regulations (40 CFR Section 194.33), the plugging and abandonment of future exploratory boreholes are assumed to be consistent with practices in the Delaware Basin at the time the compliance application is prepared. Examination of current practices in the Delaware Basin indicates that all boreholes abandoned recently are plugged to meet state and federal requirements protecting groundwater and natural resources. These plugs are expected to prevent flow in abandoned boreholes for some period after emplacement. However, over a long period of time, these plugs would degrade and brine would be expected to migrate in the borehole at a rate controlled by the estimated properties of the materials in the borehole. This degradation was considered in the long-term performance calculations used in SEIS-II and CCA intrusion borehole analyses.

**13.06 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-052 | 2 | Dr. Stanley E. Logan | |

**Comment:**
"On page S-50, it is stated that for a borehole into a pressurized brine reservoir 'the brine pressure would not be sufficient to transport waste to the overlying water-bearing units.' This is not correct. A brine reservoir as encountered at the WIPP-12 borehole would be sufficient for artesian flow to the surface. The modelling I did for my 1992 paper: 'Preemptive Release of Brine from a Pressurized Brine Reservoir Underlying WIPP,' indicated an initial artesian flow rate of over 300 gpm, decreasing to about 5 gpm after one year, ultimately decreasing to the recharge rate. In the paper, I demonstrated that preemptive release of brine through drilling and pumping to obtain compliance would provide remediation if this intrusion scenario proved to be a barrier to compliance."

**Response:**
DOE agrees with the commenter that the initial brine pressure has the potential to force brine to the land surface. SEIS-II has been modified by deleting this sentence and focusing on the results of the analysis. Analyses showed that in an intrusion borehole case, contamination may reach the Culebra Dolomite, but transport modeling showed that only very small amounts of contaminants would migrate from the point of release over 10,000 years. At a stock well 3 kilometers (2 miles) from the point of release, under the most severe case analyzed, no human health impacts (less than $10^{-20}$ probability of an LCF) would result. Results of these analyses are detailed in Chapter 5 and Appendix H of SEIS-II.

**13.06 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-167 | 3 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"[The SEIS-II text box on] page 4-9 [states] 'Geophysical surveys indicate that pressurized brine reservoirs in the Castile Formation occur as three or four discrete pockets.' No new geophysical surveys have been conducted to detect Castile brine over the WIPP repository since the publication of SEIS-I. No basis has been provided to alter the previous interpretation of the 1987 TDEM survey over the WIPP site found in SEIS-I, as follows: 'A continuous deep conducting zone underlies the region of the WIPP waste - emplacement panels.' (DOE/EIS-0026-FS, Vol. 1, p. 4-71) and 'In this report, the brines underlying the repository are assumed to be present, as they are at WIPP-12' (DOE/EIS-0026-FS, Vol. 1, p.4-73).

"The EEG position is that, based on the size of the brine reservoir intercepted by the borehole WIPP-12 and the results of the TDEM survey, the WIPP repository is underlain by a continuation of the brine reservoir that was encountered by WIPP-12."

**Response:**
This correction to the text box has been made in the Final SEIS-II to reflect revisions in Chapter 4 text for hydrology of the Castile Formation.

In the exploratory borehole intrusion analysis of SEIS-II, DOE has analyzed the impacts of a borehole that penetrates both the repository and a hypothetical pressurized brine reservoir. The analysis showed that in an intrusion borehole case, contamination may reach the Culebra Dolomite, but transport modeling showed that only very small amounts of contaminants would migrate from the point of release over 10,000 years. At a stock well 3 kilometers (2 miles) from the point of release, under the most severe case analyzed, no human health impacts (less than $10^{-20}$ probability of an LCF) would result. Results of these analyses are detailed in Chapter 5 and Appendix H of SEIS-II.

## 13.07 Resource Development

### 13.07 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 23 | Maria Santelli | |
| ALB1 | 36 | Eric James | |
| ALB1 | 54 | Lisa Sparaco | |
| ALB1 | 69 | Jim Lewis | |
| ALB2 | 22 | Sean Asghar | |
| ALB2 | 59 | Jeff Radford | Business People Concerned about WIPP |
| ALB2 | 62 | Jeff Radford | Business People Concerned about WIPP |
| ALB2 | 90 | Jamal McGrath | |
| ALB2 | 137 | Deborah Reade | |
| ALB3 | 26 | Robin Seydel | |
| ALB4 | 33 | Jeri Rhodes | |
| ALB4 | 50 | Lawrence Carter-Long | |
| ALB4 | 51 | Lawrence Carter-Long | |
| ALB5 | 36 | Susan Rodriguez | |
| ALB5 | 87 | David Shepard | |
| ALB6 | 43 | Joan Robins | |
| ALB6 | 108 | Dair Obenshain | |
| ALB6 | 128 | Alan Moskowitz | |
| ALB6 | 145 | Tom Metcalf | |
| BO1 | 75 | Steve Hopkins | |
| BO1 | 98 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| BO1 | 112 | Michele Kresge | |
| BO1 | 133 | Robert McEnaney | |
| C-090 | 2 | Linda Ewald | |
| C-118 | 11 | David Proctor | |
| C-124 | 3 | Roy Young | |
| C-125 | 2 | Barbara H. Johnson | The Rio Grande Chapter of the Sierra Club |
| C-129 | 8 | Richard A. Kenney | Coalition 21 |
| C-133 | 16 | Bonnie Bonneau | Legions of Living Light |
| C-133 | 19 | Bonnie Bonneau | Legions of Living Light |
| C-141 | 21 | Margret Carde | Concerned Citizens for Nuclear Safety |
| C-148 | 9 | Landi Fernley | |
| C-151 | 24 | Don Moniak | Serious Texans Against Nuclear Dumping |
| C-154 | 6 | Tom Marshall, Jack Mento, et al. | Rocky Mountain Peace and Justice Center |
| C-157 | 3 | Wendy Lynne Botwin | |
| C-158 | 5 | Maureen Eldredge | Military Production Network |
| C-159 | 7 | Susan Maret | Sierra Club National Nuclear Waste Task Force |
| C-163A | 12 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |
| C-163A | 13 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163A | 14 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 60 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 78 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163B | 3 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163C | 1 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163C | 5 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163C | 11 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163C | 23 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163D | 5 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163D | 8 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163E | 14 | No name provided | Citizens for Alternatives to Radioactive Dumping |
| C-163G | 8 | Jeff Radford | Business People Concerned about WIPP |
| C-166 | 8 | Elliott H. Libman, MSW | |
| CA1 | 4 | Richard Boren | |
| DE1 | 21 | Kathleen Sullivan | |
| DE1 | 75 | Sam Cole | |
| E-056 | 21 | Linda Hibbs | |
| E-056 | 28 | Linda Hibbs | |
| E-063 | 2 | Tom Moore | |
| E-069 | 4 | Pat Clark | Snake River Alliance |
| OR1 | 22 | Don Hancock | Southwest Research and Information Center |
| SF1 | 28 | Nausika Richardson | |
| SF3 | 39 | Jai Lakshman | SEVA Foundation |
| SF4 | 63 | Deborah Reade | |
| SF4 | 92 | Bonita McCune | |
| SF6 | 70 | Garland Harris | |

**Comment:**
Many commenters said that DOE has not fully evaluated the impacts of oil and gas exploration and development and potash mining on the long-term performance of WIPP.

**Response:**
DOE fully appreciates the importance of natural resource exploration and development in the Delaware Basin to the future performance of WIPP.

Active institutional controls are assumed to be completely effective in preventing oil and gas exploration and potential intrusions over the first 100 years after site closure. Passive institutional controls are assumed to be effective in reducing drilling rates by two orders of magnitude for the 600 years that follow the first 100 years after closure. Details of these controls are provided in Chapter 7 of the CCA. Additional information on these controls has been added to Section 4.1.3.2.

SEIS-II analyzed the ability of WIPP to isolate TRU waste over 10,000 years in the event that (1) an exploratory borehole breached the repository and (2) an exploratory borehole encountered a pressurized brine pocket after penetrating an individual panel. These analyses were conservative (i.e., tend to overestimate the impacts) because, for example, they were assumed to occur immediately after loss of active institutional controls when the radionuclide concentrations would be at their maximum. The analyses of an intrusion borehole that would (1) penetrate the repository and (2) penetrate both the repository and a pressurized brine reservoir show that there would be a direct release of materials to the land surface with only minor health effects to the drilling crew. Analyses also showed that in an intrusion borehole case, contamination may reach the Culebra Dolomite, but transport modeling showed that only very small amounts of contaminants would migrate from the point of release over 10,000 years. At a stock well 3 kilometers (2 miles) from the point of release, under the most severe case analyzed, no human health impacts (less than $10^{-20}$ probability of an LCF) would result. Results of these analyses are detailed in Chapter 5 and Appendix H of SEIS-II.

Evaluation of the effects of potash mining that would increase the hydraulic properties of the Culebra Dolomite in areas above known potash reserves near WIPP showed that groundwater flow paths in the Culebra would change from current high zones of transmissivity to the south and east to lower zones of transmissivity to the west. As a result, migration of key radionuclides downgradient of WIPP would be reduced to below rates postulated for unmined scenarios, and, as in the case of the unmined scenarios, no off-site radiological impacts via the groundwater pathway are postulated. The analyses of Sections 5.1.12, 5.2.12, 5.3.12, 5.4.12, and Appendix H show that isolation of TRU waste is feasible.

**13.07 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 69 | Jim Lewis | |
| ALB2 | 22 | Sean Asghar | |
| ALB2 | 62 | Jeff Radford | Business People Concerned about WIPP |
| ALB2 | 90 | Jamal McGrath | |
| ALB2 | 137 | Deborah Reade | |
| ALB2 | 138 | Deborah Reade | |
| ALB3 | 62 | David Mitchell | |
| ALB3 | 63 | David Mitchell | |
| ALB5 | 39 | Susan Rodriguez | |
| ALB6 | 63 | David Pace | |
| ALB6 | 128 | Alan Moskowitz | |
| C-118 | 12 | David Proctor | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-131 | 23 | Don Hancock | Southwest Research and Information Center |
| C-141 | 21 | Margret Carde | Concerned Citizens for Nuclear Safety |
| C-151 | 16 | Don Moniak | Serious Texans Against Nuclear Dumping |
| C-151 | 24 | Don Moniak | Serious Texans Against Nuclear Dumping |
| C-152 | 120 | Robert H. Neill | Environmental Evaluation Group |
| C-163C | 5 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163C | 20 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163C | 21 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163C | 22 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163C | 23 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163C | 24 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163C | 25 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163C | 26 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163E | 14 | No name provided | Citizens for Alternatives to Radioactive Dumping |
| C-163E | 17 | No name provided | Citizens for Alternatives to Radioactive Dumping |
| C-167 | 9 | Robert H. Neill | Environmental Evaluation Group |
| E-056 | 29 | Linda Hibbs | |
| E-056 | 30 | Linda Hibbs | |
| OR1 | 22 | Don Hancock | Southwest Research and Information Center |
| SF1 | 28 | Nausika Richardson | |

**Comment:**
A number of commenters stated that DOE has not adequately addressed the occurrence or impact of water injection, brine injection, or salt water disposal on the long-term performance of WIPP.

**Response:**
Scenario screening for the CCA has screened out water injection, brine injection, and salt water disposal events on the basis of low consequence.

In its review of the CCA, EPA requested additional analysis on these types of events. As a result, a more thorough and realistic analysis was evaluated based on assumptions and conceptual models agreed to by EPA. The modeling results confirmed earlier assertions by DOE that fluid injection has no significant impact on the long-term performance of WIPP.

Rises in water levels have been observed in several wells completed in the Culebra Dolomite south of the WIPP site. Recent analysis of these rises by DOE has shown no statistical correlation of these rises with known water injection activities.

Water levels in several WIPP observation wells completed in the Culebra Dolomite south of the WIPP site began rising in 1988. These rising levels appear to be attributable to a salt water disposal well operation within 1.6 kilometers (1 mile) of the WIPP site boundary. Section 4.1.3.2 has been modified to include additional information on these observations.

In response to these observations and other examples of the impacts of fluid injection, DOE examined the potential impacts of fluid injection in the form of water flooding and salt water disposal. Pursuant to a request by the EPA, these potential effects were modeled assuming two hypothetical injection wells located at the land withdrawal boundary operating over a 50-year period. The results of the modeling, given in Section SCR.3.3.1.3.1 of the CCA, indicate that fluid injection would not have a significant impact on repository performance. Specifically, even for the least favorable rock properties considered, the amount of brine reaching the repository over 10,000 years would be well within the range of volumes of brine expected to flow into the repository during normal undisturbed performance. On this basis, fluid injection was screened out of the performance assessment calculations. A text box has been added to Appendix H to clarify key scenarios that were considered but not analyzed.

**13.07 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 46 | Janet Greenwald | |
| C-163C | 16 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163C | 18 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163E | 9 | No name provided | Citizens for Alternatives to Radioactive Dumping |
| OR1 | 24 | Don Hancock | Southwest Research and Information Center |
| SF4 | 65 | Deborah Reade | |

**Comment:**
A number of commenters stated that DOE has not adequately addressed (1) the impact of pressurized brine reservoirs in the exploratory intrusion analysis, leaving a number of unresolved issues related to flow and transport processes in shallow water bearing-units above the WIPP facility, and (2) the impact of off-site migration.

**Response:**
The fundamental assumption of these release scenarios is that a borehole would be drilled and plugged at abandonment using standard regulatory requirements and standard drilling and borehole plugging practices. At intrusion, the pressurized brine could potentially flow all the way to the land surface, as was observed at WIPP-12, but contact with the repository would be unlikely because of the location of installed well casing during the drilling process. Over a relatively short period of time, the borehole would be plugged (as would normally be done

before abandonment) with a multiple-plug system that would isolate the Rustler Formation from underlying and overlying units, thereby isolating brine coming up from the brine reservoir. Over long periods of time, brine could potentially come into contact with waste materials in the repository as the well casing corrodes. Over the 10,000-year period, the properties of the casing and materials plugging the borehole would eventually degrade and the degraded materials would drop into the borehole at plug locations, leaving a material with a likely permeability three to four orders of magnitude higher than the original permeability. Eventually, salt creep would compress the borehole, creating a permeability of an order of magnitude less. Analyses showed that in an intrusion borehole case, contamination may reach the Culebra Dolomite, but transport modeling showed that only very small amounts of contaminants would migrate from the point of release over 10,000 years. At a stock well 3 kilometers (2 miles) from the point of release, under the most severe case analyzed, no human health impacts (less than $10^{-20}$ probability of an LCF) would result. Results of these analyses are detailed in Chapter 5 and Appendix H of SEIS-II.

Section 4.1.3 of SEIS-II has been modified to include additional information on brine reservoirs. Key assumptions related to the brine reservoir intrusion scenarios are found in Appendix H.

**13.07 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 160 | Rick Packie | |

**Comment:**
"They should use, if not a worst case scenario, drilling rates, intrusion rates which are calculated for maximum protection of future generations and are not calculated in a way to minimize the risk from future intrusion scenarios."

**Response:**
The human intrusion scenarios used in SEIS-II were used to bound the impacts from an exploratory borehole into the repository. For the purposes of analysis, the probability of the event occurring at loss of institutional control was assumed to be one. With use of active and passive controls, the probability of such an event actually occurring over the period immediately following the loss of institutional control is likely to be very low. DOE plans active institutional controls that are assumed to be completely effective in preventing oil and gas exploration and potential intrusions over the first 100 years after site closure. Passive institutional controls are assumed to be effective in reducing drilling rates by two orders of magnitude for the 600 years that follow the 100 years after closure. Details of these controls are provided in Chapter 7 of the CCA. Additional information on these controls has been added to Section 4.1.3.2.

A text box has been added to Appendix H to provide additional information on scenarios considered but not analyzed.

**13.07 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 63 | David Mitchell | |

**Comment:**
"And it says on page H-79 that multiple borehole scenarios are left out of the SEIS. Well, I want to know about water flooding, high pressure injection, one borehole through the site that allows the water to flood into the site in a couple of hundred years before the salt crushes the contents, and then another borehole that would be collapsed through the site, ejecting the slurry to the surface."

**Response:**
This specific double-borehole scenario was not investigated in the Draft SEIS-II but was examined as part of the DOE analysis performed in support of the CCA.

In SEIS-II, the potential impact from a single-borehole scenario can be approximated by examining the analysis of a future intrusion that penetrates directly into the repository and subsequently encounters a pressurized brine reservoir. The analysis showed that in an intrusion borehole case, contamination may reach the Culebra Dolomite, but transport modeling showed that only very small amounts of contaminants would migrate from the point of release over 10,000 years. At a stock well 3 kilometers (2 miles) from the point of release, under the most severe case analyzed, no human health impacts (less than $10^{-20}$ probability of an LCF) would result. Results of these analyses are detailed in Chapter 5 and Appendix H of SEIS-II and are supported by conclusions drawn in the CCA for a similar single-borehole penetration. Analysis of the double-borehole scenario (referred to as the E1E2 scenario in the CCA), which takes into account the probability of its occurrence, suggested that WIPP would meet all regulatory requirements.

A text box has been added to Appendix H to provide additional information on the E1E2 scenario analysis performed in the CCA and why it was not analyzed in SEIS-II.

**13.07 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-070 | 3 | Alice H. Gray | |

**Comment:**
"The area around WIPP is rich in oil, gas and minerals. When will there be future exploration and intrusion?"

**Response:**
In the CCA, active institutional controls are assumed to be completely effective in preventing oil and gas exploration and potential intrusions during the first 100 years after site closure. Passive institutional controls are assumed to be effective in reducing drilling rates by two

orders of magnitude for the 600 years that follow the first 100 years after closure. Details of these controls are provided in Chapter 7 of the CCA. The performance assessment models the probability and effects of intrusion into the disposal system over the 10,000-year regulatory time period.

**13.07 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 120 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 121 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 122 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 124 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
One commenter said that DOE has not performed enough analyses regarding natural resource exploration and development. The commenter said that the issue of hydrocarbon, potash, and halite (for brine drilling fluid) recovery should have been discussed at greater length in SEIS-II and should have treated hydrofracturing, brine injection, concerns of the potash industry regarding fluid injection, subsidence, and estimated reserves.

**Response:**
Because of the large interest expressed during the public comment period about the need for additional information on natural resource exploration and development, Section 4.1.3 has been modified to provide the additional information and data requested by the commenter.

DOE has included the appropriate maps and discussion in Section 4.1.3 of SEIS-II.

**13.07 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 123 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 4-21. The discussion of the water level rises in the Culebra Aquifer and the potential impact of salt water disposal wells would be clearer by preparing and presenting a figure such as the one published in EEG-62."

**Response:**
DOE has included a figure and related discussion (in Section 4.1.3) showing water-level rises in observation well H-9 to support this discussion. Rises in water levels have been observed in several wells completed in the Culebra Dolomite south of the WIPP site. Various stakeholders have asserted that these rises have been caused by unknown well injection activities south of the WIPP site.

**13.07 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 125 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 5-4. The statement is made (3 lines above Section 5.1.2) that 'No activity is occurring under these leases, and the Department may acquire these leases in the future.' The current status of these leases, including the producing gas wells and the recent court judgment, deserve a more detailed description in the final SEIS."

**Response:**
The commenter is referred to the discussion of the status of leases in the Land Withdrawal Area provided in Section 4.1.1 of SEIS-II for the most current information. Additional information is provided in Section 2.3.2.2 and in Appendix DEL of the CCA.

**13.07 (10)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 164 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 5-162. Last paragraph. The elimination of former 'Control Zone IV' made this land available for oil and gas recovery as well as for potash mining. There are a number of producing wells in this area now. Water flooding is also permitted and is occurring."

**Response:**
Section 5.10 has been updated to reflect this comment.

**13.07 (11)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 165 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 5-163. Section 5.11. The LWA prohibits the extraction of mineral and hydrocarbon resources from the Land Withdrawal Area in perpetuity, not just during the period of disposal operations."

**Response:**
The correction has been made in Section 5.11 of SEIS-II.

**13.07 (12)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163C | 20 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163C | 21 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**
One commenter said that DOE has refused to consider a brine-injection scenario similar to the Hartman incident.

**Response:**
The commenter refers to a water-flooding incident that occurred in Lea County, which allegedly caused injected water to escape an approved injection zone and to migrate into the Salado Formation onto a lease owned by a Mr. Doyle Hartman. Mr. Hartman won a lawsuit filed against Texaco for damages; however, the case is under appeal.

DOE understands this type of water flooding incident at WIPP is highly unlikely because of differences in geology between the WIPP site and the Rhodes Yates site in southeast New Mexico, changes in oil-well completion practices from the 1940s, and improved reservoir management practices. The commenter is referred to the discussion by SNL staff in EEG-62, *Fluid Injection for Salt Water Disposal and Enhanced Oil Recovery as a Potential Problem for the WIPP: Proceedings of a June 1995 Workshop and Analysis*, for further information on this topic.

DOE examined the potential impacts of fluid injection in the form of water flooding and salt water disposal for WIPP conditions in the CCA. The potential effects of water flooding and salt water disposal were modeled assuming operation of two hypothetical injection wells located at the land withdrawal boundary over a 50-year period. The results of the modeling, given in Section SCR.3.3.1.3.1 of the CCA, indicate that fluid injection would not have a significant impact on repository performance. Specifically, even for the least favorable rock properties considered, the amount of brine reaching the repository over 10,000 years would be well within the range of volumes of brine expected to flow into the repository during normal undisturbed performance. On this basis, fluid injection was screened out of the performance assessment calculations. Upon review of the CCA, EPA requested additional information and analyses of fluid injection. This more detailed analysis also shows no significant consequences to repository performance. A text box has been added to Appendix H to provide additional information on scenarios that were identified and selected for further evaluation.

**13.07 (13)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-071 | 5 | Patricia Hall | |

**Comment:**
"[The CCA states that] there will be no drilling for the next 700 years even though the site is surrounded by oil and gas wells and potash mines and those resources also are within the 16-square mile site boundaries."

**Response:**
The comment is not correct. In the CCA, active institutional controls are assumed to be completely effective in preventing oil and gas exploration and potential intrusions over the first 100 years after site closure. Passive institutional controls are assumed to be effective in reducing drilling rates by two orders of magnitude for the 600 years that follow the 100 years after closure (i.e., drilling rates would be 100 percent lower than they would be without passive institutional controls). Details of these controls are provided in Chapter 7 of the CCA.

**13.07 (14)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB6 | 62 | David Pace | |

**Comment:**
"Potash is a nonrenewable resource that is included in fertilizer. Even though most U.S. potash mines are located near the WIPP site, DOE does not consider the potential use of radioactive potash in agriculture."

**Response:**
DOE does not believe that radionuclides originating in the WIPP repository would be a potential source of radionuclides in minable potash. However, potash is naturally radioactive because of the presence of potassium-40, a naturally occurring, long-lived (1.3 billion-year half-life) radioactive isotope of potassium.

Within the controlled area of WIPP, only the McNutt Member of the Salado Formation provides potash of quality for commercial use. Results of the SEIS-II performance assessment (Section 5.1.12 for the Proposed Action) indicate that contamination that may migrate stays in the vicinity of the repository. Furthermore, studies indicate that conventional borehole plugging practices would isolate hydraulic drivers and prevent contaminated brine from reaching the McNutt Member of the Salado. DOE also would use active and passive institutional controls to prevent or limit intrusion into the repository, including potential potash mining.

**13.07 (15)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163C | 10 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163C | 12 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**
One commenter stated that potash mining in the WIPP area could cause overlying strata to fracture, subside, and collapse, thereby increasing the hydraulic conductivity of the Rustler aquifers and damaging oil well casings. The commenter also said that if water were to flood potash mines, the water would travel laterally along marker beds in the Salado Formation and subsequently reach the WIPP shafts.

**Response:**
The hydrogeologic impacts of potash mining were examined in SEIS-II, following guidance provided by EPA in 40 CFR Part 194, by evaluating the net impact of mining on the Culebra Dolomite. The analysis indicated that the net impact of mining would be a net increase in the overall hydraulic conductivity of the Culebra Dolomite. SEIS-II analyses of the most conservative cases of inadvertent drilling through the repository and into a pressurized brine reservoir showed there could be radionuclide releases to the Culebra Dolomite. However, transport analyses of these releases based on flow fields representative of the hydraulic impacts of potash mining showed that contaminants would be highly sorbed near the point of intrusion. The small amounts of contamination reaching a stock well 3 kilometers (2 miles) downgradient from the point of intrusion would yield very small human health impacts (less than $1 \times 10^{-20}$ probability of an LCF). Results of these analyses are detailed in Chapter 5 of SEIS-II and are supported by conclusions drawn in the CCA.

The commenter's scenario of water flooding potash mines and subsequently reaching WIPP shafts is not considered plausible, because the zones of potash ore are found in the McNutt Formation 400 to 525 meters (1,310 to 1,720 feet) below land surface and 75 to 250 meters (250 to 820 feet) above the repository horizon.

**13.07 (16)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163C | 14 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**
"DOE states in the SEIS (p. H-14) that it has taken this [potash mining] into consideration by examining the impact of a 1000-fold increase in the hydraulic conductivity of the Culebra dolomite due to potash mining, but the reference given (DOE 1996f) is not listed in Appendix H. CARD expects to be granted ample time to analyze said reference after its identity is revealed to us."

**Response:**
The reference was also presented in Chapter 5; it is the CCA. All interested stakeholders have had the opportunity to review the CCA since its submittal to the EPA in November 1996.

## 13.08 Uncertainties

### 13.08 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 1 | Mark Rudd | |
| ALB1 | 34 | Eric James | |
| ALB1 | 36 | Eric James | |
| ALB4 | 51 | Lawrence Carter-Long | |
| ALB6 | 23 | Dan Kerlinsky | |
| C-070 | 1 | Alice Gray | |
| C-107 | 2 | Deborah M. Brink | |
| C-128 | 2 | Mary Fran O’Connor | |
| C-133 | 16 | Bonnie Bonneau | Legions of Living Light |
| C-133 | 19 | Bonnie Bonneau | Legions of Living Light |
| C-152 | 154 | Robert H. Neill | Environmental Evaluation Group |
| C-154 | 5 | Tom Marshall, Jack Mento, et al. | Rocky Mountain Peace and Justice Center |
| C-157 | 3 | Wendy Lynne Botwin | |
| C-163A | 20 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |
| C-163A | 60 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |
| C-163A | 78 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |
| C-163C | 5 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |
| C-163C | 13 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |
| C-163D | 5 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |
| C-163D | 8 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |
| C-163E | 14 | No name provided | Citizens for Alternatives to Radioactive Dumping |
| DE1 | 9 | Leroy Moore | |
| DE1 | 75 | Sam Cole | |
| DE1 | 134 | Andrew Thurlow | |
| E-012 | 3 | Charles Hyder | |
| E-056 | 21 | Linda Hibbs | |
| OR1 | 22 | Don Hancock | Southwest Research and Information Center |
| SF1 | 95 | Tom Udall | Attorney General of New Mexico |
| SF2 | 20 | Tai Bixby | |
| SF2 | 30 | Shawn Sigsredt | |
| SF3 | 39 | Jai Lakshman | SEVA Foundation |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF3 | 40 | Jai Lakshman | SEVA Foundation |
| SF3 | 130 | Norman Budow | |
| SF4 | 57 | Deborah Reade | |
| SF4 | 98 | Joseph Oliaro | |
| SF5 | 68 | Sharon Laurie | |
| SF6 | 6 | Sheldon Herman | |
| SF7 | 47 | Marvin Mattis | |

**Comment:**
A number of commenters said that DOE has not adequately addressed possible future processes or events that could affect the long-term performance of WIPP.

**Response:**
DOE must demonstrate that WIPP can comply with the waste isolation requirements and criteria issued by EPA in 40 CFR Parts 191 and 194. EPA was aware of the uncertainty in predicting 10,000 years into the future when it wrote the standard. The requisite performance assessments need not provide complete assurance that the containment requirements would be met, primarily because of the 10,000-year period of regulatory interest and the inherent uncertainties in this compliance demonstration. EPA further indicates that proof of the future performance of a disposal system is not to be considered in the ordinary sense of the word, but instead requires a “reasonable expectation” that compliance would be achieved.

These regulations and criteria require the performance assessment to consider WIPP in an “undisturbed” state subject only to natural forces and in a “disturbed” state, as it may be affected by natural and human-induced events (including intrusion through drilling into the repository or mining above the waste horizon). The SEIS-II analyses (Sections 5.1.12, 5.2.12, 5.3.12, and 5.4.12 and Appendix H) show that isolation of TRU waste at WIPP is feasible, and the CCA demonstrates that the compliance requirements of 40 CFR Parts 191 and 194 would be met. The development of future processes, events, and features that could affect WIPP’s long-term performance is discussed in Appendix SCR of the CCA. The development, compilation of past work, and screening of these features, events, and processes are discussed.

Performance assessment sections in Chapter 5 of SEIS-II have been modified to better enable a comparison of SEIS-II results with those in the CCA.

**13.08 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 12 | Maurice Weisberg | |
| ALB2 | 98 | Lesley Weinstock | |
| ALB3 | 22 | Robin Seydel | |
| ALB5 | 39 | Susan Rodriguez | |
| ALB6 | 57 | David Pace | |
| ALB6 | 80 | Judy Pratt | |
| ALB6 | 123 | Alan Moskowitz | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB6 | 127 | Alan Moskowitz | |
| BO1 | 97 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| C-053 | 1 | David Hensel | |
| C-103 | 2 | Judith Babka | |
| C-106 | 3 | Jerry L. Gerber | |
| C-124 | 2 | Roy Young | |
| C-127 | 1 | Thomas M. Rauch | |
| C-133 | 13 | Bonnie Bonneau | Legions of Living Light |
| C-152 | 5 | Robert H. Neill | Environmental Evaluation Group |
| C-163C | 47 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163D | 2 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163E | 17 | No name provided | Citizens for Alternatives to Radioactive Dumping |
| C-165 | 2 | Steven M. Herman | Stan A. Huber Consultants, Inc. |
| DE1 | 22 | Kathleen Sullivan | |
| DE1 | 34 | David Measom | |
| DE1 | 184 | Amy Marschak | |
| DE1 | 193 | | Scott Hatfield |
| E-063 | 3 | Tom Moore | |
| SF2 | 8 | Kathleen Sullivan | |
| SF3 | 120 | Anna Katherine | |
| SF4 | 76 | Bonita McCune | |
| SF4 | 86 | Bonita McCune | |
| SF5 | 3 | Scott Shuker | |
| SF5 | 33 | Louise Baum | |
| SF5 | 53 | Jeff Berg | |
| SF6 | 11 | Rebecca Henderson | |
| SF7 | 23 | Suzanne Phillips | |
| SF7 | 119 | Charlotte Cooke | |
| SF7 | 143 | Barbara Conroy | |
| SF8 | 34 | Ame Solomon | |

**Comment:**
A number of commenters questioned the long-term ability of the WIPP site to isolate TRU waste.

**Response:**
The fundamental premise of successful waste isolation at the WIPP facility is that salt creep would ultimately encapsulate the waste and provide a long-term barrier to migration of brine contaminated with radionuclides and hazardous chemicals to the accessible environment. Over a long period of time, relatively small amounts of brine in the immediate vicinity of the waste disposal rooms and disturbed rock zone would be expected to seep into the repository and come into contact with waste materials. This would result in at least some corrosion of the waste containers. Because only small quantities of brine would be anticipated, it is unlikely that a slurry of brine and waste would form.

On this basis, the long-term performance assessment analyses in SEIS-II have indicated that no impacts to local groundwater and the Pecos River from an undisturbed WIPP repository would be expected for at least 10,000 years. DOE also analyzed the consequences of a potential future intrusion that penetrates the repository and subsequently encounters a pressurized brine reservoir. The analysis showed that in an intrusion borehole case, contamination may reach the Culebra Dolomite, but transport modeling showed that only very small amounts of contaminants would migrate from the point of release over 10,000 years. At a stock well 3 kilometers (2 miles) from the point of release, under the most severe case analyzed, no human health impacts (less than $10^{-20}$ probability of an LCF) would result. Results of these analyses are detailed in Chapter 5 and Appendix H of SEIS-II.

**13.08 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 1 | Mark Rudd | |
| ALB6 | 2 | William Beems | |
| ALB6 | 23 | Dan Kerlinsky | |
| C-070 | 1 | Alice Gray | |
| C-118 | 8 | David Proctor | |
| C-154 | 5 | Tom Marshall, Jack Mento, et al. | Rocky Mountain Peace and Justice Center |
| CA1 | 71 | Richard Malcolm | |
| SF1 | 62 | Virginia Miller | |
| SF3 | 111 | Anhara Lovato | |
| SF4 | 71 | Mary Riseley | |
| SF4 | 83 | Bonita McCune | |
| SF5 | 76 | Michael Collins | |

**Comment:**
A number of commenters asked why DOE is limiting its analysis to 10,000 years, when many of the radionuclides of concern have half-lives well beyond 10,000 years.

**Response:**
DOE recognizes that transuranic isotopes remain radioactive for periods of time that exceed the 10,000-year regulatory period established by EPA for compliance certification purposes. DOE believes that this period is appropriate for NEPA purposes for the same reasons that EPA chose this period for other regulatory purposes. EPA chose a 10,000-year time frame “because that appears to be long enough to distinguish geologic repositories with relatively good capabilities to isolate waste from those with relatively poor capabilities. On the other hand, this period is short enough so that major geologic changes are unlikely and repository performance might be reasonably projected” (50 FR 38070). “There is no intention to indicate that times beyond 10,000 years were unimportant but [EPA] felt that a containment system capable of meeting the proposed containment requirements for 10,000 years would continue to protect people and the environment well beyond 10,000 years” (50 FR 38076). EPA also recognized that there is no possibility of complete assurance that the standards would be met; it recognized that there would inevitably be substantial uncertainty in projecting disposal system performance. Proof

of future performance is not to be had in the ordinary sense of the word; instead, what is required is a “reasonable expectation” that compliance would be achieved.

**13.08 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-012 | 5 | Eleanor Ponce | |

**Comment:**
“Once it’s there, there is absolutely NO WAY to protect people from it - not for 100 years, not for 10 years, not for ONE year - much less 10,000! (We might actually make it for a year - but that isn’t certain at all since one roof was already collapsing while it was still under construction!)”

**Response:**
The fundamental premise of waste isolation at WIPP is that salt creep would ultimately encapsulate the waste and provide a long-term barrier to migration of waste-contaminated brine to the accessible environment. These waste isolation characteristics have been incorporated into the long-term performance analyses of SEIS-II (see Section 5.1.12 for the Proposed Action and Appendix H).

To date, salt slabs have detached and fallen on three different occasions. These incidents occurred in old rooms constructed in the early to mid-1980s as a part of the SPDV program. All three occurrences were anticipated, and no “ground control” measures were taken to prevent them. While some vibration was felt in the excavation, the integrity of the repository was not jeopardized and no catastrophic consequences resulted.

In no case has a roof slab dropped during repository construction.

**13.08 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-044 | 3 | Sally Spencer | |

**Comment:**
“How can we even dream that anything can [be] made safe from all unforeseen, unpredictable potentialities in this time? Earth movement, water shifting, the explorations of future uninformed human or other beings could all be catastrophic!”

**Response:**
EPA has developed the standard with which DOE must comply before WIPP could open. EPA built safety measures into the standard that were developed through scientific analysis and public participation. EPA recognized the uncertainty in predicting the future and designed additional safety measures in the standard. DOE will ensure the safety of the public and the environment by demonstrating compliance with the EPA standard.

Analyses performed by DOE to date have shown that the long-term performance of the WIPP facility would have very little impact on the accessible environment during the next 10,000 years. Although the SEIS-II analyses consider only selected scenarios in the long-term performance assessment of the WIPP facility, the CCA has considered a broad range of features, events, and processes in its probabilistic regulatory analysis of long-term performance. Details of how these features, events, and processes were considered in the performance assessment are provided in Appendix SCR of the CCA.

A discussion of the scenarios considered by DOE but not evaluated in SEIS-II has been included in a text box in Appendix H.

**13.08 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-080 | 2 | Mike Dempsey | |

**Comment:**
"You will have no doubt that the waste will be contained for at least 10,000 years. If you think about the fact that the salt has been in place for 200 plus million years, you will be sure that the waste will be safe for about a hundred million years."

**Response:**
The analyses of Sections 5.1.12, 5.2.12, 5.3.12, 5.4.12, and Appendix H show that isolation of TRU waste is feasible.

**13.08 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-151 | 12 | Don Moniak | Serious Texans Against Nuclear Dumping |

**Comment:**
"The DSEIS states that 'intense local thunderstorms produce runoff and percolation,' a fact that can be confirmed by even a short time area resident. Obviously, any contamination present during one of these normal events could easily migrate to the Pecos or result in contaminated soil, groundwater, and livestock or wildlife water supplies."

**Response:**
The long-term performance assessment analyses in SEIS-II have shown that no impacts to local groundwater and the Pecos River from an undisturbed WIPP repository would be expected for at least 10,000 years.

DOE did analyze the consequences of a potential future intrusion that penetrates the repository. The analysis showed that in an intrusion borehole case, contamination may reach the Culebra Dolomite, but transport modeling showed that only very small amounts of contaminants would migrate from the point of release over 10,000 years. At a stock well 3 kilometers (2 miles) from the point of release, under the most severe case analyzed, no human health impacts (less than $10^{-20}$ probability of an LCF) would result. Results of these analyses are detailed in Chapter 5 and Appendix H of SEIS-II. The occurrence of high-intensity local thunderstorms could likely cause a larger localized area of soil contamination but would not likely cause a widespread overland transport of radioactive materials to the Pecos River.

DOE also analyzed the consequences of an intrusion borehole that penetrates the repository and the brine reservoir. These analyses showed that if generally accepted borehole plugging techniques and materials were used, brine that might mix with waste in the repository and move up the intrusion borehole would not reach the Rustler Formation horizon and seep into the Culebra Dolomite. Results of these analyses are detailed in Chapter 5 and Appendix H of SEIS-II.

## 13.09 Water

### 13.09 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 85 | Janet Greenwald | |
| ALB2 | 98 | Lesley Weinstock | |
| ALB3 | 25 | Robin Seydel | |
| ALB3 | 61 | David Mitchell | |
| ALB4 | 98 | Angela Wiebalk | |
| ALB4 | 110 | Mary Steele | |
| ALB5 | 32 | Susan Rodriguez | |
| ALB6 | 53 | David Pace | |
| ALB6 | 106 | Dair Obenshain | |
| ALB6 | 107 | Dair Obenshain | |
| C-106 | 2 | Jerry L. Gerber | |
| C-163E | 10 | No name provided | Citizens for Alternatives to Radioactive Dumping |
| C-163F | 5 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-166 | 5 | Elliott H. Libman, MSW | |
| DE1 | 74 | Sam Cole | |
| DE1 | 173 | Tor Mohling | |
| E-008 | 2 | Bruce Trigg | New Mexico Public Health Association |
| E-056 | 18 | Linda Hibbs | |
| SF3 | 7 | Cathy Swedlund | |
| SF7 | 82 | Bonnie Bonneau | Legions of Living Light |
| SF8 | 62 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| SF8 | 74 | Sierra Allen | |

**Comment:**
A number of commenters said that the WIPP site is wet, not dry as originally thought, and that these conditions will affect the long-term performance of the WIPP site.

**Response:**
Conditions observed in the salt beds exposed by excavations in the WIPP underground provide evidence that a limited amount of brine would flow into the repository. For the most part, these observations indicate that, while the salt beds do contain small amounts of brine within their intergranular pore spaces, the permeability and porosity of the salt are extremely low, significantly limiting the Salado Formation's ability to transmit any brine in its pore space and limiting the amount of brine available for transport. Evidence of these properties is indicated by the appearance of minor brine seeps and the occurrence of salt that has precipitated along bedding planes, cracks, and crevices. Over the long-term performance period, the limited amounts of brine in the immediate vicinity of the repository and the disturbed rock zone would be expected to seep into the repository and come into contact with waste materials. However, the fundamental premise of waste isolation at WIPP is that salt creep would ultimately encapsulate the waste and provide a long-term barrier to migration of waste-contaminated brine to the accessible environment. These waste isolation characteristics have been incorporated into the long-term performance analyses of SEIS-II (see Section 5.1.12 for the Proposed Action and Appendix H).

**13.09 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-058 | 2 | George L. Miller | |

**Comment:**
"If a leak does occur...will the radioactivity leak into the water table?"

**Response:**
In the Final SEIS-II, the computer model of groundwater flow and contaminant transport in the Culebra, used to support the CCA, was implemented to evaluate off-site releases into the Culebra resulting from analysis of selected bounding cases of inadvertent intrusion into the repository and a hypothetical pressurized reservoir within the underlying Castile Formation. In using the CCA model of the Culebra, the SEIS-II analyses used estimates of distribution coefficients for plutonium as described in Appendix MASS, Section MASS.15.2, and Appendix PAR of the CCA. Results of field and laboratory experiments indicate that physical and chemical retardation would be extremely effective in reducing the transport of plutonium and other actinides in the Culebra. Analyses also showed that in an intrusion borehole case, contamination may reach the Culebra Dolomite, but transport modeling showed that only very small amounts of contaminants would migrate from the point of release over 10,000 years. At a stock well 3 kilometers (2 miles) from the point of release, under the most severe case analyzed, no human health impacts (less than $10^{-20}$ probability of an LCF) would result. Results of these analyses are detailed in Chapter 5 and Appendix H of SEIS-II.

**13.09 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163A | 80 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**
"Some of the plutonium would move through the Rustler aquifers unretarded, at the speed of water (EEG-8, 1980, pp. 17-19). This is because in open karst conduits, flowing groundwater has less contact with the rock formation, so less plutonium is adsorbed onto the rocks (EEG-32, 1985, p. 56). Thus, plutonium-contaminated brine which enters the Rustler Formation would begin showing up at Laguna Grande as soon as the groundwater aquifers can carry it there. As shown by the water balance of the Nash Draw watershed, this time frame should be on the order of 6 to 84 years."

**Response:**
Computer modeling of groundwater flow was not specifically included in SEIS-II because radionuclide releases from the repository for both undisturbed and disturbed conditions showed no releases to the Culebra Dolomite of the Rustler Formation. However, DOE has performed numerous investigations and modeling studies in support of the CCA. The commenter is referred to Chapter 6 of the CCA for further information.

Section 4.1.3 of SEIS-II has been modified to include more recent information about the current understanding of flow and transport in the Culebra Dolomite of the Rustler Formation.

**13.09 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163C | 19 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**
"Moreover, DOE assumes that even if the hole is not cased during drilling, and contaminated brine were to reach the Rustler Formation, it would be transported only to a well used to supply water for cattle, which could then become a source of meat consumed by a cattle rancher (SEIS, 1996, p. H-14). DOE does not consider that contaminated brine could be carried all the way to Nash Draw, Laguna Grande de la Sal, and the Pecos River, thus exposing large numbers of people, because this could violate EPA standards for radiation exposure."

**Response:**
SEIS-II analyses show that contaminated brines would not reach Nash Draw, Laguna Grande de la Sal, or the Pecos River. Analyses are presented in Chapter 5 and Appendix H.

**13.09 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| DE1 | 105 | Roy Young | |

**Comment:**
"Salt deforms plastic. It will seal a repository temporarily, but it contains large amounts of water. When you heat salt, it undergoes a geological process called decrepitation."

**Response:**
Observations in the WIPP underground indicate that, while the salt beds do contain brine within their intergranular pore spaces, the permeability and porosity of the salt are extremely low, significantly limiting the Salado Formation's ability to transmit any brine in its pore space. Evidence of these properties is indicated by the appearance of minor brine seeps and the occurrence of salt that has precipitated along bedding planes, cracks, and crevices. Over the long-term performance period, the limited amounts of brine in the immediate vicinity of the repository and the disturbed rock zone would be expected to seep into the repository and come into contact with waste materials. However, the fundamental premise of waste isolation at WIPP is that salt creep would ultimately encapsulate the waste and provide a long-term barrier to migration of waste-contaminated brine to the accessible environment.

Decrepitation of the salt will not occur, because it will not be heated. DOE has found that the average increase in temperature due to radioactive decay of emplaced CH-TRU and RH-TRU waste would be less than 2ºC (3.6ºF), which is insufficient to induce significant thermal convection and thermal stresses and strains or to substantially modify anticipated chemical reactions. Increased temperatures from heat of geothermal origin and compression of gas as a result of salt creep inward are predicted to be similarly insignificant (additional information can be found in the CCA, Appendix SCR).

These characteristics have been incorporated into the long-term performance analyses, which show isolation of TRU waste to be feasible (see Sections 5.1.12, 5.2.12, 5.3.12, 5.4.12, and Appendix H of SEIS-II).

## 13.10 Characterization

**13.10 (01)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-118 | 3 | David Proctor | |
| C-118 | 9 | David Proctor | |
| C-132 | 18 | Keith Tinno | Shoshone-Bannock Tribes |
| C-152 | 46 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
Several commenters said DOE has not conducted adequate characterization and experimental studies and investigations to demonstrate the effectiveness of WIPP's long-term performance.

**Response:**
After almost 20 years of site characterization and the experimental program, in 1994 and 1995 DOE developed and applied a formalized decision method, called the systems prioritization method, that (1) analyzed the potential combinations of activities in terms of predicting contributions to long-term performance and demonstrating compliance with the regulations and criteria of 40 CFR Parts 191 and 194 and (2) analyzed performance tradeoffs with the objective of identifying combinations of scientific activities, sets of waste characteristics, and engineered alternatives with the most favorable performance indicators.

As part of this effort, DOE reviewed potential sources of uncertainty, quantified the potential impacts of these uncertainties, and implemented a specific suite of experimental activities to build the baseline used to support compliance analyses. These included (1) studies of colloid chemistry and dissolved actinide solubility, (2) rock mechanics and shaft seal investigations, (3) a multi-well tracer test in the Culebra Formation, (4) evaluations of chemical retardation and fracture-matrix flow in the Culebra Dolomite, and (5) studies of direct releases to the surface. Because of the extent of its site characterization and experimental program and the way in which uncertainties have been incorporated into its performance assessment analyses, DOE believes that it understands the natural barrier system sufficiently for the purposes of demonstrating compliance with the regulations and criteria for isolating TRU waste from the environment. Results of these experimental efforts, which are discussed in Appendix H, have been incorporated into the long-term performance analyses of SEIS-II (see Section 5.1.12 for the Proposed Action for an example).

In addition, DOE has developed a disposal phase experimental program. A primary objective of this program is to support WIPP and national TRU waste system operations through maintaining compliance certification and enhancing operations. To maintain certification, DOE would monitor and verify predicted disposal system performance and perform assessment calculations. Appendix H of SEIS-II has been updated to reflect the status of key investigations or experiments relevant to performance assessment analysis.

**13.10 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 67 | Charles Hyder | |
| ALB2 | 76 | Charles Hyder | |
| C-123 | 2 | Carol Merrill | |
| C-133 | 6 | Bonnie Bonneau | Legions of Living Light |
| C-163F | 6 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |
| DE1 | 106 | Roy Young | |
| E-012 | 29 | Charles Hyder | |
| E-012 | 31 | Charles Hyder | |
| E-012 | 33 | Charles Hyder | |
| E-012 | 34 | Charles Hyder | |
| SF8 | 63 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |

**Comment:**
A number of commenters said that DOE has not thoroughly considered the impact of thermal processes in long-term performance of WIPP.

**Response:**
Based on thermal impact studies, the planning-basis WAC include thermal loading design limits of 10 kilowatts per surface acre that would preclude any significant thermal impacts from emplaced TRU waste in the WIPP facility. DOE has found that the average increase in temperature due to radioactive decay of emplaced CH-TRU and RH-TRU waste would be less than 2ºC (3.6ºF), which is insufficient to induce significant thermal convection and thermal stresses and strains or to substantially modify anticipated chemical reactions. Increased temperatures from heat of geothermal origin ("from the center of the earth") and compression of gas as a result of salt creep inward are predicted to be similarly insignificant. The melting temperature of rock salt (NaCl) is 800ºC (1,472ºF), not 93ºC (200ºF). A text box has been added to Appendix H to provide information on scenarios and processes that were considered but not analyzed. Additional information can be found in the CCA, Appendix SCR.

**13.10 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 68 | Jim Lewis | |
| ALB6 | 151 | Steve Perin | |
| C-133 | 19 | Bonnie Bonneau | Legions of Living Light |
| C-163A | 14 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163D | 8 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| SF4 | 81 | Bonita McCune | |
| SF5 | 49 | Sarah Cowan | |

**Comment:**
A number of commenters said that DOE has not adequately addressed the impact of climate change on WIPP's long-term performance.

**Response:**
DOE has considered the uncertainties of possible future climate change in the WIPP performance assessment analyses. In support of the CCA, DOE considered the effects of future climates on groundwater flow and potential radionuclide transport in groundwater. Historic climatic conditions are discussed in Section 2.5 and Appendix CLI of the CCA. Direct effects that do not involve groundwater (e.g., wind) are not likely to affect the long-term performance of WIPP because of its depth below land surface.

On the basis of these studies, the effects of postulated climate change on groundwater flow were evaluated using a regional three-dimensional model based on a concept of basin hydrology. Results of the analysis, when considering postulated increases in effective recharge (due to a wetter climate), show that the total quantity of water in the region would increase, and groundwater velocity of all units may increase as a result of the resulting increased hydraulic gradient. A number of simulations that considered a range of conditions and properties, including the corrosion of waste drums, showed that the largest observed increase in overall flow was by a factor of approximately two.

Overall, these results suggest that if an intrusion were to cause a release of radionuclides to one of the significant water-bearing units (e.g., the Culebra Dolomite) above the repository, radionuclides would be transported at a faster rate to the accessible environment but would be diluted to lower concentrations by increased groundwater flow. Analyses showed that in an intrusion borehole case, contamination may reach the Culebra Dolomite, but transport modeling showed that only very small amounts of contaminants would migrate from the point of release over 10,000 years. At a stock well 3 kilometers (2 miles) from the point of release, under the most severe case analyzed, no human health impacts (less than $10^{-20}$ probability of an LCF) would result. (Results of these analyses are detailed in Chapter 5 and Appendix H of SEIS-II.) Thus, the impact on long-term performance of the repository would be minimal; i.e., waste would remain isolated even in a “wet” climate. A text box has been added to Appendix H to provide information on scenarios considered but not analyzed in SEIS-II.

**13.10 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 45 | Janet Greenwald | |
| ALB1 | 76 | Janet Greenwald | |
| ALB1 | 81 | Janet Greenwald | |
| ALB1 | 82 | Janet Greenwald | |
| C-163E | 9 | No name provided | Citizens for Alternatives to Radioactive Dumping |
| CA1 | 63 | Betty Richards | |
| DE1 | 61 | Margret Carde | Concerned Citizens for Nuclear Safety |
| DE1 | 125 | Kathleen Sullivan | |
| SF2 | 19a | Tai Bixby | |
| SF6 | 46 | Burleigh Shepard | |

**Comment:**
A number of commenters said that DOE has not adequately resolved concerns and issues raised by the NAS.

**Response:**
A 1996 NAS report on WIPP found that the WIPP repository has the ability to isolate waste for more than 10,000 years, assuming that it is sealed effectively and that it remains undisturbed by human activity. The report also found that if WIPP were disturbed by human activity, the consequences could be reduced, based on engineering design options and improved understanding from ongoing scientific studies.

In addition, the report recommends that analyses and experiments continue, believing that uncertainties in long-term performance could be reduced and other concerns could be eliminated. In summary, the report suggests that (1) a more comprehensive understanding of non-Salado hydrology is needed to judge the role of the Rustler Formation (Culebra) and adjacent formations in delaying radionuclide release; (2) the effects of fluid injection on the repository should be analyzed; and (3) waste solubility and transport studies should be concluded.

DOE believes that recently completed analyses of the H-19 tracer study and the present three-dimensional modeling (as presented in the CCA) provide sufficient confidence in the Culebra "model" for the purposes of compliance. DOE also found that the Dewey Lake Formation does not play a role in performance assessment analyses because, in the long term, fluids never reach that elevation given the intrusion borehole parameters. Finally, actinide solubility and colloid mobilization have been examined and incorporated into performance assessment analyses; retardation effects, based on laboratory information, have also been considered.

For the purposes of enhancing disposal operations and maintaining compliance certification, DOE has developed a disposal phase experimental program. Key to this program would be monitoring activities to verify predicted disposal system performance and additional performance assessment calculations. Appendix H of SEIS-II has been updated to reflect the status of key investigations or experiments relevant to performance assessment analysis.

**13.10 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163A | 71 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**
"The stress brought on mining of the WIPP tunnels causes plastic deformation of the salt (DEIS, 1979, pp. 9-28, 9-29). The anhydrite marker bed is more brittle than the surrounding salt, and it cracks under the stress. The largest crack so far discovered is 2 to 4 inches wide, and was found to run underneath the entire length of one of the WIPP waste storage rooms. The cracks are likely to get larger and more numerous (Chaturvedi, 1/22/86, personal communication). Fractures have also been observed the WIPP shafts in other anhydrite and siltstone beds of the Salado Formation (Jarolimek et al., 1983b, pp. 4-3, 4-4, 4-5). In any cautious, conservative approach to evaluating the suitability of the WIPP site, it should be assumed that the WIPP nuclear waste storage rooms are or will be connected to the ERDA-9 drill shaft (Chaturvedi, 1/22/86, personal communication), thus eliminating the horizontal geologic barrier."

**Response:**
The creation of the disturbed rock zone around the excavation and the disturbance of the anhydrite layers and marker beds above and below WIPP would alter the permeability and effective porosity around the repository, providing enhanced pathways for the flow of gas and brine between the waste-filled rooms and nearby interbeds. Detailed analyses of the rock mechanics associated with the development of WIPP have shown that the excavation of WIPP would create a pattern of fracturing and enhancement of permeability in the salt beds and anhydrite beds, up to and including the marker beds above and below the WIPP horizon.

After repository closure, successful isolation of TRU waste would rely on the process of salt creep to consolidate the crushed salt seal material and healing of the disturbed rock zone around the repository seal system (e.g., shaft seals, panel seals, and borehole plugging) to achieve a low-permeability barrier to release of waste from the repository. The healing process is not expected to be completely reversible but is expected to reduce the permeability and porosity of both surrounding halite and anhydrite beds within 200 years. However, the performance assessment treatment of the disturbed rock zone creates a permanent high-permeability zone that does not significantly impede the flow between the repository and affected interbeds.

This development and long-term behavior of a disturbed rock zone are key components of the conceptual model used to evaluate the long-term performance of the WIPP facility. This conceptual model, which has been accepted as valid by the Conceptual Model External Peer Review panel (see p 9-14 of the CCA), does not support the lateral pattern of anhydrite bed fracturing scenario as proposed by the commenter.

**13.10 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-012 | 35 | Charles Hyder | |

**Comment:**
"Several years (5 to 10) after WIPP excavations are completed, large blocks of salt have dropped from the ceilings of those excavations. That leaves an elevated, new cavity that the dropped block left. Now that new ceiling block will drop in another 5 to 10 years onto the original dropped block and would rupture both blocks. Thus, the excavated cavity steps upward as an ever-taller Breccia Pipe grows below that ascending cavity. If nothing else, this brings WIPP's radioactive implants into direct hydrological contact with the strata encountered by WIPP's synthetic Breccia Pipes. Breccia Pipes often reach the surface with a final collapse-subsidence yielding a surface depression. Roger Y. Anderson (UNM) and Douglas W. Kirkland have conducted many studies of Breccia Pipes, and they have concluded that the WIPP site is a natural for Breccia Pipe formation. Prompt collapse of huge WIPP ceiling blocks confirms their conclusion. Multitudes of steel bolts have failed to keep WIPP's ceiling blocks from descending. Breccia pipes 1000 ft. in height that break the surface are often encountered in the northern Delaware Basin. Occasionally a Breccia Pipe 2000 ft. tall is found there. That's almost as deep as WIPP!"

**Response:**
The commenter has erroneously associated the process of salt creep and observed collapse features in the WIPP excavation with the dissolution-related feature called a breccia pipe, which is a particular type of collapse breccia feature. Collapse breccias, which are present at several places around other margins of the Delaware Basin, are attributable to deep dissolution by relatively fresh groundwater from the Capitan Limestone. These types of features have not been found in boreholes away from the basin margins.

DOE has investigated the hydrology of important geologic units overlying the WIPP facility for early 20 years and recognizes the importance of karst features and related dissolution processes in defining the surface features in the region surrounding WIPP. The current understanding of the extent, timing, and features related to dissolution (including a brief history of past project studies related to karst) in the area surrounding WIPP is described in Section 4.1.3.2 of SEIS-II. In summary, these studies and investigations have shown considerable evidence of dissolution and karst features at shallow depths. The surface locally has a karst terrain containing sinkholes, solution-subsidence troughs from both surface and subsurface dissolution. However, the results of past studies suggest that these dissolution processes are generally found in higher stratigraphic units and within a few hundred feet of the land surface. No evidence collected to date would suggest that these shallow dissolution processes are active within the deeper Salado Formation. Deep dissolution at the WIPP site has been eliminated from the performance assessment calculations on the basis of low probability of occurrence over the next 10,000 years. The impacts of shallow dissolution on the travel times of potential releases from WIPP were not discussed in SEIS-II because the analyses predicted that there would be no releases to the Culebra. However, considerable work was done in support of the CCA addressing this specific issue. A text box has been added to Appendix H to provide additional information on events and processes that were considered but not analyzed in the SEIS-II. Events and processes, such as dissolution, were identified and selected for further evaluation.

## 13.11 Geology and Hydrology

### 13.11 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 85 | Karen Navarro | |
| ALB5 | 31 | Susan Rodriguez | |
| C-151 | 10 | Don Moniak | Serious Texans Against Nuclear Dumping |
| C-156 | 9 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |
| C-163H | 1 | David T. Snow | |
| C-163H | 8 | David T. Snow | |
| C-163H | 10 | David T. Snow | |
| C-163H | 12 | David T. Snow | |
| DE1 | 147 | Amory Narvaes | |
| SF3 | 39 | Jai Lakshman | SEVA Foundation |
| SF3 | 76 | Sasha Pyle | Religious Society of Friends |

**Comment:**
A number of commenters questioned DOE’s ability to predict the long-term performance and risks of WIPP, citing uncertainties in the geology and hydrology at the site. Some commenters said DOE has failed to address a number of unresolved issues related to flow and transport processes in shallow water-bearing units above the WIPP facility.

**Response:**
Over the past 20 years, DOE has focused its site characterization and experimental program on developing an adequate understanding of key elements of the natural barrier system (e.g., geology and hydrology) that would serve to isolate TRU waste from the environment. Key elements include, for example, the following:

- The rock mechanics and hydraulic behavior of the Salado salt beds (including the process of salt creep and the propagation of fractures in the host rock).
- The quantity and rate of brine inflow.
- The gas generation potential of emplaced waste.
- The characteristics of the pressurized brine reservoirs that underlie the repository.
- Flow and transport in the Culebra Dolomite.

Even after two decades of site characterization and experimentation, uncertainties remain due to the intrinsic variability from heterogeneities of the natural system. Uncertainties are also inherent in the events and processes necessary to determine the ability of WIPP to isolate waste. To overcome these uncertainties, various conceptual understandings of the natural system (models) have been advanced and considered, and parameter distributions have been developed as appropriate. In instances for which these uncertainties cannot be reasonably treated, conservative choices were made in selecting modeling assumptions and parameter values. Because of the extent of its site characterization and experimental program and the way in which uncertainties have been incorporated into its performance assessment analyses, DOE believes that it understands the natural barrier system sufficiently for the purposes of demonstrating compliance with the regulations and criteria for isolating TRU waste from the environment. Results of these analyses are detailed in Chapter 5 and Appendix H of SEIS-II.

**13.11 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 20 | Sean Asghar | |
| ALB2 | 62 | Jeff Radford | Business People Concerned about WIPP |
| ALB3 | 64 | David Mitchell | |
| ALB4 | 34 | Jeri Rhodes | |
| ALB6 | 50 | David Pace | |
| C-163A | 14 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |
| C-163A | 16 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |
| C-163A | 80 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |
| C-163D | 6 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |
| C-163F | 8 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |
| CA1 | 63 | Betty Richards | |
| SF7 | 12 | Sister Penelope McMullen | |
| SF8 | 65 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |

**Comment:**
A number of commenters stated that DOE has not adequately analyzed the occurrence or impact of karst and salt dissolution processes and features on the long-term performance of WIPP.

**Response:**
DOE has investigated the hydrology of important geologic units overlying the WIPP facility for nearly 20 years and is well aware of the importance of karst features and related dissolution processes in defining the surface features in the region surrounding WIPP. The current understanding of the extent, timing, and features related to dissolution (including a brief history of past project studies related to karst) in the area surrounding WIPP is described in Section 4.1.3.2 of SEIS-II and in Appendix DEF of the CCA. In summary, these studies and investigations have shown considerable evidence of dissolution and karst features at shallow depths. The surface locally has a karst terrain containing sinkholes, solution-subsidence troughs from both surface and subsurface dissolution. However, the results of past studies suggest that these dissolution processes are generally found in higher stratigraphic units and within a few hundred feet of the land surface. No evidence collected to date would suggest that these shallow dissolution processes are active within the deeper Salado Formation. Deep dissolution at the WIPP site has been eliminated from the performance assessment calculations on the basis of low probability of occurrence over the next 10,000 years.

The impacts of shallow dissolution on the travel times of potential releases from WIPP were not discussed in the Draft SEIS-II because the analyses predicted that there would be no releases to the Culebra. However, considerable work was done in support of the CCA addressing this specific issue. Appendix H of SEIS-II has been modified to include information on events and processes, such as dissolution, considered but not analyzed in SEIS-II.

**13.11 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 136 | Deborah Reade | |
| SF1 | 29 | Nausika Richardson | |

**Comment:**
Two commenters said that transport at the Rustler-Salado contact and within the Culebra Dolomite were not adequately considered in SEIS-II. One of the commenters said the interbeds in the Salado are potential pathways for contaminants to reach the surface.

**Response:**
The Salado Formation contains beds of primarily anhydrite, referred to as “interbeds,” which are continuous laterally over large distances and which range in thickness from less than an inch to a few feet. Because they are brittle, in contrast to the halite from the Salado Formation, they contain fractures that may represent potential pathways for contaminated brine to move out of the repository and toward the accessible environment. Calculations of long-term repository performance, which consider brine flow into the repository and potential gas pressure buildup from corrosion of the waste containers and biodegradation of certain waste

materials, indicate that contamination would not move along the interbeds in quantities sufficient to result in significant releases. The anhydrite interbeds are discussed in Chapter 4 and the results of long-term waste isolation analyses are presented in Chapter 5 and Appendix H of SEIS-II.

The contact zone between the Salado and the Rustler Formations was discussed in Chapter 4 and Appendix H of SEIS-II. In the vicinity of Nash Draw, there is evidence that some rock units have dissolved because a residue of insoluble material remains at the contact zone. The eastern limit of dissolution at the top of the Salado Formation is east of Livingston Ridge and west of the WIPP site. Boreholes drilled close to WIPP show a complete stratigraphic section with no solution residue. Because of these facts, as well as the large vertical distance between the Rustler-Salado contact and the WIPP horizon, DOE does not deem the contact to be as significant a potential flowpath for potential off-site migration as the Culebra Dolomite. Therefore, more emphasis was placed on the potential role of the Culebra Dolomite in transporting contaminants away from WIPP. Section 4.1.3 of SEIS-II has been modified to provide additional information on the significance of the Salado-Rustler contact zone to the long-term performance of WIPP. Additional information can be found in Appendix DEF of the CCA.

In the Final SEIS-II, the computer model of groundwater flow and contaminant transport in the Culebra, used to support the CCA, was implemented to evaluate off-site releases into the Culebra resulting from analysis of selected bounding cases of inadvertent intrusion into the repository and a hypothetical pressurized reservoir within the underlying Castile Formation. The analysis showed that in an intrusion borehole case, contamination may reach the Culebra Dolomite, but transport modeling showed that only very small amounts of contaminants would migrate from the point of release over 10,000 years. At a stock well 3 kilometers (2 miles) from the point of release, under the most severe case analyzed, no human health impacts (less than $10^{-20}$ probability of an LCF) would result. Results of these analyses are detailed in Chapter 5 and Appendix H of SEIS-II. Additional information can be found in the CCA.

**13.11 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 64 | David Mitchell | |

**Comment:**
"In dismissing karst development, on sheet [page] H-85, you say that you've done a potash mining scenario that analyzed and incorporates a 1,000 increase in the hydraulic conductivities. That's the potash mining scenario.

"And that is supposed to fully investigate the potential effects of increased permeability from any cause, including karst development. Then in the paragraph immediately above that it says, 'Hydraulic conductivity across the site varies by a factor of 1,000,000.' So I guess for purposes of this report 1,000 is the same as 1,000,000."

**Response:**
The Final SEIS-II relied on previous analysis of the effect of potash mining performed by DOE in support of the CCA. In the CCA, evaluation of the effects of potash mining that would increase the hydraulic properties of the Culebra Dolomite in areas above known potash reserves near WIPP showed that groundwater flow paths in the Culebra would change from current flow conditions that migrate through high zones of transmissivity to the south and east to a more westerly flow condition that migrates through lower zones of transmissivity. As a result, migration of key radionuclides downgradient of WIPP would be reduced to below rates postulated for unmined scenarios, and no off-site radiological impacts via the groundwater pathway are postulated.

**13.11 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163A | 72 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**
"The two most likely natural mechanisms which could create a breach of the WIPP site are: (1) an open fracture in the Castile anhydrite, forming a vertical connection between the Castile brine reservoir and the ERDA-9 drill shaft, and (2) fractures in the Salado anhydrite marker bed, creating a preferential pathway for brine flow along the 560-foot horizontal distance between the high-level waste storage area and the WIPP-12 drill role, which is already connected to the Castile brine reservoir. There is no way to predict when this breach of the WIPP site will occur. Over geologic time, such a breach is almost inevitable."

**Response:**
DOE disagrees with the commenter's characterization of potential breaches of WIPP. There are no direct pathways from existing brine reservoirs to the repository and, by design, no drill holes through the area enclosed by the WIPP workings have been allowed to penetrate down to the stratigraphic interval potentially containing Castile brines.

Detailed analysis of the rock mechanics associated with the development of WIPP has shown that the excavation of WIPP would create a pattern of fracturing and enhancement of permeability in the salt beds and anhydrite beds, up to and including the marker beds above and below the WIPP horizon. This development of a disturbed rock zone is a key component of the conceptual model used to evaluate the long-term performance of the WIPP facility. This conceptual model, which has been accepted as valid by the Conceptual Model External Peer Review panel (see page 9-14 of the CCA), does not support the lateral pattern of anhydrite bed fracturing scenario as proposed by the commenter.

### 13.11 (06)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF8 | 61 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**
"All the geologic mechanisms necessary for a complete failure of waste containment are present at the WIPP site and have been well-known for ten years or more."

**Response:**
Regulations and criteria applicable to waste disposal at WIPP, which were established by EPA, provide that the compliance analyses are to include both natural and human-induced processes and events that can have an effect on the disposal system. The analyses are not to consider processes and events that have a probability of less than 1 in 10,000 of occurring during the 10,000-year period of interest. (However, EPA requires the effects of drilling events and mining on waste isolation to be included in the compliance analyses.) Evaluation of past and present natural geologic processes (e.g., tectonics, earthquakes, faulting) in the region indicates that none has the potential to breach the repository within 10,000 years. A text box has been added to Appendix H to provide information on processes and events considered but not analyzed in SEIS-II.

## 13.12 No Action Alternatives

### 13.12 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-021 | 3 | Ruth Weiner | |

**Comment:**
"Some doses for the No Action Alternative 2, leaving the waste stored where it now is, are somewhat smaller than for the proposed action—a questionable result that really doesn't make much sense. If surface storage were adequate, neither the National Academy of Sciences (in 1957 and 1980), nor the U.S. Geological Survey (in 1979), nor the U.S. Congress would have supported mined geologic disposal of this waste. The intent of mined geologic storage was and is to sequester radioactive materials from the accessible environment in which people live. The apparent result that exposure to radioactive materials is greater from a geologic repository, for 10,000 years, than from just leaving the material in unmonitored surface storage for that period of time, contradicts common sense. Why did the Draft SEIS analysis provide this result?

"Several explanations may apply. First, a comparison of Tables H-26 and I-9 indicates that, as expected, direct dose to an intruder is greater for No Action Alternative 2 than for the proposed action. Conversion from rem to LCF is done differently for the two cases, so that the results of these conversions may not even be comparable. Second, there were some inexplicable differences in the radionuclides considered: e.g., Y-90 was included for the proposed action but not for no-action Alternative 2, although Y-90 is a daughter of the relatively short-lived Sr-90. Third, although decay and ingrowth appear to be incorporated in the same way by the computer codes used in the two cases (NUTS and PANEL for the proposed action, MEPAS and GENII for no-action Alternative 2), the method for calculating the decay to the time of intrusion for no-action Alternative 2 is not clear. Fourth, there is no table for the proposed action that can be compared directly to Table I-11. The relationship between Table I-11 and Figures I-4 and I-5 is not clear: were the curves in Figures I-4 and I-5 integrated to give Table I-II? Why are the abscissae of Figures I-4 and I-5 given as 70-year lifetimes instead of just as years; the 'lifetime' unit is arbitrary and misleading."

**Response:**
The commenter is correct that benefits of geologic disposal over surface storage should be more clearly articulated. Long-term surface storage does offer higher opportunties for human impacts in two areas. One is obviously the potential for human contact by direct exposure with surface stored waste or from waste brought to the land by drilling.

DOE agrees with the commenter that the issue of the probability or rate of intrusion after closure should be considered when comparing the impacts of drilling intrusions at WIPP with those analyzed at the surface burial facilities at the generator sites. Overall, the long-term environmental release waste left at generator sites as described for No Action Alternative 2 would result in exposures to much larger populations. The aggregate impact over all sites over 10,000 years was estimated to result in approximately 800 LCFs. These impacts also do not include the significant impacts of direct intrusion into the site waste, which for No Action Alternative 2 would have the potential of occurring at a much higher frequency than at WIPP. A discussion of these differences in probabilities is addressed in a text box in Chapter 5.

With regard to the first explanation offered by the commenter, the doses calculated at the sites are expected to differ for a number of reasons. (The commenter refers to Table I-9, which summarizes the impacts for a scavenger scenario; Table I-7 is the correct table to match with Table H-26). When comparing results outlined in Tables H-26 and I-7, one must consider that the drilling scenario used at WIPP (deep drilling in salt beds using large volumes of drilling fluids) is inherently different from drilling techniques used at the generator sites (shallow drilling in unconsolidated sediments using either augering or cable tool techniques) and would result in different releases of the waste materials. Also, the profile of waste inventory at WIPP differs from the waste inventory profiles estimated for each generator site.

With regard to the second comment on the inconsistency in the radionuclides considered, overall, the results between the intrusion at WIPP and at generator sites were somewhat consistent (highest doses were attributable to the same radionuclides: americium-241, plutonium-238, plutonium-239, and cesium-137). However, for the reasons outlined above, the list of key radionuclides at WIPP was not the same list of key nuclides to consider at the generator sites.

With regard to the third comment, decay and ingrowth are considered in implementation of the MEPAS and GENII codes for the No Action Alternative 2 analyses.

With regard to the fourth comment, the commenter is correct that the Proposed Action analysis has no comparable table to Table I-11 in Appendix I, which summarizes maximum lifetime impacts to an MEI and to exposed populations from long-term release from TRU waste in surface burial or storage configurations to the accessible environment at the generator sites over 10,000 years. For the undisturbed performance, calculations presented in Appendix H show no releases from WIPP and there should be nothing comparable. Figures I-4 and I-5 simply provide these same results over all lifetimes within the 10,000-year period of releases. The 70-year lifetime impact, used to present these impacts, is a commonly used time frame to describe long-term chronic radiological impact.

**13.12 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-104 | 8 | Bob Slay | Savannah River Site Citizens Advisory Board |

**Comment:**
"Determine for the No-Action Alternative 2 and WIPP's Proposed Alternative (which leaves TRU wastes at SRS) the health consequences at SRS in the event of a loss of institutional control followed by a catastrophic release of SRS TRU wastes under two scenarios: for when the TRU wastes at SRS are sufficiently treated and for when the TRU wastes at SRS are not treated at all."

**Response:**
Under No Action Alternative 1 and No Action Alternative 2, the Final SEIS-II does examine the impacts of environmental release of thermally treated and untreated TRU waste at SRS and all other major generator sites in the event of loss of institutional control. Results of these analyses are provided in Sections 5.5.12 and 5.6.12 of Chapter 5.

**13.12 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-112 | 1 | Dennis R. Floyd | |

**Comment:**
"[It has been argued that] the DOE can't guarantee the safety of the [WIPP] site for 240,000 years. How safe [is it] to leave the waste at Rocky Flats? Cite some statistical bases, such as the relative likelihood of cancer deaths between [keeping Rocky Flats plutonium waste at Rocky Flats rather than sending it to WIPP for long-term disposal]."

**Response:**
The comparisons called for by this comment can be made by reviewing estimates of potential health effects (i.e., LCFs) from the treatment and storage of TRU waste at various DOE sites around the United States with estimates of potential health effects for transportation to, and disposal at, WIPP (see Section 5.6, No Action Alternative 2).

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# 14.0 PURPOSE AND NEED

## 14.01 General

### 14.01 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-010 | 3 | Justin P. Wilson | State of Tennessee |
| A-012 | 6 | Kathleen E. Trever | State of Idaho Oversight Program |
| ALB1 | 25 | Maria Santelli | |
| ALB2 | 43 | Virginia Kotler | |
| ALB3 | 30 | Robin Seydel | |
| ALB3 | 107 | Lois Pribble | |
| ALB4 | 17 | Don Thompson | |
| ALB5 | 73 | Kent Gormley | |
| ALB6 | 82 | Judy Pratt | |
| ALB6 | 120 | Glenna Voigt | |
| ALB6 | 125 | Alan Moskowitz | |
| BO1 | 16 | Congressman Mike Crapo | |
| BO1 | 23 | Robin Blaisdell | Snake River Alliance Education Fund |
| BO1 | 29 | Robin Blaisdell | Snake River Alliance Education Fund |
| BO1 | 32 | Robin Blaisdell | Snake River Alliance Education Fund |
| BO1 | 77 | Steve Hopkins | |
| BO1 | 80 | Kerry Cooke | |
| BO1 | 109 | Michele Kresge | |
| C-044 | 2 | Sally Spencer | |
| C-053 | 2 | David Hensel | |
| C-053 | 3 | David Hensel | |
| C-053 | 5 | David Hensel | |
| C-090 | 10 | Linda Ewald | |
| C-111 | 2 | Scott W. Estep | |
| C-118 | 5 | David Proctor | |
| C-121 | 5 | Bob McEnaney | |
| C-122 | 2 | Ross Lockridge | Concerned Citizens of Cerrillos |
| C-129 | 2 | Richard A. Kenney | Coalition 21 |
| C-141 | 2 | Margret Carde | Concerned Citizens for Nuclear Safety |
| C-141 | 11a | Margret Carde | Concerned Citizens for Nuclear Safety |
| C-141 | 12 | Margret Carde | Concerned Citizens for Nuclear Safety |
| C-148 | 11 | Landi Fernley | |
| C-154 | 13 | Tom Marshall, Jack Mento, et al. | Rocky Mountain Peace and Justice Center |
| C-154 | 15 | Tom Marshall, Jack Mento, et al. | Rocky Mountain Peace and Justice Center |
| C-158 | 8 | Maureen Eldredge | Military Production Network |
| C-159 | 22 | Susan Maret | Sierra Club National Nuclear Waste Task Force |
| C-160 | 5 | Julie R. Sutherland | |
| DE1 | 26 | Kathleen Sullivan | |
| DE1 | 73 | Sam Cole | |
| DE1 | 81 | Benjamin Corbett | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| DE1 | 159 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| DE1 | 179 | Kathryn Becker | |
| DE1 | 185 | Amy Marschak | |
| E-063 | 8 | Tom Moore | |
| E-069 | 2 | Pat Clark | Snake River Alliance |
| E-069 | 9 | Pat Clark | Snake River Alliance |
| E-070 | 1 | Pat Clark | Snake River Alliance |
| SF1 | 22 | Ray Schmidt | |
| SF1 | 44 | Margret Carde | Concerned Citizens for Nuclear Safety |
| SF1 | 52 | Margret Carde | Concerned Citizens for Nuclear Safety |
| SF1 | 76 | Don Hancock | Southwest Research and Information Center |
| SF1 | 77 | Don Hancock | Southwest Research and Information Center |
| SF2 | 50 | Barbara Card | |
| SF3 | 42 | Jai Lakshman | SEVA Foundation |
| SF3 | 47 | Jai Lakshman | SEVA Foundation |
| SF3 | 56 | Bill Gould | |
| SF3 | 79 | Sasha Pyle | Religious Society of Friends |
| SF3 | 81 | Sasha Pyle | Religious Society of Friends |
| SF3 | 86 | Sasha Pyle | Religious Society of Friends |
| SF3 | 94 | Anhara Lovato | |
| SF3 | 123 | Anna Katherine | |
| SF4 | 135 | Pat Larragoite | |
| SF5 | 5 | Scott Shuker | |
| SF5 | 43 | Michael Buonaiuto | |
| SF5 | 58 | Amy Mohr | |
| SF5 | 62 | Emilio Romero | |
| SF6 | 5 | Ann Dasburg | |
| SF6 | 13 | Alfred Fuller | |
| SF6 | 27 | Amy Stix | |
| SF6 | 34 | Pamela Baumgertel | |
| SF6 | 59 | Anna Hansen | |
| SF6 | 61 | Anna Hansen | |
| SF6 | 79 | Garland Harris | |
| SF6 | 83 | Pia Gallegos | |
| SF7 | 1 | Carole Tashel | |
| SF7 | 8 | Carole Tashel | |
| SF7 | 33 | Amy Bunting | |
| SF7 | 36 | Amy Bunting | |
| SF7 | 89 | Linda Hibbs | |
| SF8 | 11 | Susan Diane | |

**Comment:**
Many commenters said DOE gives the illusion that WIPP will solve the nation's nuclear waste problems, or those of a particular site such as INEEL. Some commenters stated that removal of TRU waste in storage at sites such as INEEL or LANL still leaves significant quantities of buried TRU waste that may be eligible for disposal at WIPP when decisions to excavate are made. They also stated that stored TRU waste represents only a very small amount of radioactivity, given spent nuclear fuel on site and scheduled to arrive for storage.

Many of the commenters said that, because WIPP will not truly solve all radioactive waste problems, funds being spent on developing WIPP should be redirected toward environmental restoration, pollution prevention and waste minimization, improved means to treat (e.g., transmutation, neutralization, incineration) and store TRU waste, development of renewable or alternative forms of energy, or management of other waste, such as excess plutonium. Other commenters compared the life-cycle costs for continued storage (the no action alternatives) to those of the Proposed Action, noting that on-site storage and progress toward environmental restoration could be vastly improved if WIPP were halted and the monies redirected accordingly. They also said that if funds were redirected, future waste generation would be significantly reduced or otherwise eliminated.

**Response:**
Since WIPP's inception by congressional action in 1980, DOE has maintained that the primary mission of WIPP is the disposal of defense TRU waste. It is correct that the TRU waste destined for disposal at WIPP represents only a portion of the radioactive waste throughout the DOE complex and that, as currently authorized, WIPP would not (and is not intended to) completely address all of DOE's nuclear waste disposal needs. Despite these limitations, the analyses in SEIS-II demonstrate that TRU waste in storage continues to pose a risk to the public, which can be minimized if it is disposed of at WIPP.

Given WIPP's TRU waste disposal mission, the Proposed Action of SEIS-II examines the disposal of defense TRU waste that has been placed in retrievable storage and that would continue to be generated from plutonium stabilization and management, environmental restoration, decommissioning activities, waste management programs, and testing and research through the year 2033. Previously disposed of waste at a site such as INEEL, if excavated, would be considered newly generated TRU waste and would be eligible for disposal. Current restrictions may prevent DOE from completely disposing of all TRU waste under the Proposed Action; however, all TRU waste would be removed from some sites (see Section 3.1 of SEIS-II).

Although DOE's national defense mission has changed significantly in recent years, TRU waste will continue to be generated by a variety of activities, such as nuclear weapons research and dismantlement, decontamination and decommissioning of facilities, environmental restoration of contaminated sites, and waste characterization and treatment. As discussed in Section 3.1 and Section A.1, TRU waste inventory estimates, as used in the analyses throughout SEIS-II, are based on many conservative assumptions (i.e., inventory is likely to be overestimated). Because of the conservatism in the inventory estimates, DOE believes that the capacity of WIPP would be sufficient to dispose of all defense TRU waste in storage and TRU waste that would be generated in the DOE complex for the foreseeable future.

A discussion of national funding priorities for programs within DOE is beyond the scope of SEIS-II. However, it should be recognized that DOE receives various levels of funding for programs within its overall mission, consistent with annual congressional appropriations that reflect contemporary priorities. These programs include, but are not limited to, waste disposal programs such as WIPP; construction, operation, and maintenance of waste management facilities (storage, treatment, packaging); research to improve waste management capabilities for all types of waste; pollution prevention and waste minimization programs; and research into renewable energy. Significant funding also is provided for environmental restoration activities, which, like waste management, often result in the generation of TRU waste that would require appropriate interim management and eventual disposal. WIPP-directed appropriations must be used for WIPP; DOE is prohibited from redirecting these funds as suggested without congressional approval.

**14.01 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 4 | Mark Rudd | |
| ALB1 | 15 | Noel Savignac | |
| ALB1 | 17 | George Newton | |
| ALB1 | 18 | George Newton | |
| ALB1 | 24 | Maria Santelli | |
| ALB1 | 42 | Sally Alice Thompson | |
| ALB1 | 47 | Lisa Sparaco | |
| ALB1 | 65 | Sally Alice Thompson | |
| ALB1 | 70 | Jim Lewis | |
| ALB2 | 14 | Maurice Weisberg | |
| ALB2 | 28 | Sean Asghar | |
| ALB2 | 39 | Virginia Kotler | |
| ALB2 | 42 | Virginia Kotler | |
| ALB2 | 48 | Harry Kinney | |
| ALB2 | 92 | John Leahigh | |
| ALB2 | 103 | Lesley Weinstock | |
| ALB2 | 104 | Lawrence Curry | |
| ALB2 | 108 | Zelda Gatuskin | |
| ALB2 | 109 | Zelda Gatuskin | |
| ALB2 | 110 | Zelda Gatuskin | |
| ALB2 | 113 | Sandra Schroeder | |
| ALB2 | 143 | Zelda Gatuskin | |
| ALB3 | 40 | Harry Willson | |
| ALB3 | 65 | Chuck Hosking | |
| ALB3 | 80 | Maryann Fiske | |
| ALB3 | 95 | Karen Navarro | |
| ALB3 | 98 | Jeffrey Rich | |
| ALB3 | 106 | Lois Pribble | |
| ALB3 | 110 | Peter Kalberer | |
| ALB4 | 9 | Dory Bunting | |
| ALB4 | 18 | Don Thompson | |
| ALB4 | 61 | Lawrence Carter-Long | |
| ALB4 | 68 | Richard Clark | |
| ALB4 | 69 | Richard Clark | |
| ALB4 | 87 | Wendy Cory | |
| ALB4 | 89 | Wendy Cory | |
| ALB4 | 125 | Jon Thomas-Weger | |
| ALB5 | 50 | Aanya Adler Friess | |
| ALB5 | 72 | Kent Gormley | |
| ALB5 | 97 | Janet Greenwald | |
| ALB6 | 3 | William Beems | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB6 | 12 | Catherine O'Neill | |
| ALB6 | 47 | Joan Robins | |
| ALB6 | 49 | David Pace | |
| ALB6 | 75 | Tsosie Tsinhnahjinnie | |
| ALB6 | 77 | Judy Pratt | |
| ALB6 | 138 | Tom Metcalf | |
| ALB6 | 144 | Tom Metcalf | |
| BO1 | 24 | Robin Blaisdell | Snake River Alliance Education Fund |
| BO1 | 39 | Pat Clark | Snake River Alliance |
| BO1 | 41 | Patricia Hall | |
| C-012 | 4 | Eleanor Ponce | |
| C-026 | 3 | Tom and Nancy Florshein | |
| C-030 | 2 | Carole J. Suderman | |
| C-037 | 2 | Erica Simonov | |
| C-049 | 2 | Lorraine Hanley | |
| C-057 | 2 | Diana Reimers | |
| C-065 | 2 | Dee Homans and Andrew Davus | |
| C-088 | 4 | Victoria Parrill | |
| C-103 | 4 | Judith Babka | |
| C-105 | 3 | Valerie Hookham | |
| C-106 | 9 | Jerry L. Gerber | |
| C-111 | 3 | Scott W. Estep | |
| C-126 | 2 | Richard Dant | |
| C-136 | 7 | N. Watson | |
| C-137 | 1 | Herbert Arthur | |
| C-143 | 2 | Roger Wishau | |
| C-148 | 10 | Landi Fernley | |
| C-157 | 6 | Wendy Lynne Botwin | |
| C-162 | 9 | Kathleen Sullivan | |
| C-166 | 2 | Elliott H. Libman, MSW | |
| DE1 | 16 | Gary Erb | |
| DE1 | 17 | Gary Erb | |
| DE1 | 28 | Jack Mento | |
| DE1 | 31 | David Measom | |
| DE1 | 50 | Kay Mack | |
| DE1 | 79 | Benjamin Corbett | |
| DE1 | 82 | Benjamin Corbett | |
| DE1 | 90 | Ben Lipman | |
| DE1 | 91 | Andrew Hanscom | |
| DE1 | 92 | Andrew Hanscom | |
| DE1 | 93 | Andrew Hanscom | |
| DE1 | 94 | Andrew Hanscom | |
| DE1 | 116 | Amy Rosser | |
| DE1 | 126 | Kathleen Sullivan | |
| DE1 | 131 | Kathleen Sullivan | |
| DE1 | 145 | Magdalen Seaman | |
| DE1 | 155 | James Ciarlo | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| DE1 | 156 | James Ciarlo | |
| DE1 | 177 | Kathryn Becker | |
| DE1 | 180 | Scott Smiley | |
| DE1 | 198 | Scott Hatfield | |
| DE1 | 199 | David Granquist | |
| E-056 | 5 | Linda Hibbs | |
| E-056 | 62 | Linda Hibbs | |
| E-069 | 15 | Pat Clark | Snake River Alliance |
| E-077 | 1 | Rebecca A. Nebelsick | |
| OR2 | 2 | John Croes | |
| SF1 | 21 | Ray Schmidt | |
| SF1 | 37 | Lety Seibel | |
| SF1 | 38 | Lety Seibel | |
| SF1 | 39 | Tom Seibel | |
| SF1 | 70 | Virginia Miller | |
| SF1 | 72 | Mark Lee | |
| SF1 | 92 | Chris Moore | |
| SF1 | 112 | Peggy Prince | |
| SF1 | 116 | Peggy Prince | |
| SF1 | 125 | Clan Ianaeby | |
| SF2 | 14 | Kathleen Sullivan | |
| SF2 | 33 | Alonzo Gallegos | |
| SF2 | 34 | Dolores Baca | |
| SF2 | 46 | Elliott Skinner | |
| SF2 | 61 | Nancy Judd | |
| SF3 | 24 | Eleanor Ponce | |
| SF3 | 54 | Michael Motley | |
| SF3 | 65 | Bill Gould | |
| SF3 | 96 | Anhara Lovato | |
| SF3 | 114 | Anhara Lovato | |
| SF3 | 119 | Anna Katherine | |
| SF4 | 40 | Bruce LeBrun | |
| SF4 | 95 | Joseph Oliaro | |
| SF4 | 105 | Kathy Sanchez | |
| SF4 | 106 | Kathy Sanchez | |
| SF4 | 121 | Vicki Downey | |
| SF4 | 131 | Juan Montes | |
| SF4 | 132 | Juan Montes | |
| SF5 | 14 | Marilyn Hoff | |
| SF5 | 22 | Lawry Mann | |
| SF5 | 25 | Susan Curtis | |
| SF5 | 30 | Siona Curtis-Briley | |
| SF5 | 37 | Louise Baum | |
| SF5 | 79 | Michael Collins | |
| SF5 | 94 | Peggy Prince | |
| SF6 | 7 | Sheldon Herman | |
| SF6 | 9 | Erica Elliott | |
| SF6 | 16 | Guy Fuller | |
| SF6 | 24 | Susannah Harrison | |
| SF6 | 44 | Ian Duncan | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF6 | 72 | Garland Harris | |
| SF7 | 17 | Sister Penelope McMullen | |
| SF7 | 27 | Suzanne Phillips | |
| SF7 | 28 | Suzanne Phillips | |
| SF7 | 29 | Suzanne Phillips | |
| SF7 | 30 | Suzanne Phillips | |
| SF7 | 49 | Eric Ericson | |
| SF7 | 54 | Todd Macon | |
| SF7 | 55 | Todd Macon | |
| SF7 | 75 | Bonnie Bonneau | Legions of Living Light |
| SF7 | 78 | Bonnie Bonneau | Legions of Living Light |
| SF7 | 90 | Linda Hibbs | |
| SF7 | 107 | Jill Cliburn | |
| SF7 | 108 | Jill Cliburn | |
| SF7 | 134 | Dominique Mazeaud | |
| SF8 | 12 | Susan Diane | |
| SF8 | 13 | Susan Diane | |
| SF8 | 24 | Jean Nichols | |
| SF8 | 26 | Jean Nichols | |
| SF8 | 43 | Virginia Ravndal | |
| SF8 | 47 | Karin Salzmann | |

**Comment:**
Commenters expressed a variety of opinions about the need for TRU waste disposal. Some said that each state should responsibly manage the waste at its sites, questioning whether WIPP is needed, while others said they believe geologic disposal is necessary and urged a decision to move into disposal operations. A few commenters stated that WIPP is simply pork-barrel politics, that WIPP is truly a short-term solution soon to be filled and closed, or that disposal is not acceptable in any state. Commenters stated that the purpose of WIPP is to provide justification for continuing the nuclear arms industry or nuclear energy generation and that the production of all nuclear waste, materials, and weapons must stop. Also, commenters stated that waste should be left in place and that new research, such as detoxifying, neutralizing, or stabilizing radioactive waste, should be promoted.

**Response:**
A DOE predecessor agency, the Energy Research and Development Administration, began initial WIPP site investigations under authority of the Atomic Energy Act in 1975. The mission of WIPP was authorized by Public Law 96-164 in 1980 to provide a research and development facility to demonstrate the safe disposal of radioactive waste resulting from defense activities and programs. In 1981, DOE issued a ROD concluding that geologic disposal was the best available option and that the Los Medaños site would adequately isolate TRU waste from the environment. In 1990, after completion of the initial phase of site construction and SEIS-I, DOE issued a second ROD that decided to proceed with the phased development of WIPP.

In 1992, Congress passed the LWA (modified in 1996), which reaffirmed the need for WIPP. Thus, the purpose of WIPP was determined by Congress, which also has approved all appropriations.

The question of whether to continue to produce nuclear material or energy is beyond the scope of SEIS-II. Although DOE's national defense mission has changed significantly in recent years and nuclear weapons production has ceased, Congress has directed DOE to maintain nuclear capabilities. Until Congress changes that direction, nuclear weapons-related activities will continue and TRU waste will continue to be generated by a variety of activities, such as nuclear weapons research and dismantlement, decontamination and decommissioning of facilities, environmental restoration of contaminated sites, and waste characterization and treatment. Much of future waste generation will be the result of environmental remediation activities undertaken either to meet legal requirements or to reduce the health risk to workers and the public at DOE sites. Further, production of nuclear materials for medical purposes, food irradiation, waste characterization (radioassay) and the like will continue. It is also clear that, given annual appropriations for research and development, DOE will continue to develop means to better manage waste in the future. In any event, the SEIS-II analyses show that disposal of TRU waste would minimize the risks posed by continuing to store TRU waste at sites throughout the United States (see Sections 5.5 and 5.6). The analyses also show that releases to the environment from a closed WIPP repository would be unlikely for at least 10,000 years (see Section 5.1.12 for the Proposed Action and Appendix H).

**14.01 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF1 | 117 | Peggy Prince | |
| SF1 | 118 | Peggy Prince | |
| SF1 | 119 | Peggy Prince | |
| SF5 | 88 | Michael Collins | |

**Comment:**
A few commenters suggested that the national laboratories should be removed from the nuclear weapons industry and given the mission of finding cost-effective solutions to the problem of nuclear and hazardous waste.

**Response:**
Issues regarding the mission of national laboratories are beyond the scope of SEIS-II. However, the national laboratories are conducting research into methods that address improved ways to manage radioactive and hazardous waste.

**14.01 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-004 | 4 | George Voinovich | State of Ohio Office of the Governor |

**Comment:**
"Ohio is interested in any legislative proposals that DOE might be considering that would permit the ultimate disposal of all transuranic waste at the WIPP site including the waste commingled with polychlorinated biphenyls (PCB's). This issue is important because of the 20 cubic meters of such waste that would remain at the Mound facility under the proposed action."

**Response:**
As noted in Section 3.2.1, SEIS-II includes alternatives that would result in the disposal of all TRU waste, including PCB-commingled waste. As further noted in Chapter 3, DOE may decide for site-specific reasons to treat TRU waste to levels more intensive than the minimal level required by planning-basis WAC. Thus, PCB-commingled waste could potentially be thermally treated and disposed of at WIPP.

**14.01 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB4 | 11 | Dory Bunting | |

**Comment:**
"We need to spend probably $200 billion over a period of decades to find a solution."

**Response:**
The SEIS-II analyses show WIPP would isolate TRU waste and would cost considerably less than $200 billion.

**14.01 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| BO1 | 107 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| C-154 | 17 | Tom Marshall, Jack Mento, et al. | Rocky Mountain Peace and Justice Center |
| SF6 | 35 | Pamela Baumgertel | |

**Comment:**
A commenter said U.S. nuclear waste policy must undergo a high level of independent review. Another said nuclear waste policy should reflect the problems of the 1990s and the lessons of the 1970s.

**Response:**
The call for an independent review of U.S. nuclear waste policy is beyond the scope of SEIS-II.

**14.01 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF7 | 42 | Stanley E. Logan | |

**Comment:**
"Simply because WIPP by itself does not solve all problems, such as previously buried waste and waste generation beyond the 35-year proposed operational period, there is no justification for either of the two No Action Alternatives."

**Response:**
Thank you for your comment.

**14.01 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-024 | 4 | Barbara Conroy | |

**Comment:**
"The cost is too high -- Waste burial incurs costs to the future of life on earth with toxic wastes embedded in the earth, inaccessible and largely unprotected. Waste burial forecloses the perceived need for the development and application of new technology for safer processing, handling or transmuting it."

**Response:**
DOE agrees that waste disposed of at the WIPP site would not be easily accessible after closure and decommissioning of the WIPP site. DOE does not agree that the waste would be unprotected. The WIPP site was selected precisely because its existing salt formation would cause waste placed there to become surrounded by salt over a period of hundreds of years and become virtually inaccessible. The additional engineered protection features and institutional controls for WIPP are discussed in Chapter 3, Section 3.1.3.5 of SEIS-II.

During waste emplacement at WIPP, it would still be possible to use newly demonstrated technology to treat the remaining inventory or to use new technology for enhanced processing and handling. DOE can decide to implement one (or a combination) of the alternatives in SEIS-II and at the same time pursue technologies that show promise but are not currently available.

**14.01 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-082 | 2 | Alfred Brooks | |
| C-083 | 1 | Diantha F. Pare | League of Women Voters Environment Committee |

**Comment:**
One commenter stated that east Tennessee is not geologically suitable for TRU waste storage and that 150 to 160 years of long-term storage presents an unnecessary and unevaluated risk. Another commenter said that buildings suggested for storing defense-related TRU waste at the Oak Ridge reservation are in poor condition and that the damp climate in Tennessee precludes such long-term storage.

**Response:**
Sections 5.5.9 and 5.6.9 discuss the potential health risks and effects from the continued management of TRU waste at the generator sites.

**14.01 (10)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-141 | 6 | Margret Carde | Concerned Citizens for Nuclear Safety |

**Comment:**
"The 35 year window gives no indication of the scope of waste problems at generator sites and no real perspective on how significantly WIPP would reduce these waste problems."

**Response:**
The SEIS-II analyses are limited to TRU waste, based on a TRU waste inventory that includes waste in storage and waste that may be generated through the year 2033 at each of the TRU waste sites in the DOE complex. As discussed in Section 1.5, SEIS-II incorporates by reference and, where appropriate, updates and adjusts information from the WM PEIS. Whereas SEIS-II is limited to TRU waste, the WM PEIS evaluates alternative configurations for managing five types of waste, including TRU waste, that are at DOE sites or are otherwise under DOE's control or responsibility.

The analyses of the alternatives in SEIS-II demonstrate in Chapter 3 the extent to which TRU waste would be removed from each site. The WM PEIS also provides similar analyses. On this basis, DOE believes that the reader can ascertain the magnitude of each site's overall waste management problems and the degree to which disposal of TRU waste at WIPP would mitigate these problems.

**14.01 (11)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 119 | David Mitchell | |
| ALB6 | 4 | Ruth Weiner | |
| BO1 | 137 | Martin Huebner | Federation of Western Outdoor Clubs |
| C-031 | 3 | Nina Johnson and H. Lopez | |
| SF6 | 51 | Janet Degan | |
| SF7 | 11 | Sister Penelope McMullen | |

**Comment:**
A few commenters stated that the opening of WIPP promoted the continued proliferation of plutonium and other materials that could be used for weapons production or commercial power generation. These and other commenters urged the selection of continued storage at the sites as a means to strengthen the nonproliferation treaty and to abandon plans to convert plutonium, either excess or waste-bearing, to commercial use. One commenter favored disposing of plutonium in a deep geologic repository. Other commenters stated that nuclear weapons should be dismantled, and that production of weapons was immoral, posing a threat to the public, workers, and the environment.

**Response:**
The small amounts and forms of plutonium that exist in the TRU waste would not justify the expense, time, and effort to recover sufficient plutonium to constitute a proliferation hazard or for use in commercial nuclear reactors. Plutonium that is available for use as a mixed oxide fuel (i.e., a uranium and plutonium mixture) for commercial nuclear reactors is addressed in the ROD for the *Final Programmatic Environmental Impact Statement for the Storage and Disposition of Weapons-Usable Fissile Materials* (DOE/EIS-0229).

**14.01 (12)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF7 | 112 | Monika Steinhoff | |
| SF8 | 72 | Jess Osborn | |

**Comment:**
Two commenters raised concerns about the nuclear fuel rods that are in use or storage at nuclear power production facilities around the United States.

**Response:**
A discussion of nuclear fuel, whether in storage or in use, is beyond the scope of SEIS-II. DOE is studying the Yucca Mountain site as a proposed repository for commercial and DOE-owned spent nuclear fuel and high-level radioactive waste as required by the Nuclear Waste Policy Act, as amended.

**14.01 (13)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| OR2 | 3 | John Croes | |

**Comment:**
"My concerns for this nation in its energy needs are the [air] emissions [from] coal-fired plants and the health problems caused by generating electrical power [using fossil fuels]. [Health impacts from air emissions are higher for fossil fuels than for] nuclear energy."

**Response:**
Thank you for your comment.

**14.01 (14)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-060 | 4 | Jeff Moyers | RPM2 Building Services Ltd. |

**Comment:**
"Why should Colorado allow the shipment of other state's waste through our beautiful state when it could be stored on the site where it was generated? Are we paid for this? How much?"

**Response:**
The disposal of waste at WIPP would reduce the potential long-term human health risks associated with the long-term storage of TRU waste currently stored at generator sites around the United States. There is no provision for payments to the State for transportation through Colorado, although DOE does plan to provide emergency response training in communities along the transportation route.

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# 15.0 WIPP OPERATIONS

## 15.01 General

### 15.01 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-002 | 3 | Gedi Cibas | New Mexico Environment Department |
| A-008 | 4 | Tom Udall | Attorney General of New Mexico |
| A-010 | 5 | Justin P. Wilson | State of Tennessee |
| A-010 | 20 | Earl Leming | State of Tennessee Department of Environment and Conservation |
| ALB4 | 39 | Jeri Rhodes | |
| ALB5 | 12 | Robert H. Neill | Environmental Evaluation Group |
| ALB5 | 13 | Robert H. Neill | Environmental Evaluation Group |
| C-133 | 7 | Bonnie Bonneau | Legions of Living Light |
| C-141 | 34 | Margret Carde | Concerned Citizens for Nuclear Safety |
| C-152 | 8 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 24 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 98 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 148 | Robert H. Neill | Environmental Evaluation Group |
| CA1 | 24 | Don Gray | |
| OR1 | 19 | Don Hancock | Southwest Research and Information Center |
| SF1 | 10 | Robert H. Neill | Environmental Evaluation Group |
| SF1 | 96 | Tom Udall | Attorney General of New Mexico |

**Comment:**
Several commenters said they were concerned about the plans for emplacement of RH-TRU waste at WIPP. Among the concerns were (1) the actual capacity at WIPP versus the legally allowed 7,080 cubic meters (250,000 cubic feet) of RH-TRU waste that was analyzed for the Proposed Action, (2) the potential need for modification of WIPP Panels 9 and 10 to accommodate the legally allowed RH-TRU waste capacity, (3) the actual timing for acceptance of RH-TRU waste at WIPP compared to that analyzed in SEIS-II, and (4) prioritization of RH-TRU waste disposal based on activity levels. One commenter stated that facilities for handling RH-TRU waste at WIPP were inadequate and would put WIPP workers at risk. Another said that SEIS-II did not commit to finalizing RH-TRU waste procedures until the RH-72B transportation cask was approved by NRC, while the RCRA Part B Permit Application provided detailed (although not necessarily final) handling procedures.

**Response:**
On the basis of the C&C Agreement between DOE and the State of New Mexico, 7,080 cubic meters (250,000 cubic feet) of RH-TRU waste could be disposed of at WIPP. Under the current repository design and waste disposal schedule, not all of the 7,080 cubic meters could be emplaced. This is discussed in a text box in Section 3.1. However, impacts were evaluated under legally permissible conditions of full emplacement of RH-TRU waste beginning soon after WIPP's opening and lasting for 35 years under the Proposed Action (longer under the action alternatives) to show full-repository impacts in such areas as transportation, human health, performance assessment, and economics. Changes in these assumptions would result in lower impacts. Only Panels 1 through 8 are currently designed to accept RH-TRU waste

horizontally placed in the walls. The access drifts (Panels 9 and 10) are not currently wide enough to permit RH-TRU waste emplacement; they were designed to accept only CH-TRU waste. If deemed safe and feasible, these panels would need to be modified to accept RH-TRU waste, thereby increasing the RH-TRU waste capacity to volumes closer to the 7,080-cubic-meter (250,000-cubic-foot) limit; the legal capacity of 173,600 cubic meters (6.2 million cubic feet) would not be affected. If DOE decides to open WIPP, the intent would be to remove RH-TRU waste from the generator sites as safely and quickly as possible. Initially, RH-TRU waste would be shipped from those sites having waste certified for disposal; however, final queuing, whether based on activity levels, site consent orders, or other criteria, is yet to be finalized. Currently, given the limited availability of waste certified for WIPP disposal and lack of approved RH-TRU waste transportation containers, it is likely that CH-TRU waste would be emplaced before RH-TRU waste, at the loss of some RH-TRU waste disposal capacity. No RH-TRU waste would be expected to be received at WIPP prior to the year 2002.

DOE is unaware of any defects or inadequacies in the waste handling and disposal facilities and believes that planned CH-TRU and RH-TRU waste handling operations would provide protection for workers. DOE dose limits and WIPP administrative dose limits for radiation exposure would not be exceeded; worker doses would also be kept ALARA. The SEIS-II analysis of RH-TRU waste operations was conducted using current facility design and in anticipation of expected handling operations (see Section 5.1.9 for the Proposed Action). However, a WIPP safety analysis of RH-TRU waste handling and disposal operations, which must be completed before any RH-TRU waste would arrive at WIPP, may result in modifications to these operations.

**15.01 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB4 | 44 | Jeri Rhodes | |
| C-131 | 24 | Don Hancock | Southwest Research and Information Center |
| C-141 | 11b | Margret Carde | Concerned Citizens for Nuclear Safety |
| E-056 | 31 | Linda Hibbs | |
| OR1 | 20 | Don Hancock | Southwest Research and Information Center |
| SF3 | 129 | Norman Budow | |

**Comment:**
A few commenters said they were concerned about collapse or roof fall in the WIPP repository. Commenters raised concerns over the safety and planned use of Panel 1, which has been excavated for nearly 10 years. One commenter said the effect of brine could increase the potential for roof fall.

**Response:**
DOE recognizes the potential for roof falls in the repository, and workers constantly monitor the walls and roof to identify potential areas of fall. Brine is not considered to present any unusual hazard for roof fall compared to those normally anticipated from salt plasticity and scaling. Workers receive comprehensive training in excavation hazards, safety techniques, and

emergency procedures. Underground operations in the WIPP repository have a demonstrated safety record that has earned DOE's highest safety award.

The anticipated annual frequency of occurrence of roof fall is presented in Appendix G of SEIS-II and is estimated to be four orders of magnitude higher for Panel 1 than for other disposal panels. Excavation of Panel 1 began in 1986 and was completed in 1988. A roof failure during disposal operations is the main concern for use of Panel 1. A complex monitoring system, called a borehole extensometer, is in place to check the dilation of the Panel 1 roof, providing an indication of salt creep. The convergence of the floor and roof is also monitored to provide an indication of possible roof deterioration. If monitoring indicated that the risk of roof failure became too great, DOE would take appropriate action to ensure the safety of underground workers and the disposal operations. Section G.4.3 has been modified to highlight the higher risk of a roof fall in Panel 1.

**15.01 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-162 | 5 | Kathleen Sullivan | |
| SF2 | 10 | Kathleen Sullivan | |

**Comment:**
One commenter stated that WIPP, as a receiving facility for disposal with limited aboveground storage capacity, must be prepared to deal with inclement weather and other road hazards that may affect waste shipment and receiving schedules.

**Response:**
Scheduling of TRU waste shipments to be received at WIPP would be a very important aspect of WIPP operations should DOE decide to open the repository. In accordance with the TRUPACT-II Certificate of Compliance, waste may remain sealed in TRUPACT-II containers for up to 60 days, providing some flexibility in how long waste on tractor-trailers may remain at the generator site, on the road in case of delays due to bad weather, or at WIPP. WIPP does have adequate storage capacity in the parking area for waste-loaded TRUPACT-IIs and in the Waste Handling Building for waste containers that have been unloaded. The volume capacity of the waste storage areas would be determined by the New Mexico Environment Department when the final RCRA permit was issued. Section 3.1.2 of SEIS-II provides additional discussion of the coordination between the generator sites and WIPP for transportation and receipt of TRU waste.

**15.01 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-131 | 11 | Don Hancock | Southwest Research and Information Center |
| C-152 | 101 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 108 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 109 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
One commenter stated that the estimated area (aboveground footprint) of the 10 WIPP panel-equivalents was not 40 hectares (100 acres), but rather about 50 hectares (125 acres). The commenter also said that estimates of increased panel-equivalents for action alternatives were similarly inaccurate in estimating the aboveground footprint. Another commenter stated that no design information was provided for the increased number of panels for the action alternatives, including how they would be positioned in relation to hydrocarbon and mineral reserves in the land withdrawal area and how surface buildings and shafts would have to be modified.

**Response:**
Estimates of the surface footprint for all action alternatives are now based on 5 hectares (12 acres) per panel-equivalent rather than 4 hectares (10 acres) per panel-equivalent. Unchanged are the additional 8 hectares (20 acres) for surface facilities and 12 hectares (30 acres) for the salt pile. Descriptions of the WIPP surface footprint have been changed for all action alternatives in Sections 3.1.3.5, 3.2.2.3, 3.2.3.3, 3.2.4.3, 5.1.1, 5.2.1, 5.3.1, and 5.4.1.

The SEIS-II analyses assumed that additional waste disposal panels would extend from the current 10-panel design. Additional panels would be at the repository horizon (655 meters [2,150 feet] deep), below potash reserves and above oil and gas and possible brine reservoirs, extending in a southerly direction but remaining in the land withdrawal area. Studies would likely be performed in the future to determine the optimum repository design and layout (including the optimum design for panels that would contain only RH-TRU waste) and to investigate cost and time savings if an expanded WIPP repository were needed and received regulatory approval. DOE believes that the assumption of using the current design (disposing of both CH-TRU and RH-TRU waste in a panel) does not underestimate potential impacts of the action alternatives. Additional information has been added to Chapters 3 and 5 for the action alternatives to describe changes in such things as surface facilities and shafts that would be needed at WIPP to reduce the operational periods of the action alternatives. Any proposed changes to WIPP surface facilities would be the subject of a separate NEPA review.

**15.01 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-010 | 8 | Elgan H. Usrey | State of Tennessee |
| A-010 | 10 | Earl Leming | State of Tennessee Department of Environment and Conservation |
| A-010 | 13 | Earl Leming | State of Tennessee Department of Environment and Conservation |
| A-010 | 17 | Earl Leming | State of Tennessee Department of Environment and Conservation |
| A-010 | 22 | Earl Leming | State of Tennessee Department of Environment and Conservation |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-010 | 24 | Earl Leming | State of Tennessee Department of Environment and Conservation |
| OR2 | 8 | Barbara A. Walton | Oak Ridge Reservation Local Oversight Committee |

**Comment:**
Several commenters commented on current plans for RH-TRU waste at ORNL and the assumptions in SEIS-II about consolidation, lag storage, and shipping schedules. The comments emphasized that assumptions of similar shipment rates from all RH-TRU waste sites were not acceptable and that shipment of waste from ORNL to WIPP should have a high priority due to quantity, limited adequate storage, and proximity to metropolitan population centers. The commenter said shipments should commence in accordance with the *Oak Ridge Reservation Site Treatment Plan* and that the issue of consolidation of RH-TRU waste at ORNL should be handled separately.

**Response:**
To evaluate environmental impacts, SEIS-II assumed waste would be received at the same rate over the operational lifetime of WIPP. Rather than complicate the analysis by basing it on a system of priorities that is likely to change, DOE chose to assume that no system of priorities is in place, primarily because it would make little difference in the overall impacts. DOE has done some prioritization in the context of the *National TRU Waste Management Plan*, but the priorities set forth in that plan may change. Timetables of waste shipments from specific sites (such as ORNL) would depend on many variables and decisions yet to be made. Variables include the availability of waste certified for shipment and availability of CH-TRU and RH-TRU waste shipping containers.

DOE recognizes its obligations with regard to TRU waste set forth in the *Oak Ridge Reservation Site Treatment Plan* and related orders, and it will fulfill those obligations. The assumptions adopted for the purposes of analyses should not be construed as evidence that DOE intends to leave RH-TRU waste in excess of WIPP capacity at Oak Ridge for indefinite storage. Rather, these assumptions should be recognized as a potential barrier that would need to be addressed to allow DOE to fulfill its agreements. Based on updated waste volume projections contained in the *National TRU Waste Management Plan*, there would be no need to leave RH-TRU waste at Oak Ridge because DOE could dispose of all defense RH-TRU waste within WIPP capacity.

More recent waste volume projections and their effects on the impact analysis are contained in a new Appendix J and in the text of SEIS-II.

The SEIS-II alternatives were based upon the alternatives examined in the WM PEIS with respect to consolidation and/or decentralization. Under the WM PEIS preferred alternative, TRU waste would not be consolidated at ORNL, with the exception of a small amount of SRS RH-TRU waste. The SEIS-II Preferred Alternative takes into account the WM PEIS preferred alternative. Whether, and to what extent, DOE might decide to consolidate waste, in particular RH-TRU waste, at ORNL is a decision that will be made in the context of the WM PEIS, not SEIS-II.

**15.01 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| NA1 | 1 | Todd Crawford | |

**Comment:**
"Is the Basic Inventory of 12,000 cubic meters a fixed allocation of WIPP space for Savannah River Site, or can it be changed as needed under the Proposed Action?"

**Response:**
DOE has not established waste volume allocations at WIPP for different sites. SEIS-II estimates 12,000 cubic meters (420,000 cubic feet) of waste will be in storage or newly generated through the year 2033 at the SRS.

**15.01 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-080 | 3 | Mike Dempsey | |

**Comment:**
"WIPP Airborne Radioactivity Monitoring - Exhaust Shaft, Station A, Station B, Offsite Locations, and the Waste Handling Building: any release would be detected and contained appropriately. I am convinced no problems related to an offsite release will occur."

**Response:**
The exhaust air in the Waste Handling Building always passes through HEPA filters prior to release. Ventilation air from the WIPP underground is continuously monitored for the presence of radionuclides. An accidental atmospheric release of detectable quantities of radioactive materials would be routed through HEPA filters. This filtration would reduce the amount of material released by several orders of magnitude.

SEIS-II analyzed the impacts of accidental releases without HEPA filtration and found impacts to be negligible except for the very low-probability event of a waste hoist failure (see Section 5.1.10.3).

**15.01 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 95 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 3-9. 3.1.3.1 'The Department estimates that it would require up to three years to excavate a panel.' Why would it take 3 years to excavate 7 rooms when 4 rooms were excavated in 6 weeks for the SPDV Program? Revise the estimate."

**Response:**
Section 3.1.3.1 of SEIS-II explains how DOE arrived at its estimate. Because of the "just-in-time excavation" technique that would be employed at WIPP, panel excavation time would depend on the rate of waste receipt. Lower levels of waste receipt and longer periods of excavation would be most likely during the initial years after a projected WIPP opening.

**15.01 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 96 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 3-9. 'The facility would be inspected a minimum of 4 times a year by the Mine Safety and Health Administration.' Point out that the WIPP Land Withdrawal Act requires this."

**Response:**
A reference to Section 11 of the LWA has been added to Section 3.1.3.1 of SEIS-II.

**15.01 (10)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB5 | 5 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"The SEIS is deficient in providing specificities in the anticipated increase of the thermal loading, saying that we would space out with one emplacement per day over a period of up to 190 years. And we note that increasing the curie inventory, in effect, would increase the amounts of the transuranic which are allowed to be released."

**Response:**
Section 3.2.1 of SEIS-II discusses the factors that influence the duration of disposal operations for the action alternatives. These factors include the thermal loading design limit of 10 kilowatts per surface acre, the time necessary to excavate each panel, and the waste handling and emplacement rates. Also, as noted in this section, the handling and excavation operations could be modified to allow shorter operational time periods, and it is likely that actual heat loads (principally from RH-TRU waste) would be less, which would require less excavation. In any event, DOE recognizes that these longer durations for disposal operations under the action alternatives would not be likely if one of these alternatives were to be selected. The duration of disposal operations for these alternatives has been modified accordingly.

DOE must demonstrate that the proposed WIPP repository can comply with the containment requirements of the EPA regulations at 40 CFR Part 191, as implemented by 40 CFR Part 194. These regulations and criteria indicate that the amount of radionuclides that may be released over the 10,000-year period of regulatory interest is proportional to the amount initially disposed of.

**15.01 (11)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 14 | Bruce Trigg | New Mexico Public Health Association |

**Comment:**
"What have those 700 people been doing in Carlsbad all these years?"

**Response:**
The employees at the WIPP site have been engaged in a variety of activities. Among these are readying the facility to operate, gathering information necessary for permits and compliance applications, and preparing the applications that are necessary before WIPP could obtain authority to open. In addition, employees conduct public affairs activities, underground maintenance, administrative and security functions, safety and health compliance activities, recordkeeping and quality assurance tasks, and more.

**15.01 (12)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 27 | Eric Rajala | |
| ALB1 | 57 | Lisa Sparaco | |
| ALB2 | 25 | Sean Asghar | |
| ALB3 | 96 | Jeffrey Rich | |
| ALB3 | 120 | David Mitchell | |
| ALB3 | 121 | David Mitchell | |
| ALB4 | 40 | Jeri Rhodes | |
| ALB5 | 40 | Susan Rodriguez | |
| BO1 | 99 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| C-060 | 6 | Jeff Moyers | RPM2 Building Services Ltd. |
| C-070 | 4 | Alice H. Gray | |
| C-131 | 38 | Don Hancock | Southwest Research and Information Center |
| C-141 | 25 | Margret Carde | Concerned Citizens for Nuclear Safety |
| C-148 | 2 | Landi Fernley | |
| C-152 | 102 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 103 | Robert H. Neill | Environmental Evaluation Group |
| C-157 | 4 | Wendy Lynne Botwin | |
| C-162 | 10 | Kathleen Sullivan | |
| C-163B | 4 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163C | 9 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163E | 18 | No name provided | Citizens for Alternatives to Radioactive Dumping |
| DE1 | 76 | Sam Cole | |
| DE1 | 127 | Kathleen Sullivan | |
| DE1 | 130 | Kathleen Sullivan | |
| E-056 | 38 | Linda Hibbs | |
| OR1 | 12 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| OR1 | 35 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |
| SF1 | 30 | Nausika Richardson | |
| SF1 | 41 | Tom Seibel | |
| SF1 | 69 | Virginia Miller | |
| SF2 | 15 | Kathleen Sullivan | |
| SF2 | 19b | Tai Bixby | |
| SF2 | 54 | Mary Barr | |
| SF3 | 41 | Jai Lakshman | SEVA Foundation |
| SF3 | 44 | Jai Lakshman | SEVA Foundation |
| SF5 | 27 | Susan Curtis | |
| SF6 | 15 | Alfred Fuller | |
| SF6 | 63 | Anna Hansen | |

**Comment:**
Many commenters said the WIPP site's active and passive institutional controls would not be adequate to prevent intrusion, inadvertent or otherwise, into the repository for 10,000 years. More specifically, commenters stated that political systems, languages, and monument markers and warning signs have not been shown to endure for the thousands of years necessary to adequately protect the environment and the public from releases from the WIPP site due to exploration or resource recovery. Some commenters cited DOE's inability to maintain adequate records of currently active oil and gas leases as evidence that institutional controls will be inadequate. Other commenters questioned how DOE or others would monitor the WIPP site to prevent unlawful waste recovery or access to the site. One commenter asked who would be responsible for the WIPP facility in 10,000 years.

**Response:**
EPA established requirements in 40 CFR Part 191 and associated certification criteria in 40 CFR Part 194 regarding the development and installation of active and passive institutional controls. The regulations require DOE to establish active controls (e.g., fencing and pre- and post-closure monitoring) and provide an estimate of their effectiveness in preventing or reducing releases. However, the regulations also indicate that, in demonstrating compliance with the waste containment requirements, active controls can only be presumed to be effective for 100 years, despite their projected effectiveness.

The regulations also require that WIPP be designated by the most permanent markers, records, and other passive controls practicable. The passive system is meant to communicate the presence of dangerous waste material and the potential consequences of intrusion into the waste repository to future generations, regardless of whether agencies such as DOE or funding are available to maintain responsibility for the site. In establishing these regulations, EPA specified that passive controls cannot be relied on for extended periods of time (i.e., thousands of years). Thus, EPA regulations and criteria place primary reliance on the ability of the natural and engineered barriers to isolate TRU waste from the environment, assuming that passive controls may eliminate or reduce inadvertent intrusion for a few hundred years.

Consistent with these regulations, DOE would establish active and passive institutional controls. During disposal operations, active controls (e.g., fencing and security patrols) would be used to prevent unauthorized access to the site. Two oil and gas leases exist within the withdrawn area, but no active wells (or drilling) are present. Near the withdrawn area, many leases and resource recovery activities are under way, requiring the establishment of procedures to maintain an active database of these leases and activities and to monitor any changes that may occur.

Following cessation of the waste disposal operations, active controls (e.g., fencing, routine periodic surveillance, and an unpaved roadway along the perimeter of the waste disposal area [projected to the land surface]) would be implemented. In the event of an intrusion, corrective actions would be taken. Although the nature of disposal in bedded salt makes it unnecessary to monitor the waste per se, groundwater quality and subsidence would be monitored. DOE considers the loss of active institutional controls during and after disposal operations to be extremely unlikely. A temporary failure could conceivably occur during time of war or from a catastrophic natural event such as a meteor strike, but impacts would be highly unlikely and would be minor compared to the events that prompted the loss of institutional controls.

A permanent marking system would convey information about the site to future generations and also provide passive control of the site. The permanent marking system would involve the use of surface monuments, small subsurface warning markers, buried rooms, and large earthen structures marking the WIPP repository footprint on the surface. Messages in the six official United Nations languages (English, French, Spanish, Chinese, Russian, and Arabic) and Navajo would be inscribed on the permanent markers.

DOE, like EPA, acknowledges that it is indeed impossible to ensure complete control of any site for a period of thousands of years. Although waste containment must rely on geologic factors and the engineered barriers such as shaft seals and magnesium oxide backfill, DOE has committed to enhancing its current and proposed institutional controls by maintaining its natural resources (oil, gas, potash) database, periodically reexamining its procedures, and continuing to research possible control design variations (e.g., types of perimeter earthworks, fencing types and locations), monument and subsurface marker material types, and other features of the system.

Despite DOE’s intent to maintain institutional control of the WIPP site, the SEIS-II analyses assume that passive institutional controls would not be effective in preventing intrusion immediately after the 100-year period of active institutional control ends.

On the basis of the long-term performance analyses of SEIS-II (see Section 5.1.12 for the Proposed Action), which assume failure of passive institutional controls, DOE is confident that inadvertent intrusions into the closed repository or its land surface would not result in significant impacts to the public or environment.

The institutional control systems are described briefly in Section 3.1.3.5 of SEIS-II. More detailed descriptions of the post-closure active and passive controls planned for the WIPP site can be found in Chapter 7 of the CCA.

**15.01 (13)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-159 | 5 | Susan Maret | Sierra Club National Nuclear Waste Task Force |

**Comment:**
"DOE has neglected to include information in the D-SEIS-II on quality assurance training of workers, how DOE will conduct audits, and resolution of nonconformance and corrective actions."

**Response:**
The Final SEIS-II has been modified to explain that WIPP workers are trained regularly in safety and quality assurance procedures; any noncompliance with safety procedures would be corrected promptly and appropriate disciplinary action taken. This information would be applicable to all alternatives.

**15.01 (14)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF5 | 80 | Michael Collins | |

**Comment:**
"Recently, there was a shutdown due to killer bees. Have other such catastrophes been studied?"

**Response:**
The commenter refers to a swarm of bees that invaded the WIPP site and caused a temporary shutdown of the facility (lasting approximately one-half day) to protect the site workers. It is an exaggeration to characterize this incident as a catastrophe. Procedures are in place for dealing with nonradiological operational situations and emergencies. In addition, SEIS-II presents an analysis of health-related consequences to workers. SEIS-II estimates the number of injuries, illnesses, and fatalities that may occur to workers at WIPP during disposal operations and decommissioning. The estimates are based upon average DOE occupational injury/illness and fatality rates from 1988 to 1992. Additional information can be found in Sections 5.1.11, 5.2.11, 5.3.11, and 5.4.11 of SEIS-II.

**15.01 (15)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163B | 17 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**
"The on-site supervisor said that $H_2S$ concentrations were so high that his crew, at the land surface, 'was on "red alert" for 48 hours, as dangerous quantities of gas rose up through the ERDA-6 borehole.' Despite their inability to accurately measure the levels of $H_2S$ gas at the ERDA-6 borehole, Profile, Inc. estimated the $H_2S$ level at 260,000 parts per million (ppm) or 26%. DOE was publicly critical of this estimate.

"It turns out that analysis of gas samples from ERDA-6 had been performed for Sandia Labs in 1975, six years earlier. This analysis indicated $H_2S$ concentrations of 320,000 parts per million (ppm), or 32%. This potentially lethal measurement was revealed in the Basic Data Report for Drillhole ERDA-6 (1983, p. 59).

"$H_2S$ attacks membranes and the nervous system, and is lethal on contact at 700 ppm. ...Gas masks can protect miners from $H_2S$ in concentrations up to 1,000 ppm, but for concentrations beyond that there is no protection."

**Response:**
WIPP environmental monitoring personnel wear $H_2S$ (hydrogen sulfide) detectors wherever $H_2S$ has the potential to occur. Early detection of $H_2S$ would allow workers to evacuate the area before exposure to high concentrations of $H_2S$ would occur.

# 16.0 SITE CHARACTERIZATION

## 16.01 General

### 16.01 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-124 | 4 | Roy Young | |

**Comment:**
"Those very characteristics which the DOE promotes for salt (that it deforms plastically and that the repository becomes self-sealing) are in fact the very reasons to decide against it: The salt will deform and flow quite readily with thermal loading from the waste, under pressure, allowing emplaced waste to migrate into one large brine-filled cavity, with no separation."

**Response:**
The salt would undergo virtually no thermal loading from the waste. Based on thermal impact studies, the planning-basis WAC include thermal loading design limits of 10 kilowatts per surface acre that would preclude any significant thermal impacts from emplaced TRU waste in WIPP. DOE has found that the average increase in temperature due to radioactive decay of emplaced CH-TRU and RH-TRU waste would be less than 2ºC (3.6ºF), which is insufficient to induce significant thermal convection and thermal stresses and strains or to substantially modify anticipated chemical reactions. A text box has been added to Appendix H to provide additional information on thermal impacts and other processes that were considered but not analyzed in SEIS-II. Additional information can be found in the CCA, Appendix SCR.

### 16.01 (02)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 72 | Charles Hyder | |
| ALB6 | 105 | Dair Obenshain | |
| ALB6 | 133 | Amy Nixon | |
| C-028 | 1 | C. M. Wood | Centers for Disease Control |
| C-133 | 2 | Bonnie Bonneau | Legions of Living Light |
| C-151 | 13 | Don Moniak | Serious Texans Against Nuclear Dumping |
| DE1 | 41 | Kay Mack | |
| DE1 | 53 | Vince Likar | |
| OR1 | 44 | Karl Shendall | |
| SF3 | 116 | Anhara Lovato | |
| SF6 | 85 | Pia Gallegos | |
| SF7 | 81 | Bonnie Bonneau | Legions of Living Light |
| SF8 | 53 | Katherine Lage | |

**Comment:**
Several commenters raised a variety of issues related to the suitability of salt as a waste disposal medium. A few said that salt beds as geologic units are not stable and change through time, although another commenter stated that the salt beds have existed for hundreds of

millions of years. Other commenters questioned whether the permeability of salt was sufficiently low to merit its use as a disposal medium. One stated that the salt at WIPP is not as impermeable as was first thought. One commenter was concerned about salt creep crushing the waste containers and the need to retrieve the waste. Another commenter questioned the characterization of the salt beds as relatively impermeable in one part of the SEIS-II, and as having extremely low or no permeability in another.

Several commenters stated that slabs of the rock that forms the ceilings of the excavation have come loose and fallen to the floor. The commenters said that these incidents were evidence of instability of the WIPP excavation; another commenter stated that a roof fall in 1990 was predicted and used in the validation of engineering calculations. One commenter said that the interbeds above the roof have been allowed to be fractured.

One commenter was concerned about the presence of faults beneath the site.

**Response:**
SUITABILITY OF SALT: The properties of salt (in particular, halite) suggest that it is a very good medium for containing radioactive waste. Halite in bedded salt, as in the Salado Formation, exhibits very low permeability to fluid flow. In addition, at the depth of the WIPP repository, openings in the salt become closed as a result of inward creep of the salt. As a result, and by design, waste placed in the repository would become encapsulated by the salt and sealed off from the environment.

DOE selected the Salado Formation as the site of the WIPP repository for several geologic reasons: (1) the Salado halite units have very low permeability to fluid flow, as indicated above, which impedes groundwater flow into and out of the repository; (2) the Salado is regionally widespread; (3) the Salado includes continuous halite beds without complicated structure; (4) the Salado is deep with little potential for dissolution; (5) the Salado is near enough to the surface that access is reasonable; and (6) the Salado is largely free of mobile groundwater, as compared to existing mines and other potential repository sites.

With regard to the issue of retrievability, it is not anticipated that waste would have to be pulled out of the repository, either before (“retrieval”) or after (“recovery”) salt creep proceeded to the point that the containers would be crushed. However, SEIS-II has addressed that eventuality in its transportation projections.

It is understood that the earth is a dynamic system. DOE must demonstrate that WIPP can comply with the waste isolation requirements and criteria issued by EPA at 40 CFR Parts 191 and 194. EPA has stated that the requisite performance assessments need not provide complete assurance, or “proof,” that the containment requirements would be met, primarily because of the 10,000-year period of regulatory interest and the inherent uncertainties in this compliance demonstration. Instead, DOE is required to show only a “reasonable expectation” that compliance would be achieved. The SEIS-II analyses (Sections 5.1.12, 5.2.12, 5.3.12, and 5.4.12, and Appendix H) show that isolation of TRU waste at WIPP is feasible, and the CCA demonstrates that the compliance requirements of 40 CFR Parts 191 and 194 would be met.

SALT PERMEABILITY: Exhaustive laboratory and field investigations of the salt of the Salado Formation, in which WIPP is located, has led investigators to conclude that the Salado halite is characterized by extremely low permeability to fluid movement. In fact, results of some field tests have indicated permeabilities sufficiently low that the salt could be considered impermeable, within the capability of the tests to resolve extremely low permeabilities. The description of the salt beds as “relatively impermeable” in SEIS-II was intended to convey the idea that the Salado salt is less permeable in general than the geologic units above and below the Salado. Its “relatively” low permeability and, more importantly, its “absolutely” low permeability are the reasons the Salado was chosen as the host formation of the repository.

SITE INTEGRITY: The three detached roof slabs occurred in the first rooms to be excavated at WIPP. These rooms are part of the original SPDV excavation, which was a test facility constructed in the early 1980s. The slabs were intentionally allowed to fall, and no ground control measures were implemented. The slabs separated from the roof along one of the thin anhydrite and clay layers located just above the roof.

The slabs in each case represented a relatively thin layer of salt that detached from the roof and fell to the floor. They did not leave voids or caverns, nor did salt, liquid, or any other material replace them. Since the floor of the rooms had already undergone a certain amount of buckling (which was anticipated) over the years, the impact of the slabs did not cause additional appreciable cracking in the floor.

The fundamental premise of successful waste isolation at the WIPP facility is that salt creep would ultimately encapsulate the waste and provide a long-term barrier to migration of brine contaminated with radionuclides and hazardous chemicals to the accessible environment. Over a long period of time, relatively small amounts of brine in the immediate vicinity of the waste disposal rooms and disturbed rock zone would be expected to seep into the repository and come into contact with waste materials. This is true even though the overlying marker beds may be fractured or may have been penetrated by roof bolts and exploratory borings. Because only small quantities of brine would be anticipated, it is unlikely that a slurry of brine and waste would form. On this basis, the long-term performance assessment analyses in SEIS-II indicate that no impacts to the environment would be expected from an undisturbed WIPP facility for at least 10,000 years.

Over the past 20 years, DOE has focused its site characterization and experimental program on developing an adequate understanding of key elements of the natural barrier system (geology, hydrology) that would serve to isolate TRU waste from the environment. To date, no evidence has been found to indicate that there are faults at the WIPP site. DOE believes that the WIPP site characteristics and design will ensure that radioactive material would not reach the environment. Because WIPP is located in thick salt beds at considerable depth, it is well isolated from water-bearing formations above and below the facility horizon. The most significant water-bearing hydrogeologic unit that may be considered in a scenario involving off-site migration of radioactive contaminants is the much-investigated Culebra Dolomite of the Rustler Formation, about 440 meters (1,440 feet) above the repository. The long-term performance assessment analyses in SEIS-II indicate, however, that no impacts to the overlying water-bearing units would be expected from an undisturbed WIPP facility for at least 10,000 years. Analysis of the most conservative cases of disturbed conditions involving drilling through the repository and into a pressurized brine reservoir resulted in contaminants being released from the repository to the Culebra Dolomite. However, transport analysis of the migration of these releases to an off-site stock well concluded that human health impacts would be negligible.

## 16.02 Air Quality

### 16.02 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-006 | 2 | Frank J. Deckert | U.S. Department of the Interior |

**Comment:**
"We recognize that your project emissions are low; however as a Class 1 PSD Air Quality Area even [an] incremental increase could degrade air quality at Carlsbad Caverns National Park. We are concerned with any cumulative deterioration that could hamper preserving the Park's ecosystem and providing for the public enjoyment. We encourage careful and precise monitoring of air quality parameters. We request that you select measures to reduce threats to Carlsbad Caverns National Park."

**Response:**
An air quality permit for WIPP was obtained in 1994 (New Mexico Air Quality Permit 310-M-2) and is on file with the New Mexico Environment Department. Two potential sources of emissions were modeled: fugitive salt dust and exhaust from diesel generators. Concentrations would not be measurable at the WIPP site boundary. Therefore, no adverse effects on Carlsbad Caverns, as well as anywhere outside the WIPP site boundary, would result from operations.

## 16.03 Ecological Resources

### 16.03 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-080 | 4 | Mike Dempsey | |
| OR1 | 34 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |

**Comment:**
Two commenters referred to the WIPP site and region at the surface. One inquired as to the meaning of "sparsely inhabited" as a description of the WIPP site. The other said that the land surrounding the WIPP site has improved since the land withdrawal with respect to erosion and dust due to animals and vehicles, protection of wildlife, and water management.

**Response:**
The description of the WIPP site as "sparsely inhabited" refers to the human population.

The comment presenting the observation that the land surrounding the WIPP site has improved is appreciated.

## 16.04 Geology

### 16.04 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-076 | 1 | Mary Brissenden | |
| CA1 | 6 | Richard Boren | |
| DE1 | 182 | Amy Marschak | |
| SF7 | 24 | Suzanne Phillips | |

**Comment:**
A few commenters said they were concerned about the potential for earthquakes and volcanic activity. Two cited occurrences of earthquakes in the site region. One commenter pointed out that other parts of the country have less historic seismic activity than the WIPP region.

**Response:**
WIPP is in an area characterized by relatively low seismicity. The strongest earthquake on record within 290 kilometers (180 miles) of the site was the Valentine, Texas, event in 1931, with an estimated Richter magnitude of 6.4. Two events have occurred in the WIPP region since 1990: the Rattlesnake Canyon earthquake in 1992, with a magnitude of 5.0 (100 kilometers [60 miles] from the site) and one near Alpine, Texas, in 1995 with a magnitude of 5.3 (240 kilometers [150 miles] from the site). The latter event is the largest event within 300 kilometers (185 miles) of the site since the 1931 event, according to a 1995 report on seismicity of the WIPP site, but it had no effect on any structures at WIPP. No effects of severe seismic activity, such as faulting or igneous intrusions, have been observed in the excavations at WIPP; the nearest igneous dike is about 13 kilometers (8 miles) from the center of the site.

For engineering design purposes, the intensity of an earthquake is considered in terms of the maximum acceleration, expressed as a fraction of the acceleration due to gravity (g), of the ground movements during shaking caused by the earthquake. Based on probabilistic calculations, the strongest earthquake acceleration expected at WIPP within the next 1,000 years is 0.075g. The design-basis earthquake (determined by rounding up 0.075g to 0.1g for conservatism) is included in WIPP's design criteria for Class I and Class II structures. Although the underground facilities are not designed specifically to the design-basis earthquake, mine experience and studies on earthquake damage to underground facilities show that tunnels, mines, wells, etc., are not damaged at sites having peak accelerations at the surface below 0.2g.

## 16.05 Hydrogeology

### 16.05 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 32 | Virginia Kotler | |
| ALB5 | 79 | Melinda Stanley | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-133 | 12 | Bonnie Bonneau | Legions of Living Light |
| C-162 | 2 | Kathleen Sullivan | |
| C-163D | 1 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163G | 11 | Jeff Radford | Business People Concerned about WIPP |
| DE1 | 85 | Ben Lipman | |
| DE1 | 104 | Roy Young | |
| SF1 | 25 | Nausika Richardson | |
| SF2 | 7 | Kathleen Sullivan | |
| SF2 | 53 | Mary Barr | |
| SF4 | 75 | Bonita McCune | |

**Comment:**
Many commenters stated that water is present around and within the WIPP excavation. Several said that plans to develop WIPP were based on the understanding that the salt beds would be dry, and that the seepage of brine into the repository through the salt and down the shaft was unexpected. One commenter stated that the fundamental questions relate to the age of the water and the rate at which it exchanges with water in the accessible environment. Another commenter said she was concerned about corrosive effects on the waste, and still another stated that water migrates readily through salt.

**Response:**
Conditions observed in the salt beds exposed by excavations in the WIPP underground indicate that, while the salt beds contain brine within their intergranular pore spaces, the permeability and porosity of the salt are extremely low, significantly limiting the Salado Formation's ability to transmit any brine in its pore space. Evidence of these properties is indicated by the appearance of minor brine seeps and the occurrence of salt that has precipitated along bedding planes, cracks, and crevices. Over the long-term performance period, the limited amounts of brine in the immediate vicinity of the repository and the disturbed rock zone would be expected to seep into the repository, corrode the waste containers to some extent, and come into contact with waste materials. However, the fundamental premise of waste isolation at WIPP is that salt creep would ultimately encapsulate the waste and provide a long-term barrier to migration of waste-contaminated brine to the accessible environment. These waste isolation characteristics have been incorporated into the long-term performance analyses (see Section 5.1.12 for the Proposed Action and Appendix H in SEIS-II).

The water originating in the upper part of the shafts is gradual seepage, often referred to as "mine watering." It is a common occurrence in mines that contain shafts.

A 1996 NAS report on WIPP has found that the WIPP repository has the ability to isolate waste for more than 10,000 years, assuming that it is sealed effectively and that it remains undisturbed by human activity. This effectively defines the consensus within the scientific community that fluids in the low-permeability Salado Formation salt would not reach the accessible environment within a reasonable ("human-scale") time frame and, in any case, within 10,000 years.

**16.05 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 119 | Robert H. Neill | Environmental Evaluation Group |
| C-162 | 2 | Kathleen Sullivan | |
| C-163A | 70 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163G | 11 | Jeff Radford | Business People Concerned about WIPP |
| CA1 | 3 | Richard Boren | |
| DE1 | 85 | Ben Lipman | |
| OR1 | 21 | Don Hancock | Southwest Research and Information Center |
| SF2 | 7 | Kathleen Sullivan | |
| SF4 | 89 | Bonita McCune | |
| SF8 | 69 | Janet Greenwald | |

**Comment:**
Several commenters stated that pressurized brine reservoirs exist beneath the WIPP site; they said that the pressure is sufficiently high that contaminated brine could flow up a borehole that penetrated the repository and brine reservoir and contaminate aquifers and the surface. Commenters also said that the WIPP site had previously been moved as a result of a borehole encountering a pressurized brine reservoir (WIPP-12). One commenter stated that a hydraulic connection between the WIPP excavation and a brine reservoir could develop: the excavation would be constructed to within 15 meters (50 feet) of the ERDA-9 borehole, and the bottom of the ERDA-9 borehole, which penetrates 15 meters (51 feet) into the upper Castile anhydrite, is separated from the brine reservoir by 60 meters (200 feet) of vertically fractured anhydrite. One commenter questioned a statement in SEIS-II that pressurized brine reservoirs in the Castile Formation "occur as three or four discrete pockets."

**Response:**
In 1974, during initial siting studies to identify a suitable candidate site for a repository, drilling northeast of the current WIPP site revealed unsuitable geologic conditions such as steeply dipping beds, missing units, and brine containing hydrogen sulfide near the deeper planned repository depths. These geologic conditions necessitated a search for a new site in a region (the Los Medaños area) where salt bed deformation was absent and the occurrence of brine pockets was thought to be unlikely.

During the site characterization phase within the Los Medaños area, the WIPP-12 borehole (north of the current WIPP site) was deepened into the Castile Formation below the repository horizon and encountered large quantities of brine that flowed freely into the borehole and to the surface. The discovery of the brine reservoir prompted DOE to consider changing the repository waste panels layout, from the planned location north of the experimental area to the current configuration south of the shafts (see Section 2.1.4 of SEIS-II). This discovery also led to a geophysical program in the 1980s to investigate the possibility of brine reservoirs under the current site. In addition, the development of probabilistic performance assessments led to a significant effort to characterize the consequences of various combinations of natural and human-induced events and processes (e.g., model analysis of multiple intrusions into the repository and a brine reservoir). The analyses contained in Section 5.1.12 for the Proposed Action and Appendix H demonstrate that TRU waste would remain isolated from the environment. Reanalysis of selected bounding cases of inadvertent drilling into the repository and a hypothetical pressurized brine reservoir for the Final SEIS-II did show that contaminant releases to the Culebra Dolomite would occur within 10,000 years. However, radiological impacts from migration of these releases to distances greater than 1 kilometer (0.6 mile), including a stock well 3 kilometers (2 miles) downgradient from the intrusion borehole, were found to be negligible.

Section 2.1.4 of SEIS-II has been modified to include a discussion of WIPP site selection. Section 4.1.3.2 has also been modified to include a more detailed discussion of brine reservoirs.

It is unlikely that a brine reservoir in the upper Castile Formation would connect hydraulically with the WIPP repository. The geologic barriers mentioned in one comment (Castile anhydrite and Salado salt) would probably function to isolate the repository. In any event, even if a connection were made and some brine flowed into the repository, the only conceivable way to transport dissolved radionuclides and hazardous chemicals to the accessible environment would be by drilling into the repository after the connection was made. A scenario nearly like this was analyzed in SEIS-II, in which a borehole inadvertently penetrated the repository and continued downward into a pressurized brine reservoir in the upper Castile.

Over a 10,000-year period, the probability of an exploratory borehole encountering a pressurized brine pocket after intersecting the repository is unknown, but it is likely to be less than 10 percent, based on a geostatistical interpretation of a large regional database (see Appendix SCR.3 of the CCA). To bound this potential impact, DOE evaluated the impact of drilling an exploration well that would encounter a pressurized brine pocket after penetrating an individual waste panel. Results of the evaluation indicate that, under this scenario, (1) a direct release of waste materials from the repository to the land surface would be expected, and (2) a member of the drilling crew and a well site geologist would be exposed to the released materials. The impacts of this scenario under the Proposed Action and all action alternatives showed that brine moving up the borehole would not reach important hydrogeologic units, such as the Culebra Dolomite, and thus no off-site migration of waste would be expected to occur (see Chapter 5 and Appendix H in SEIS-II for additional details).

With regard to the statement that pressurized brine reservoirs in the Castile Formation "occur as three or four discrete pockets," this was the interpretation of WIPP site data from a time-domain electromagnetic survey, which was designed to establish the presence or absence of Castile brine beneath the WIPP site and delineate its extent. A 1995 SNL study titled *Systems Prioritization Method – Iteration 2, Baseline Position Paper, Non-Salado Flow and Transport* stated that the "time-domain electromagnetic survey surveys … conducted at the WIPP site can be interpreted to suggest the presence of one to four Castile brine reservoirs that may extend beneath portions of the WIPP disposal rooms. A conservative implementation of this interpretation for assessment calculations is to specify four discrete reservoirs rather than a single reservoir, because a subsequent hit of a different reservoir would encounter a pressurized, rather than unpressurized, reservoir [i.e., it is more conservative]."

**16.05 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163A | 54 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 55 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 56 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 57 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 58 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 59 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**
One commenter stated that a cooler climate is likely over the next several thousand years because of variations in the earth's orbit. The commenter said that after fossil fuels are depleted, no greenhouse-effect warming would occur to counteract this cooling. He stated that if the mean temperature dropped $8^{o}$ to $11^{o}C$ ($14^{o}$ to $20^{o}F$), the rate of evaporation would decrease by approximately one-half and the surface and subsurface would become significantly wetter, even if precipitation did not increase. The commenter said that if this occurred, groundwater recharge would increase, and Laguna Grande would enlarge and probably overflow into the surrounding area, including the Pecos River.

**Response:**
The uncertainties of possible future climate change, including the possibility of a future wet climate in the WIPP region, have been incorporated into the performance assessment analyses by considering the effects of future climates on groundwater flow and potential radionuclide transport in groundwater. Historic climatic conditions are discussed in Section 2.5 and Appendix CLI of the CCA. Direct effects that do not involve groundwater (e.g., wind) are not likely to affect the long-term performance of WIPP because of its depth below land surface.

On the basis of these studies, the effects of postulated climate change on groundwater flow were evaluated using a regional three-dimensional model based on a concept of basin hydrology. Results of the analysis, when considering postulated increases in effective recharge (due to a wetter climate), show that the total quantity of water in the region would increase, and groundwater velocity of all units may increase as a result of the resulting increased hydraulic gradient. A number of simulations that considered a range of conditions and properties, including the corrosion of waste drums, showed that the largest observed increase in overall flow was by a factor of approximately 2.

Overall, these results suggest that if an intrusion were to release radionuclides to one of the significant water-bearing units (e.g., the Culebra Dolomite) above the repository, radionuclides would be transported at a faster rate to the accessible environment but would be diluted to lower concentrations by increased groundwater flow. Thus, the impact on long-term performance of the repository would be minimal; i.e., waste would remain isolated even in a wet climate. A text box has been added to Appendix H to provide information on the potential impact of climate change.

**16.05 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 28 | Eric James | |
| ALB3 | 24 | Robin Seydel | |
| BO1 | 54 | Representative Jack Barraclough | |
| C-070 | 2 | Alice H. Gray | |
| C-122 | 3 | Ross Lockridge | Concerned Citizens of Cerrillos |
| C-151 | 14 | Don Moniak | Serious Texans Against Nuclear Dumping |
| C-163A | 13 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 53 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| SF4 | 89 | Bonita McCune | |
| SF4 | 97 | Joseph Oliaro | |
| SF6 | 86 | Pia Gallegos | |
| SF8 | 68 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**
Many commenters stated that WIPP will fail to isolate the radioactive waste and that groundwater and, ultimately, the Laguna Grande, the Pecos River, the Rio Grande, the Gulf of Mexico, and aquifers in Oklahoma will become contaminated. One commenter stated that the WIPP site is geologically and hydrologically suspect. One commenter cited the desirable characteristics of the site, including those favoring minimization of waste transport.

**Response:**
DOE believes that, given the design of WIPP, radioactive material is not expected to reach the water bodies and aquifers about which the commenters are rightfully concerned. WIPP is sited in thick salt beds about 655 meters (2,150 feet) below the land surface. It is well isolated from water-bearing formations above and below the facility horizon. The most significant water-bearing hydrogeologic unit that may be considered in a scenario involving off-site migration of radioactive contaminants to the Pecos River (about 24 kilometers [15 miles] southwest of the WIPP site) is the much-investigated Culebra Dolomite of the Rustler Formation, about 440 meters (1,440 feet) above the repository.

A three-dimensional groundwater basin modeling effort was undertaken to improve DOE's understanding of the hydrogeology of the Culebra Dolomite in the context of regional groundwater flow. A fundamental aspect that has evolved from the modeling is that the groundwater system is dynamic and is responding to the drying of the climate that has occurred since the end of the Pleistocene. Recharge rates at the end of the Pleistocene maintained the water table at a level near the land surface; groundwater flow was therefore controlled by the immediate features of the land surface topography. This resulted in the east-to-west flow of groundwater, probably into Nash Draw. As the water table dropped, groundwater flow was influenced increasingly by the topography at the scale of the entire groundwater basin, and its direction changed toward the south and southwest. Further information can be found in Chapter 2 and Appendix MASS of the CCA.

The long-term performance assessment analyses in SEIS-II have indicated that no impacts to local groundwater and the Pecos River from an undisturbed WIPP repository would be expected for at least 10,000 years. DOE also analyzed the consequences of a potential future intrusion that penetrates the repository and subsequently encounters a pressurized brine reservoir. The analysis showed that in an intrusion borehole case, contamination may reach the Culebra Dolomite, but transport modeling showed that only very small amounts of contaminants would migrate from the point of release over 10,000 years. At a stock well 3 kilometers (2 miles) from the point of release, under the most severe case analyzed, no human health impacts (less than $10^{-20}$ probability of an LCF) would result. Results of these analyses are detailed in Chapter 5 and Appendix H of SEIS-II.

**16.05 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 83 | Janet Greenwald | |

**Comment:**
"There is a contradiction in water flow results from the WIPP site in the Castile formation which is over the WIPP site, which is the most likely way for waste to reach the biosphere, according to the Department of Energy. It is believed that the water flows from north to south, and that's from hydrological well tests. However, the chemical analysis of the water shows that there [are] less minerals towards the south of the site than there [are] toward the north of the site, which means that the chemical analysis of the water contradicts the hydrological calculations."

**Response:**
There has been an apparent inconsistency between the current inferred flow direction in the Culebra and the observed geochemistry. At the time the geochemical work was performed (in the late 1970s and early 1980s), the interpretations made indicated that the water is relatively old and that no young water directly recharges the Culebra in the site area. In addition, the present-day geochemistry appeared to be inconsistent as well with the assumption of long-term, steady-state, perfectly confined flow ("two-dimensional" flow) in the Culebra, which was the flow model used in the late 1970s and early 1980s.

These inconsistencies led researchers to consider that flow directions may have changed over time, in response to climate changes. This idea provided a major motivation for reexamining the Culebra and the Rustler flow system. Two major studies were undertaken as a result of the reexamination: (1) two-dimensional vertical and two-dimensional horizontal regional-scale modeling by the United States Geological Survey, titled *Variable-Density Ground Water Flow and Paleohydrology in the Waste Isolation Pilot Plant (WIPP) Region, Southeastern New Mexico*, and (2) a three-dimensional regional-scale modeling study by SNL, titled *The Role of*

*Regional Groundwater Flow in the Hydrogeology of the Culebra Member of the Rustler Formation at the Waste Isolation Pilot Plant (WIPP), Southeastern New Mexico*.

The recent three-dimensional study has yielded several important observations. Significant changes in flow direction have apparently occurred in the Culebra as a result of the lowering of the water table due to climate change since the last glacial pluvial. The amount of vertical flow into the Culebra varies spatially, as do the magnitude and rate of flow in general.

The modeling has resulted in at least two preliminary conceptual frameworks in which flow and chemistry are consistent: (1) east-to-west flow in the Culebra in the southern site area changed to north-to-south flow as a result of climate change; and (2) present-day flow directions are not incompatible with geochemistry when very small fluxes east of WIPP and vertical fluxes to the south-southwest are considered.

A more detailed analysis of the existing geochemical data and the recently completed three-dimensional regional flow model may be the only way to confirm or modify the two preliminary conceptual frameworks. Nonetheless, given the current understanding of the range of Culebra flow behaviors observed in the three-dimensional regional flow model, and the likelihood that there is a conceptual tie between Culebra flow and the observed geochemistry, the representation of Culebra flow as incorporated into the performance assessment calculations is reasonable.

**16.05 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 50 | Lisa Sparaco | |
| ALB2 | 146 | Janet Greenwald | |
| ALB2 | 148 | Janet Greenwald | |
| ALB2 | 158 | Rick Packie | |
| ALB4 | 99 | Angela Wiebalk | |
| ALB5 | 30 | Susan Rodriguez | |
| ALB6 | 51 | David Pace | |
| ALB6 | 52 | David Pace | |
| ALB6 | 55 | David Pace | |
| C-133 | 9 | Bonnie Bonneau | Legions of Living Light |
| C-133 | 17 | Bonnie Bonneau | Legions of Living Light |
| C-141 | 19 | Margret Carde | Concerned Citizens for Nuclear Safety |
| C-163A | 1 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |
| C-163A | 2 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |
| C-163A | 3 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |
| C-163A | 4 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |
| C-163A | 5 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |
| C-163A | 6 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People’s Coalition |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163A | 7 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 8 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 9 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 10 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 11 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 12 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 15 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 21 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 22 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 23 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 24 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 25 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 26 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 27 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 28 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 29 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 30 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 31 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 32 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 33 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 34 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 35 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 36 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 37 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 38 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163A | 39 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 40 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 41 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 42 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 43 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 44 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 45 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 46 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 47 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 48 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 49 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 50 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 51 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 52 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 53 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 61 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 62 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 63 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 64 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 65 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 66 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 67 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 79 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163A | 83 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163B | 18 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163B | 19 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163B | 20 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163E | 8 | No name provided | Citizens for Alternatives to Radioactive Dumping |
| C-163F | 9 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163F | 10 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163F | 11 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163F | 12 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163G | 11 | Jeff Radford | Business People Concerned about WIPP |
| C-163H | 6 | David T. Snow | |
| CA1 | 3 | Richard Boren | |
| E-056 | 16 | Linda Hibbs | |
| E-056 | 17 | Linda Hibbs | |
| SF1 | 24 | Nausika Richardson | |
| SF4 | 64 | Deborah Reade | |
| SF8 | 66 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| SF8 | 67 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| SF8 | 68 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| SF8 | 69 | Janet Greenwald | |

**Comment:**
Many commenters said that karst processes are a potential hazard that may affect WIPP performance and that they have not been adequately addressed. One commenter stated that WIPP would probably not be able to meet EPA standards for permanent disposal. Another commenter has performed an extensive investigation of karst features and processes in the WIPP region and submitted specific comments regarding his observations and conclusions. This commenter said, among other things, that (1) the Mescalero caliche is not a barrier to rainwater infiltration, (2) there are karst features at the WIPP site, (3) the Rustler undergoes fresh water recharge, (4) there is evidence of dissolution at the base of the Rustler at the northern part of the WIPP site, (5) a gravity survey of parts of the WIPP site indicates the presence of cavities/channels, (6) a water balance calculation suggests very short travel times in the Rustler, and (7) geochemical evidence argues for Laguna Grande as the discharge point for the Rustler and the Malaga Bend of the Pecos River as the discharge point for the brine aquifer.

**Response:**
DOE has investigated the hydrology of important geologic units overlying the WIPP facility for nearly 20 years and is well aware of the importance of karst features and related dissolution processes in defining the surface features in the region surrounding WIPP. The current

understanding of the extent, timing, and features related to dissolution (including a brief history of past project studies related to karst) in the area surrounding WIPP is described in Section 4.1.3.2 of SEIS-II. In summary, these studies and investigations, including those mentioned by one commenter, have shown considerable evidence of dissolution and karst features at shallow depths. The surface locally has a karst terrain containing sinkholes, solution-subsidence troughs from both surface and subsurface dissolution. However, the results of past studies suggest that these dissolution processes are generally found in higher stratigraphic units and within a few hundred feet of the land surface. No evidence collected to date would suggest that these shallow dissolution processes are active within the deeper Salado Formation. Deep dissolution at the WIPP site has been eliminated from the performance assessment calculations on the basis of low probability of occurrence over the next 10,000 years.

DOE’s current understanding of recharge and discharge in the water-bearing units above the Salado Formation, including the Rustler, are articulated in Chapters 2 and 6 of the CCA. The principal and most extensively studied water-bearing units in the Rustler include the residues (residuum) from evaporite dissolution at the contact between the Rustler and Salado Formations (referred to as the brine aquifer by one commenter), the Culebra Dolomite, Magenta Dolomite Members.

With regard to the comment about the Mescalero caliche and recharge, DOE has stated in the CCA that although the Mescalero caliche is a well-developed calcareous remnant of an extensive soil profile across the WIPP site and adjacent areas and may be up to 3 meters (10 feet) thick in some areas, it is acknowledged as not being continuous and it does not prevent infiltration to the underlying formations. However, DOE does contend that the highly mineralized nature of groundwater found in various water-bearing units of the Rustler supports the idea that these units are largely confined water-bearing units. The notion of widespread vertical leakage of local infiltrating rainwater through low permeability units above the Culebra and Magenta, as suggested by one commenter, is not supported.

Groundwater found in the Rustler Formation has been or is currently being recharged from a number of areas in the region, as described in *Integration of Hydrogeology and Geochemistry of the Culebra Member of the Rustler Formation in the Vicinity of the Waste Isolation Pilot Plant* (Corbet 1997 in Appendix H). The dissolved ions in the brines of the Rustler-Salado contact residuum are predominantly sodium and chloride; dissolved-solids concentrations range from 79,800 milligrams per liter at test hole H-7C to 480,000 milligrams per liter at test hole H-1. Large concentrations of dissolved potassium and magnesium in groundwater in the eastern part of the study area indicate restricted flow and extensive interaction between the groundwater and its host rock.

Water in the Culebra Dolomite is slightly saline to briny; dissolved-solids concentrations range from 3,200 milligrams per liter at test hole H-8B to 420,000 milligrams per liter at test hole P-18. Dominant dissolved ions are sodium and chloride; other ions include sulfate, potassium, calcium, and magnesium. Not only does the mineralization of the water generally increase from west to east across the site, but so do the concentrations of potassium and magnesium.

The water in the Magenta is saline to briny; concentrations of dissolved solids range from 5,460 milligrams per liter at test hole H-9A to 270,000 milligrams per liter at test hole H-10A.

Dissolved-mineral constituents of the water include sulfates and chlorides of sodium, magnesium, potassium, and calcium, the major percentages being sodium and chloride. Larger magnesium and potassium concentrations in the eastern part of the site may indicate restricted circulation in the Magenta.

Water level maps of the Culebra Dolomite indicate flow is southwest across the WIPP site toward Nash Draw at a gradient of 12 meters (39 feet) per mile and then south-southwest down Nash Draw to Malaga Bend on the Pecos River at a gradient of about 3 meters (10 feet) per mile. DOE has examined past investigations and collected its own geochemical and hydraulic head data and has concluded that the water present in neither the Culebra Dolomite Member nor the Rustler-Salado residuum is in good hydraulic connection with the brine from springs that flow into Laguna Grande de la Sal. The most likely source of the brines discharging into Laguna Grande is the Tamarisk Member of the Rustler.

DOE has no evidence to support the suggestion made by one commenter that, because of the high degree of dissolution and associated fracturing, plutonium in Culebra (Rustler) groundwater would reach the accessible environment in as little as 100 years. Results of recent hydraulic and tracer tests in wells completed in the Culebra Dolomite and plutonium adsorption studies performed by DOE provide hydraulic and geochemical data evidence to the contrary.

To support the CCA analysis, DOE has used results of these hydraulic and tracer tests and adsorption studies to develop a two-dimensional flow and transport model of the Culebra Dolomite. SEIS-II used this model to perform a transport analysis of contaminants released to the Culebra from the most conservative cases of drilling through the repository and into a pressurized brine reservoir. Results of these analyses showed that all actinides released during an intrusion and transported in the Culebra would be highly adsorbed and would not reach the accessible environment in concentrations to create a human health impact greater than a $1 \times 10^{-20}$ probability of an LCF within 10,000 years after site closure. More detailed information on these analyses are summarized in Sections 5.1.12, 5.2.12. 5.3.12, and 5.4.12 of Chapter 5 and Section H.8 of Appendix H of the Final SEIS-II.

EPA is now in the process of determining, in the context of the CCA, whether WIPP would meet the requirements for disposal of TRU waste.

## 16.06 Inadequate/Incomplete

### 16.06 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 22 | Maria Santelli | |
| ALB1 | 50 | Lisa Sparaco | |
| ALB2 | 21 | Sean Asghar | |
| ALB2 | 58 | Jeff Radford | Business People Concerned about WIPP |
| ALB2 | 133 | Deborah Reade | |
| ALB2 | 145 | Janet Greenwald | |
| ALB2 | 157 | Rick Packie | |
| ALB3 | 24 | Robin Seydel | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 75 | Jack Uhrich | |
| ALB3 | 87 | Karen Navarro | |
| ALB4 | 31 | Jeri Rhodes | |
| ALB4 | 36 | Jeri Rhodes | |
| ALB4 | 52 | Lawrence Carter-Long | |
| ALB4 | 64 | Lawrence Carter-Long | |
| ALB5 | 29 | Susan Rodriguez | |
| ALB5 | 30 | Susan Rodriguez | |
| ALB6 | 38 | Joan Robins | |
| ALB6 | 41 | Joan Robins | |
| ALB6 | 55 | David Pace | |
| BO1 | 113 | Michele Kresge | |
| C-118 | 13 | David Proctor | |
| C-125 | 5 | Barbara H. Johnson | The Rio Grande Chapter of the Sierra Club |
| C-129 | 9 | Richard A. Kenney | Coalition 21 |
| C-141 | 19 | Margret Carde | Concerned Citizens for Nuclear Safety |
| C-151 | 14 | Don Moniak | Serious Texans Against Nuclear Dumping |
| C-151 | 15 | Don Moniak | Serious Texans Against Nuclear Dumping |
| C-159 | 8 | Susan Maret | Sierra Club National Nuclear Waste Task Force |
| C-163B | 9 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163B | 12 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163E | 6 | No name provided | Citizens for Alternatives to Radioactive Dumping |
| C-163F | 2 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163G | 7 | Jeff Radford | Business People Concerned about WIPP |
| C-163H | 11 | David T. Snow | |
| E-056 | 23 | Linda Hibbs | |
| E-069 | 5 | Pat Clark | Snake River Alliance |
| OR1 | 32 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |
| SF1 | 32 | Nausika Richardson | |
| SF3 | 61 | Bill Gould | |
| SF4 | 62 | Deborah Reade | |
| SF5 | 56 | Amy Mohr | |
| SF6 | 86 | Pia Gallegos | |
| SF7 | 140 | Barbara Conroy | |
| SF8 | 15 | Carl Tsosie | Picuris Pueblo Tribal Council |
| SF8 | 59 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |

**Comment:**

Many commenters said that the WIPP site geology and hydrology were inadequately, even poorly, understood, and that the studies and tests necessary to gain a proper understanding have not been done. One commenter stated that borehole DOE-1 was drilled with freshwater gel, dissolving much of the halite from the cuttings. Another commenter stated that these contentions should not go unchallenged, and further stated that the groundwater systems at WIPP have been extensively investigated, are well understood, and there is practically no risk of waste getting to the surface. One commenter asked what the likelihood was that information obtained in the future would further, or significantly change, the understanding of environmental impacts.

As examples of inadequately characterized site elements and processes, commenters cited regional groundwater distribution and flow, the location of the water table, the geologic stability of the site, karst, groundwater recharge and discharge, the Dewey Lake Redbeds, radionuclide transport, Castile brine reservoirs, the flow and transport properties and fracture characteristics of the Culebra Dolomite, groundwater basin modeling, and the potential presence of faults beneath the site. A few commenters pointed to EEG studies that support the contention of inadequate characterization, and one commenter held that recommendations for tests by the EEG should have been followed. Commenters' recommendations for testing were broad, calling for the tests necessary for a complete understanding of the geology and hydrology. Two commenters maintained that the Culebra fracture characteristics could be obtained only by conducting a slant-drilling program, since vertical boreholes have intersected a nonrepresentative number of vertical fractures.

**Response:**
Over the past 20 years, DOE has focused its site characterization and experimental program on developing an adequate understanding of key elements of the natural barrier system (e.g., geology, hydrology) that serve to isolate TRU waste from the environment. Key elements include, for example, the following:

- rock mechanics and hydraulic behavior of the Salado salt beds (including the process of salt creep and the propagation of fractures in the host rock)
- the quantity and rate of brine inflow
- the gas generation potential of emplaced waste
- the characteristics of the pressurized brine reservoirs that underlie the repository, and flow and transport in the Culebra Dolomite

Even after two decades of site characterization and experimentation, uncertainties remain due to the intrinsic variability from heterogeneity of the natural system. Uncertainties are also inherent in the events and processes necessary to determine the ability of WIPP to isolate waste. To overcome these uncertainties, various conceptual understandings of the natural system (models) have been advanced and considered, and parameter distributions have been developed as appropriate. In instances for which these uncertainties cannot be reasonably treated, conservative choices were made in selecting modeling assumptions and parameter values. Because of the extent of its site characterization and experimental program and the way in which uncertainties have been incorporated into its performance assessment analyses, DOE believes that it understands the natural barrier system, including groundwater movement, sufficiently for purposes of demonstrating compliance with the regulations and criteria for isolating TRU waste from the environment.

In 1994 and 1995, after almost 20 years of site characterization and the experimental program, DOE developed and applied a systems prioritization method. This formalized decision method (1) analyzed the potential combinations of activities in terms of predicting contributions to long-term performance and demonstrating compliance with the regulations and criteria of 40 CFR Parts 191 and 194, and (2) analyzed performance tradeoffs with the objective of identifying combinations of scientific activities, sets of waste characteristics, and engineered alternatives with the most favorable performance indicators.

As part of this effort, DOE reviewed potential sources of uncertainty, quantified the potential impact of these uncertainties, and implemented a specific suite of experimental activities to build the baseline used to support compliance analyses. These included (1) studies of colloid chemistry and dissolved actinide solubility; (2) rock mechanics and shaft seal investigations; (3) a multi-well tracer test in the Culebra Formation; (4) evaluations of chemical retardation and fracture-matrix flow in the Culebra Dolomite; and (5) studies of direct releases to the surface. Results of these experimental efforts have been incorporated into the long-term performance analyses of SEIS-II (see Section 5.1.12 for the Proposed Action and Appendix H.1).

DOE has worked with oversight groups, including the EEG, throughout the project and has followed many of the recommendations made by the EEG regarding additional testing and analysis.

A 1996 NAS report on WIPP has found that the WIPP repository has the ability to isolate waste for more than 10,000 years, assuming that it is sealed effectively and that it remains undisturbed by human activity. The report also found that if WIPP were disturbed by human activity, the consequences could be reduced, based on engineering design options and improved understanding from ongoing scientific studies.

In addition, the report recommends that analyses and experiments continue, believing that uncertainties in long-term performance could be reduced and other concerns could be eliminated. In summary, the report suggests that (1) a more comprehensive understanding of non-Salado hydrology is needed to judge the role of the Rustler Formation (Culebra) and adjacent formations in delaying radionuclide release; (2) the effects of fluid injection on the repository should be analyzed; and (3) waste solubility and transport studies should be concluded.

DOE believes that the recently completed analyses of the H-19 tracer study and the present three-dimensional modeling provide sufficient confidence in the Culebra model for purposes of compliance. DOE also found that the Dewey Lake Formation does not play a role in performance assessment analysis because, in the long term, fluids never reach that elevation given the intrusion borehole parameters. Also, as discussed in Appendix H of SEIS-II, the effects of fluid injection have been considered. Finally, actinide solubility and colloid mobilization have been examined and incorporated into performance assessment analyses; retardation effects, based on laboratory information, have also been considered.

For the purposes of enhancing disposal operations and maintaining compliance certification, DOE has developed a disposal phase experimental program. Key to this program would be monitoring activities to verify predicted disposal system performance and additional performance assessment calculations. Appendix H of SEIS-II has been updated to reflect the status of key investigations or experiments relevant to performance assessment analysis.

Regulations at 40 CFR Section 194.15 stipulate that WIPP must be recertified every five years. DOE is required to submit new information obtained during the previous five-year period, including monitoring data, analytical results, and results of experiments. Changes in activities or assumptions from those of the most recent compliance application must be identified. In this way, developments in the understanding of potential environmental impacts from WIPP would be incorporated into the ongoing certification process.

## 16.07 Natural Resources

### 16.07 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-148 | 7 | Landi Fernley | |
| C-152 | 70 | Robert H. Neill | Environmental Evaluation Group |
| C-163G | 11 | Jeff Radford | Business People Concerned about WIPP |
| SF5 | 56 | Amy Mohr | |
| SF6 | 64 | Anna Hansen | |
| SF6 | 69 | Garland Harris | |

**Comment:**
A few commenters stated that significant hydrocarbon and potash resources exist in the WIPP site vicinity and that the country needs these natural resources. They said that the potential for resource development was initially thought to be low but that this is no longer the case. They said the prospect of future exploration and development of the area's natural resources jeopardizes WIPP's ability to isolate waste.

One commenter stated that a deviated gas well drilled at WIPP in 1982 was discovered by DOE in 1991.

**Response:**
DOE fully appreciates the importance of natural resource exploration and development in the Delaware Basin to the economic future of the region as well as to the future performance of WIPP. DOE must demonstrate that WIPP can comply with the waste isolation requirements and criteria issued by EPA in 40 CFR Parts 191 and 194. These regulations and criteria require the performance assessment to consider WIPP in an "undisturbed" state subject only to natural forces and in a "disturbed" state, as it may be affected by natural and human-induced events, including intrusion through drilling into the repository or mining above the waste horizon.

In response, SEIS-II analyzed the ability of WIPP to isolate TRU waste over 10,000 years in the event that (1) an exploratory borehole breached the repository, (2) an exploratory borehole encountered a pressurized brine pocket after penetrating an individual panel, and (3) mining occurred in the upper Salado Formation above the repository horizon. These analyses were conservative (i.e., tend to overestimate the impacts) because, for example, they were assumed to occur immediately after loss of active institutional controls when the radionuclide concentrations would be at their maximum. The analyses of an intrusion borehole that would penetrate the repository and one that would penetrate both the repository and a pressurized brine reservoir show that there would be a direct release of materials to the land surface with only minor health effects to the drilling crew. The analysis showed that in an intrusion borehole case, contamination may reach the Culebra Dolomite, but transport modeling showed that only very small amounts of contaminants would migrate from the point of release over 10,000 years. At a stock well 3 kilometers (2 miles) from the point of release, under the most severe case analyzed, no human health impacts (less than $10^{-20}$ probability of an LCF) would result. Results of these analyses are detailed in Chapter 5 and Appendix H of SEIS-II.

Evaluation of the effects of potash mining that would increase the hydraulic properties of the Culebra Dolomite in areas above known potash reserves near WIPP showed that groundwater flow paths in the Culebra would change from current migration through high zones of transmissivity to the south and east to a more westerly flow direction through zones of lower transmissivity. As a result, migration of key radionuclides downgradient of WIPP would be reduced to below rates postulated for unmined scenarios, and, as in the case of the unmined scenarios, no off-site radiological impacts via the groundwater pathway are postulated. The analyses of Sections 5.1.12, 5.2.12, 5.3.12, 5.4.12, and Appendix H show that isolation of TRU waste is feasible.

The deviated gas well referred to by a commenter is the James Ranch Well. It was described in EEG-50; DOE has provided responses to this report.

# 17.0 SITE SELECTION

## 17.01 General

### 17.01 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB4 | 80 | Shari Sommers | |
| ALB4 | 103 | Merida Wexler | |
| C-163B | 6 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| DE1 | 200 | David Granquist | |
| SF6 | 22 | Susannah Harrison | |

**Comment:**
Several commenters said they were concerned about the safety and necessity of WIPP and the site selection process used. One of the commenters said DOE should have exercised extreme caution and selectivity in choosing a site. One commenter stated that there is no good place for WIPP, while another stated that there are several safe sites for waste disposal. Another commenter said that the Geological Characterization Report (GCR) was used as a site selection tool.

**Response:**
DOE selected the WIPP site with the full realization that TRU waste must be isolated from the accessible environment for a very long time. DOE also appreciates the reality that there is probably no universally acceptable location for a waste repository. The GCR, found in Appendix GCR of the CCA, was not used for purposes of site selection.

The properties of salt (in particular, halite) suggest that it is a very good medium for containing radioactive waste. Halite in bedded salt, as in the Salado Formation, exhibits very low permeability to fluid flow. In addition, at the depth of the WIPP repository, openings in the salt become closed as a result of inward creep of the salt. As a result, and by design, waste placed in the repository would become encapsulated by the salt and sealed off from the environment. The long-term performance assessment analyses in SEIS-II indicate that no impacts to the environment would be expected from an undisturbed WIPP facility for at least 10,000 years.

DOE selected the Salado Formation as the site of the WIPP repository for several geologic reasons: (1) the Salado halite units have very low permeability to fluid flow, as indicated above, which impedes groundwater flow into and out of the repository; (2) the Salado is regionally widespread; (3) the Salado includes continuous halite beds without complicated structure; (4) the Salado is deep with little potential for dissolution; (5) the Salado is near enough to the surface that access is reasonable; and (6) the Salado is largely free of mobile groundwater, as compared to existing mines and other potential repository sites.

The site selection process was described in Subsection 2.2 of the 1980 FEIS. Site selection criteria included the following:

- depth of salt — 300 to 760 meters (1,000 to 2,500 feet)
- thickness of salt — at least 60 meters (200 feet)
- lateral extent of salt — sufficient to protect against dissolution
- tectonics — low historical seismicity, no salt-flow structures nearby
- hydrology — minimal groundwater
- mineral potential — minimal
- existing boreholes — minimum number
- population density — low
- land availability — federal land preferable

With the exception of mineral potential (oil, gas, and potash), none of the criteria were based on social, political, or economic factors; low population density in the vicinity of the WIPP site is a desirable safety factor.

**17.01 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB6 | 116 | Glenna Voigt | |
| ALB6 | 152 | Steve Perin | |
| C-056 | 1 | Marian Cook March | |
| C-124 | 1 | Roy Young | |
| C-152 | 115 | Robert H. Neill | Environmental Evaluation Group |
| CA1 | 93 | Bob Murray | |
| CA1 | 125 | Dan Funchess | |
| DE1 | 96 | Laura Kriho | |
| DE1 | 103 | Roy Young | |
| DE1 | 196 | Scott Hatfield | |
| SF4 | 82 | Bonita McCune | |

**Comment:**
A number of comments pertained to the suitability of salt as a medium for TRU waste disposal. Some of these are positive comments, supporting the site. Most commenters said that salt is an unsuitable, even extremely poor, choice for TRU waste disposal. One commenter cited problems at the Lyons, Kansas, site (saying that water migrated through salt and vanished), and another was concerned that salt was easily dissolvable. Several said that the WIPP site is wet. Two commenters said that the site is a good one and cited a list of criteria. A few commenters stated that an alternative medium might be better: two said that granite is more durable and

drier than salt, and one suggested inventorying other available media. One commenter questioned the implication in SEIS-II that salt is a more favorable disposal medium than granite, basalt, and tuff; the commenter cited programs in the United States and Sweden that use other media.

**Response:**
The properties of salt (in particular, halite) suggest that it is a very good medium for containing radioactive waste. Halite in bedded salt, as in the Salado Formation, exhibits very low permeability to fluid flow. In addition, at the depth of the WIPP repository, waste placed in the repository would become encapsulated by the salt and sealed off from the environment as a result of the salt creep process.

DOE selected the Salado Formation as the site of the WIPP repository for several geologic reasons: (1) the Salado halite units have very low permeability to fluid flow, as indicated above, which impedes groundwater flow into and out of the repository; (2) the Salado is regionally widespread; (3) the Salado includes continuous halite beds without complicated structure; (4) the Salado is deep with little potential for dissolution; (5) the Salado is near enough to the surface that access is reasonable; and (6) the Salado is largely free of mobile groundwater, as compared to existing mines and other potential repository sites.

Conditions observed in the salt beds exposed by excavations in the WIPP underground indicate that, while the salt beds do contain brine within their intergranular pore spaces, the permeability and porosity of the salt are extremely low and significantly limit the Salado Formation’s ability to transmit any brine in its pore space. Evidence of these properties is indicated by the appearance of minor brine seeps and the occurrence of salt that has precipitated along bedding planes, cracks, and crevices. The fundamental premise of successful waste isolation at the WIPP facility is that salt creep would ultimately encapsulate the waste and provide a long-term barrier to migration of brine contaminated with radionuclides and hazardous chemicals to the accessible environment. Over a long period of time, relatively small amounts of brine in the immediate vicinity of the waste disposal rooms and disturbed rock zone would be expected to seep into the repository and come into contact with waste materials. This would result in at least some corrosion of the waste containers. Because only small quantities of brine would be anticipated, it is unlikely that a slurry of brine and waste would form. These waste isolation characteristics have been incorporated into the long-term performance analyses (see Section 5.1.12 for the Proposed Action and Appendix H), and results of these analyses in SEIS-II indicate that no impacts to the environment would be expected from an undisturbed WIPP facility for at least 10,000 years.

The Atomic Energy Commission, a predecessor to DOE, sponsored several years of research and in June 1970 selected Lyons, Kansas, as a potential site. However, in 1972, the Lyons site was found to be unacceptable because of previously undiscovered drill holes and because water used in nearby solution mines could not be traced.

Salt, granite, basalt, and tuff are all potentially suitable geologic media for a waste disposal repository, provided necessary criteria are met. It was believed early in the WIPP decisionmaking process, and is still believed today, that relatively dry bedded salt is highly suitable for disposal of TRU waste, and the WIPP site was chosen accordingly.

With respect to selecting a high-level waste repository (in addition to WIPP, which is not expected to receive high-level TRU waste), it was not until the early-mid 1980s that four rock types were investigated as candidate media. After an extensive site-screening process, which incorporated many factors in addition to rock type, the tuff site at Yucca Mountain was selected.

The Swedish intermediate-level waste repository referred to in one comment is actually a thick-walled cylindrical concrete silo constructed in a relatively near-surface granite excavation.

**17.01 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-136 | 2 | N. Watson | |

**Comment:**
"[WIPP] is only 2100 feet deep?! I know of some Artesian wells close to this depth."

**Response:**
The WIPP underground facility is 655 meters (2,150 feet) below the land surface in a bedded salt and anhydrite formation ranging in thickness from 530 to 610 meters (1,740 to 2,000 feet).

DOE believes that the WIPP site characteristics and design will ensure that radioactive material would not reach the environment. Since WIPP is located in thick salt beds at considerable depth, it is well isolated from water-bearing formations above and below the facility horizon. The most significant water-bearing hydrogeologic unit that may be considered in a scenario involving off-site migration of radioactive contaminants is the much-investigated Culebra Dolomite of the Rustler Formation, about 440 meters (1,440 feet) above the repository. The long-term performance assessment analyses in SEIS-II indicate, however, that no impacts to the overlying water-bearing units would be expected from an undisturbed WIPP facility for at least 10,000 years.

**17.01 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 86 | Karen Navarro | |
| ALB6 | 116 | Glenna Voigt | |
| DE1 | 11 | Michael Hoffman | |
| DE1 | 135 | Andrew Thurlow | |
| SF7 | 3 | Carole Tashel | |
| SF8 | 35 | Ame Solomon | |
| SF8 | 48 | Katherine Lage | |

**Comment:**
Several commenters said they were concerned with various aspects of water at and near WIPP—water entering the repository, as well as the potential for contamination of the aquifers above the repository and its migration to the Pecos River and other surface water.

**Response:**
Conditions observed in the salt beds exposed by excavations in the WIPP underground indicate that, while the salt beds do contain brine within their intergranular pore spaces, the permeability and porosity of the salt are extremely low, significantly limiting the Salado Formation's ability to transmit brine in its pore space. Evidence of these properties is indicated by the appearance of minor brine seeps and the occurrence of salt that has precipitated along bedding planes, cracks, and crevices. Over the long-term performance period, the limited amounts of brine in the immediate vicinity of the repository and the disturbed rock zone would be expected to seep into the repository and come into contact with waste materials. However, the fundamental premise of waste isolation at WIPP is that salt creep would ultimately encapsulate the waste and provide a long-term barrier to migration of waste-contaminated brine to the accessible environment. These waste isolation characteristics have been incorporated into the long-term performance analyses (see Section 5.1.12 for the Proposed Action and Appendix H).

DOE believes that, given the design of WIPP, radioactive material is not expected to reach the Rustler or other aquifers, the Pecos River, or any other body of water. This is because WIPP is sited in thick salt beds about 655 meters (2,150 feet) below the land surface and is well isolated from water-bearing formations above and below the facility horizon. The most significant water-bearing hydrogeologic unit that may be considered in a scenario involving off-site migration of radioactive contaminants to the Pecos River (about 24 kilometers [15 miles] southwest of the WIPP site) is the much-investigated Culebra Dolomite of the Rustler Formation, about 440 meters (1,440 feet) above the repository.

The long-term performance assessment analyses in SEIS-II have indicated that no impacts to local groundwater and the Pecos River from an undisturbed WIPP repository would be expected for at least 10,000 years.

Analysis of an intrusion borehole case showed that contamination may reach the Culebra Dolomite, but transport modeling showed that only very small amounts of contaminants would migrate from the point of release over 10,000 years. At a stock well 3 kilometers (2 miles) from the point of release, under the most severe case analyzed, no human health impacts (less than $10^{-20}$ probability of an LCF) would result. Results of these analyses are detailed in Chapter 5 and Appendix H of SEIS-II.

**17.01 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 19 | Sean Asghar | |
| ALB2 | 139 | Deborah Reade | |
| ALB5 | 35 | Susan Rodriguez | |
| ALB5 | 62 | Lilly Rendt | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-163E | 13 | No name provided | Citizens for Alternatives to Radioactive Dumping |
| DE1 | 11 | Michael Hoffman | |
| DE1 | 135 | Andrew Thurlow | |
| DE1 | 183 | Amy Marschak | |
| E-056 | 22 | Linda Hibbs | |
| SF8 | 48 | Katherine Lage | |

**Comment:**
Several commenters said that WIPP may be located over a pressurized brine reservoir. Some stated that WIPP had already been moved twice because of proximity to known brine reservoirs. One commenter questioned the depth selected for WIPP, stating that purer salt existed at greater depths, and that locating the repository there would keep it away from brine pockets. One commenter stated that there is a stream beneath WIPP that flows to Carlsbad Caverns**.**

**Response:**
In 1974, during initial siting studies to identify a suitable candidate site for a repository, drilling northeast of the current WIPP site revealed unsuitable geologic conditions such as steeply dipping beds, missing units, and brine containing hydrogen sulfide near the deeper planned repository depths. These geologic conditions necessitated a search for a new site in a region (the Los Medaños area) where salt bed deformation was absent and the occurrence of brine pockets was thought to be unlikely.

During the site characterization phase within the Los Medaños area, the WIPP-12 borehole (north of the current WIPP site) was deepened into the Castile Formation below the repository horizon and encountered large quantities of brine that flowed freely into the borehole and to the surface. The discovery of the brine reservoir prompted DOE to consider changing the repository waste panels layout from the planned location north of the experimental area to the current configuration south of the shafts (see Section 2.1.4). This discovery also led to a geophysical program in the 1980s to investigate the possibility of brine reservoirs under the current site. In addition, the development of probabilistic performance assessments led to a significant effort to characterize the consequences of various combinations of natural and human-induced events and processes (e.g., model analysis of multiple intrusions into the repository and a brine reservoir). The analyses contained in Section 5.1.12 for the Proposed Action and Appendix H demonstrate that TRU waste would remain isolated from the environment, even in the event of a borehole that would intersect the repository and a pressurized brine pocket.

Section 2.1.4 of SEIS-II has been modified to include a discussion of WIPP site selection. Section 4.1.3.2 has also been modified to include a more detailed discussion of brine reservoirs.

Over a 10,000-year period, the probability of an exploratory borehole encountering a pressurized brine pocket after intersecting the repository is unknown, but it is likely to be less than 10 percent, based on a geostatistical interpretation of a large regional database (see Appendix SCR.3 of the CCA). To bound this potential impact, DOE evaluated the impact of drilling an exploration well that would encounter a pressurized brine pocket after penetrating an individual waste panel. The analysis showed that in an intrusion borehole case, contamination may reach the Culebra Dolomite, but transport modeling showed that only very small amounts of contaminants would migrate from the point of release over 10,000 years. At a stock well 3 kilometers (2 miles) from the point of release, under the most severe case analyzed, no human health impacts (less than $10^{-20}$ probability of an LCF) would result. Results of these analyses are detailed in Chapter 5 and Appendix H of SEIS-II.

The horizon selected for WIPP at a depth of 655 meters (2,150 feet) is well suited for isolation of TRU waste. DOE is not aware of any evidence that would support the assertion that a purer salt (more suitable for disposal of TRU wastes) exists at a greater depth than the current WIPP horizon. No freely flowing water, including streams, occur beneath or above the repository. A 1996 NAS report on WIPP has found that the WIPP repository has the ability to isolate waste for more than 10,000 years, assuming that it is sealed effectively and that it remains undisturbed by human activity.

**17.01 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB6 | 116 | Glenna Voigt | |
| SF7 | 3 | Carole Tashel | |

**Comment:**
Two commenters said that the geology of the proposed site is unstable and ever changing, and that the site is fractured.

**Response:**
DOE disagrees with the characterization of the proposed site as unstable. The WIPP underground facility is 655 meters (2,150 feet) below the land surface in a bedded salt and anhydrite formation ranging in thickness from 530 to 610 meters (1,740 to 2,000 feet) with extremely low permeability. The salt unit is 250 million years old. The facility was constructed to demonstrate the safe disposal of TRU waste from DOE defense programs and activities.

Over time, the salt would move, or creep, and crush the waste containers, thereby sealing any openings and fractures and entombing the waste. DOE believes that the combination of natural features (e.g., low-permeability bedded salt, depth below groundwater) and engineered features would provide adequate waste isolation in compliance with the applicable regulations. Additional information can be found in Chapters 1, 2, and 3 of SEIS-II.

**17.01 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 60 | Jeff Radford | Business People Concerned about WIPP |
| ALB2 | 159 | Rick Packie | |
| ALB3 | 86 | Karen Navarro | |
| ALB6 | 61 | David Pace | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-148 | 8 | Landi Fernley | |
| C-163C | 7 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163C | 8 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163G | 9 | Jeff Radford | Business People Concerned about WIPP |
| CA1 | 62 | Betty Richards | |
| DE1 | 11 | Michael Hoffman | |
| SF1 | 63 | Virginia Miller | |
| SF3 | 109 | Anhara Lovato | |

**Comment:**
Many commenters stated that the presence of natural resources in the WIPP region and the potential for future exploration and development could compromise the integrity of the repository. A few said that EPA's siting criteria preclude siting a repository near known significant natural resources. One commenter stated that the Lyons, Kansas, site was abandoned because of the presence of oil wells. Another commenter said that exploratory drilling conducted during waste emplacement could release contamination from the site.

**Response:**
DOE fully appreciates the importance of natural resource exploration and development in the Delaware Basin to future performance of WIPP. DOE selected the WIPP site several years in advance of EPA's standards. The site selection process undertaken in the late 1970s was described in Subsection 2.2 of the 1980 FEIS. General site selection criteria included the following:

- depth of salt — 300 to 760 meters (1,000 to 2,500 feet)
- thickness of salt — at least 60 meters (200 feet)
- lateral extent of salt — sufficient to protect against dissolution
- tectonics — low historical seismicity, no salt-flow structures nearby
- hydrology — minimal groundwater
- mineral potential — minimal
- existing boreholes — minimum number
- population density — low
- land availability — federal land preferable

The WIPP site was identified as the site that best met all of the criteria for TRU waste disposal at that time. Since that time, of course, DOE has learned much about the characteristics of the site and regional geology and hydrology, as well as the waste itself and the engineered barrier system. As a result, the long-term performance analyses of SEIS-II and those of the CCA provide, to DOE's satisfaction, a reasonable expectation of compliance with EPA's regulations and criteria. EPA is currently reviewing DOE's CCA, which was submitted in October 1996.

DOE must demonstrate that WIPP can comply with the waste isolation requirements and criteria issued by EPA in 40 CFR Parts 191 and 194. These regulations and criteria require the performance assessment to consider WIPP in an "undisturbed" state subject only to natural forces and in a "disturbed" state, as it may be affected by natural and human-induced events, including intrusion through drilling into the repository or mining above the waste horizon.

In response, SEIS-II analyzed the ability of WIPP to isolate TRU waste over 10,000 years in the event that (1) an exploratory borehole breached the repository, (2) an exploratory borehole encountered a pressurized brine pocket after penetrating an individual panel, and (3) mining occurred in the upper Salado Formation above the repository horizon. These analyses were conservative (i.e., tend to overestimate the impacts) because, for example, they were assumed to occur immediately after loss of active institutional controls when the radionuclide concentrations would be at their maximum. The analyses of an intrusion borehole that would penetrate the repository and one that would penetrate both the repository and a pressurized brine reservoir show that there would be a direct release of materials to the land surface with only minor health effects to the drilling crew. The analysis showed that in an intrusion borehole case, contamination may reach the Culebra Dolomite, but transport modeling showed that only very small amounts of contaminants would migrate from the point of release over 10,000 years. At a stock well 3 kilometers (2 miles) from the point of release, under the most severe case analyzed, no human health impacts (less than $10^{-20}$ probability of an LCF) would result. Results of these analyses are detailed in Chapter 5 and Appendix H of SEIS-II.

Evaluation of the effects of potash mining that would increase the hydraulic properties of the Culebra Dolomite in areas above known potash reserves near WIPP showed that groundwater flow paths in the Culebra would change from current migration through high zones of transmissivity to the south and east to a more westerly flow direction through zones of lower transmissivity. As a result, migration of key radionuclides downgradient of WIPP would be reduced to below rates postulated for unmined scenarios, and, as in the case of the unmined scenarios, no off-site radiological impacts via the groundwater pathway are postulated. The analyses of Sections 5.1.12, 5.2.12, 5.3.12, 5.4.12, and Appendix H show that isolation of TRU waste is feasible.

The Atomic Energy Commission, a predecessor to DOE, sponsored several years of research and in June 1970 selected Lyons, Kansas, as a potential site. However, in 1972, the Lyons site was found to be unacceptable because of previously undiscovered drill holes and because water used in nearby solution mines could not be traced (not just because of the presence of oil wells).

No drilling would be permitted within the WIPP site boundary during the operation of the repository. Subsequent to closure of the repository, active institutional controls would be implemented for 100 years to deter anyone from accidentally drilling into the repository. This would be followed with the use of passive controls for the same purpose.

**17.01 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF7 | 3 | Carole Tashel | |

**Comment:**
"Surely you must admit that WIPP is not as promising a site as was originally hypothesized. It's fractured, soggy, and full of holes."

**Response:**
DOE disagrees with this characterization of the WIPP site. The site was chosen because it was in an area of relatively few existing boreholes. The original siting criteria were set forth in Section 2.2 of the 1980 FEIS. The criterion that there be no deep boreholes within 3.2 kilometers (2 miles) of the WIPP site was added to the original criteria, then later modified to 1.6 kilometers (1 mile), based on studies on salt dissolution that indicated it would take about 250,000 years for water flowing from an inadequately plugged borehole to dissolve 1.6 kilometers (1 mile) of salt in the Salado Formation, where WIPP is located. Therefore it is no closer than 1.6 kilometers (1 mile) to any borehole (with the exception of ERDA-9).

**17.01 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 89 | Jamal McGrath | |
| ALB3 | 5 | Don Schrader | |
| ALB3 | 72 | Jack Uhrich | |
| ALB6 | 20 | Victoria Michelle | |
| ALB6 | 54 | David Pace | |
| C-163B | 1 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163B | 10 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163B | 22 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163C | 2 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| C-163C | 6 | Richard H. Phillips | Citizens for Alternatives to Radioactive Dumping/All People's Coalition |
| E-012 | 2 | Charles Hyder | |
| E-056 | 27 | Linda Hibbs | |

**Comment:**
Several commenters said that the original WIPP siting criteria were changed in order to allow compliance of the selected site. The commenters said the criteria affected by these changes include proximity to major rivers, streams, and groundwater; proximity to extractable natural resources; and decrease of the minimum distance to deep boreholes (from 3.2 kilometers [2 miles] to 1.6 kilometers [1 mile]). One commenter stated that his organization has long suspected that one of the reasons for reducing the WIPP site boundaries was to exclude obvious

karst features in Zone IV. The commenter stated as well that the NEPA process should have been redone when the site was moved to its present location.

**Response:**
DOE has not altered its criteria for a desirable site for the disposal of TRU waste. The site selection process undertaken in the late 1970s was described in Subsection 2.2 of the 1980 FEIS. Site selection criteria included the following:

- depth of salt 300 to 760 meters (1,000 to 2,500 feet)
- thickness of salt at least 60 meters (200 feet)
- lateral extent of salt sufficient to protect against dissolution
- tectonics low historical seismicity, no salt-flow structures nearby
- hydrology minimal groundwater
- mineral potential minimal
- existing boreholes minimum number
- population density low
- land availability federal land preferable

The WIPP site was identified as the site that best met all of the criteria for TRU waste disposal at that time.

The original siting criteria were set forth in Section 2.2 of the 1980 FEIS. The criterion that there be no deep boreholes within 3.2 kilometers (2 miles) of the WIPP site was added to the original criteria, then later modified to 1.6 kilometers (1 mile), based on studies on salt dissolution that indicated it would take about 250,000 years for water flowing from an inadequately plugged borehole to dissolve 1.6 kilometers (1 mile) of salt in the Salado Formation, where WIPP is located. DOE believed that moving the location of the excavation and remaining within the original site boundary did not necessitate another EIS or modification to the existing one.

In any event, the acceptability of the WIPP site will be determined only when several conditions are met. Specifically, DOE must, at a minimum: (1) receive a RCRA Part B Permit from the State of New Mexico, (2) receive CCA certification from EPA pursuant to 40 CFR Parts 191 and 194, (3) complete SEIS-II and issue a ROD to begin disposal operations; (4) complete transportation emergency response and preparedness provisions of the LWA; and (5) complete any other relevant operating requirements pursuant to DOE orders (e.g., operational readiness review).

DOE has investigated the hydrology of important geologic units overlying the WIPP facility for nearly 20 years and is well aware of the importance of karst features and related dissolution processes in defining the surface features in the region surrounding the WIPP site. The current understanding of the extent, timing, and features related to dissolution (including a brief history of past project studies related to karst) in the area surrounding WIPP is described in Section 4.1.3.2 in SEIS-II. In summary, these studies and investigations have shown considerable evidence of dissolution and karst features at shallow depths. The surface locally has a karst terrain containing sinkholes, solution-subsidence troughs from both surface and subsurface dissolution. However, the results of past studies suggest that these dissolution processes are generally found in higher stratigraphic units and within a few hundred feet of the land surface. No evidence collected to date would suggest that these shallow dissolution processes are active within the deeper Salado Formation. Deep dissolution at the WIPP site has been eliminated from the performance assessment calculations based on the low probability of occurrence over the next 10,000 years. The impacts of shallow dissolution on the travel times of potential releases from WIPP were not discussed in SEIS-II because the analyses predicted that there would be no releases to the Culebra. However, considerable work was done in support of the CCA addressing this specific issue. A text box has been added to Appendix H to provide information on processes, such as dissolution, that were considered but not analyzed in SEIS-II.

**17.01 (10)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 150 | Rick Packie | |
| ALB3 | 84 | Karen Navarro | |
| ALB3 | 111 | Peter Kalberer | |
| ALB6 | 99 | Sharon Williams | |
| C-032 | 1 | Joan O. King | |
| C-122 | 5 | Ross Lockridge | Concerned Citizens of Cerrillos |
| C-154 | 2 | Tom Marshall, Jack Mento, et al. | Rocky Mountain Peace and Justice Center |
| DE1 | 111 | Foster Goodwill | |
| E-056 | 26 | Linda Hibbs | |
| E-056 | 57 | Linda Hibbs | |

**Comment:**
Several commenters expressed the belief that the WIPP site was selected on the basis of political, as opposed to scientific, considerations.

**Response:**
The site selection process was described in Subsection 2.2 of the 1980 FEIS. Site selection criteria included the following:

- depth of salt — 300 to 760 meters (1,000 to 2,500 feet)
- thickness of salt — at least 60 meters (200 feet)
- lateral extent of salt — sufficient to protect against dissolution
- tectonics — low historical seismicity, no salt-flow structures nearby

- hydrology minimal groundwater
- mineral potential minimal
- existing boreholes minimum number
- population density low
- land availability federal land preferable

With the exception of mineral potential (oil, gas, and potash), none of the criteria was based on social, political, or economic factors; low population density in the vicinity of the WIPP site is a desirable safety factor, not a political consideration.

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# 18.0 SOCIOECONOMICS

## 18.01 General

### 18.01 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-013 | 19 | Jennifer Salisbury | New Mexico Radioactive Waste Consultation Task Force |
| C-131 | 39 | Don Hancock | Southwest Research and Information Center |
| CA1 | 73 | Terry Marshall | |
| SF4 | 2 | Terry Marshall | |
| SF4 | 3 | Terry Marshall | |
| SF4 | 4 | Terry Marshall | |
| SF4 | 5 | Terry Marshall | |
| SF4 | 6 | Terry Marshall | |
| SF4 | 7 | Terry Marshall | |
| SF4 | 8 | Terry Marshall | |
| SF4 | 9 | Terry Marshall | |

**Comment:**
A few commenters said the socioeconomic analyses were inadequate. One of the commenters said that additional community-specific information was needed for major communities in the Region of Influence (ROI). Another commenter said that the sources of socioeconomic information need to be provided. A number of commenters said that the No Action Alternative 1 and 2 analyses did not show the devastating impact that selection of these alternatives would have on the Carlsbad area, mainly because the ROI of Eddy and Lea counties was inappropriate, diluting the socioeconomic impact that would affect mainly the Carlsbad area. Various commenters made the following specific comments:

- Because of an incorrect ROI, the importance of the hydrocarbon industry for Carlsbad was overestimated; the Draft SEIS-II employment categories for the ROI mask impacts to Carlsbad and are too broad, failing to recognize impacts to areas such as housing and service industries.

- The socioeconomic analysis did not consider developmental growth generated by WIPP, instead being based entirely on census-type secondary data and perpetuating mistaken assumptions presented in earlier socioeconomic studies about WIPP impacts.

- Many of the social aspects of selecting the no action alternatives were ignored, including such things as impacts on community leadership and involvement, influx of highly trained professionals to the Carlsbad area, and contributions to volunteer and community activities.

**Response:**
The ROI used in the SEIS-II economic analysis is consistent with that used in previous WIPP NEPA documents. The oil and gas extraction industry and related services dominate the

economic ROI (i.e., the economies of Eddy County, Lea County, Carlsbad, Artesia, and Hobbs). These industries dominate employment and output in these areas. The overall economic impact of WIPP is larger for the ROI than for the Carlsbad area alone. SEIS-II notes the stabilizing influence of WIPP in the ROI economy and indicates in several places that Carlsbad would be the focal point of the economic impacts in the ROI. Additional information on impacts to the Carlsbad area has been added in the economic impacts sections (e.g., Section 5.1.7.2 for the Proposed Action) of SEIS-II.

The economic analysis performed for SEIS-II employs generally accepted and widely practiced economic analysis methods. Input-output modeling is generally accepted by the economics profession as the most reasonable analysis approach for questions of regional economic impact, given constraints on data, research costs, and time.

NEPA requires that the "Affected Environment" chapter include the presentation of baseline economic data to describe the economy being affected by the Proposed Action. The socioeconomic analysis in SEIS-II used the best available data. These include New Mexico sources covering WIPP-specific expenditures made in New Mexico and State of New Mexico data on baseline economic conditions. Where appropriate, economic data sources have been updated for the Final SEIS-II. DOE believes that the degree of aggregation of background information presented for the socioeconomic environment in Section 4.1.6 is sufficient. A discussion of the WIPP site's economic development potential and the Carlsbad area economy has been added to Section 4.1.6 of the Final SEIS-II.

SEIS-II assesses the economic and socioeconomic impacts of various alternatives (Sections 5.1.7.2, 5.2.7.2, 5.3.7.2, and 5.4.7.2) concerning WIPP and of two no action alternatives (Sections 5.5.7.2 and 5.6.7.2), which would result in closure of the WIPP site prior to disposal operations. SEIS-II includes additional information that presents impacts of the no action alternatives as percentages, providing an additional frame of reference for the reader to evaluate impacts (see Section 5.5.7.2).

Regardless of the course of action selected, there would be economic impacts, which may be perceived to have either positive or negative consequences. DOE will consider potential impacts of all alternatives in making its decision for future action. That decision and its rationale will be documented in the SEIS-II ROD. Appendix D of SEIS-II provides guidance on the sources of information used in the SEIS-II life-cycle cost analysis, along with the scope of coverage and the methods used to estimate the various life-cycle components. It also fully documents the economic impact analysis.

**18.01 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 88 | Jamal McGrath | |
| ALB5 | 67 | John McCall | |
| ALB6 | 78 | Judy Pratt | |
| C-080 | 5 | Mike Dempsey | |
| E-056 | 49a | Linda Hibbs | |

**Comment:**
Several commenters said the DOE projections of direct jobs that would be generated at WIPP were far too optimistic. They said that, rather than going up to 800 or 900, the number of jobs would be more likely to decrease to around 500 to 600. One commenter said WIPP provided very few jobs, many of which lasted only for the WIPP construction period and went to people from outside the area, then were gone when construction was completed. Another commenter said DOE and the State of New Mexico should develop an alternative plan for jobs in Carlsbad in anticipation of further activities at WIPP ceasing.

**Response:**
Currently, DOE and DOE contractors directly employ over 600 people to operate WIPP. DOE currently has no plans to reduce staff at WIPP if the decision is made to open the repository to receive waste. In contrast, DOE plans to gradually increase the staffing level to 1,095, as noted in Section 5.1.7.2 of SEIS-II.

The length of emplacement operations depends on the alternative DOE chooses, but upon completion, the operations workforce would diminish to the level necessary to meet institutional control requirements for the site. Only under No Action Alternatives 1 and 2 would the WIPP facility eventually be closed and the associated jobs lost. Although some of the employees at WIPP did move to New Mexico from other states, all permanent employees are expected to become New Mexico residents. If DOE decided to implement either of the no action alternatives, the potential impacts to the Carlsbad area and the need for and feasibility of economic assistance, including jobs programs, would be evaluated at that time.

**18.01 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 93 | John Leahigh | |
| ALB2 | 111 | Zelda Gatuskin | |
| ALB4 | 23 | Andy Lenderman | |
| ALB4 | 91 | Jerry Messick | Local 1199NM/AFSCME |
| CA1 | 13 | Richard Boren | |
| E-056 | 48 | Linda Hibbs | |
| E-056 | 49b | Linda Hibbs | |
| SF3 | 106 | Anhara Lovato | |
| SF5 | 51 | Sarah Cowan | |
| SF7 | 147 | Naomi Mattis | |

**Comment:**
Several commenters stated that WIPP has not really provided any economic benefit to the State of New Mexico. They stated that New Mexico has one of the lowest per capita income rates in the nation and that poverty rates have actually grown in New Mexico despite the money spent on WIPP. One commenter said that WIPP was a small contributor to economic benefit ($34 million cumulative to date) compared to New Mexico's tourist industry ($2 billion) and that tourism should be the state's first priority. Commenters stated that the perceived economic benefit to Carlsbad and the nuclear industry did not justify the risk to members of the public in

New Mexico and along the transportation routes. One commenter said the money could be better spent by providing it directly to those in need in the Carlsbad area.

**Response:**
SEIS-II assesses the economic and socioeconomic impacts of various alternatives (Sections 5.1.7.2, 5.2.7.2, 5.3.7.2, and 5.4.7.2) concerning WIPP and of two no action alternatives (Sections 5.5.7.2 and 5.6.7.2), which would result in closure of the WIPP site prior to disposal operations. SEIS-II includes additional information that presents impacts of the no action alternatives as percentages, providing an additional frame of reference for the reader to evaluate impacts (see Section 5.5.7.2).

Section 4.1.6 of SEIS-II presents several sources of information about the economic impact of WIPP. SEIS-II presents no judgments about New Mexico’s national ranking based on per capita income or poverty levels or about the equality of New Mexico's economy. SEIS-II also does not present any judgment indicating that the New Mexico economy would improve due to WIPP operations. Statewide per capita income or poverty levels do not offer fair measures of the WIPP economic impact, although New Mexico per capita income estimates have included the income received by WIPP workers for nearly two decades. The economic impact is principally in the WIPP ROI, of which the Carlsbad area is the major component. SEIS-II presents estimates of the local economic effects of the alternative courses of action DOE may pursue with regard to WIPP. The WIPP-related economic impact is generally confined to the ROI, and specifically around the Carlsbad area. No claim is made that disposal operations at WIPP would improve or make more equal per capita income. These larger economic issues are beyond the scope of SEIS-II.

**18.01 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-125 | 16 | Barbara H. Johnson | The Rio Grande Chapter of the Sierra Club |

**Comment:**
“In People Against Nuclear Energy v. U.S. Nuclear Regulatory Commission (1982) 678 F2d 222, a case involving the re-opening of the Three Mile Island nuclear power plant, the plaintiffs suggested that ‘...communities [would be] severely damaged...because fear of nuclear accidents will diminish citizen confidence in local institutions, cause local businesses and residents to leave the area, and discourage potential newcomers who perceive the area as an undesirable location.’ (678 F2d at 230) The Court agreed that this was a ‘classic “socio-economic” issue’ which needed to be considered in an EIS. ‘Deterioration of a community’s economic base or social stability...is a cognizable “secondary effect” important under NEPA...’ and must be evaluated. (678 F2d at 230) Socioeconomic considerations, including considerations of environmental justice, have been discussed in the SEIS-II with regard to the area surrounding WIPP. But they have not been considered for areas such as Santa Fe which stand to face significant socioeconomic impacts. The City of Santa Fe is on record as saying that it does not want WIPP trucks going through the city.”

**Response:**
The United States Supreme Court overturned the case referred to in the comment.

However, this issue has been addressed in previous WIPP NEPA documents. DOE has not identified any evidence that WIPP operations, including the transportation of nuclear waste, would have a measurable negative impact on economic development in the state. The New Mexico Economic Development and Tourism Department was contacted in July and August 1989 regarding this issue; it stated that WIPP would not have a negative impact on economic development in New Mexico. Please refer to the comment responses to the 1990 SEIS-I, which address such issues as the following:

- Potential negative effects on businesses along the WIPP route.
- A potential decrease in movie/video productions in New Mexico.
- Negative impacts on retiree in-migration to New Mexico.
- A potential decrease in investor interest, economic development, and bond ratings to communities along the WIPP route.

**18.01 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 190 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 191 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
One commenter said that the values in Table D-10 could not be reproduced using the stated discount factor of (1/1+r). The commenter also said that the values in Table D-10 appeared to be rounded in a crude manner that undermined his confidence in the values.

**Response:**
Table D-10 is an example of how discounting affects present value calculations for different levels of annual spending. The stated discount factor is correct; however, the entire equation used to calculate discounted costs in the Draft SEIS-II was not given and has been added to Section D.1. Over the project life-cycle (T = 35 years), the discounted annual costs are represented by $C\ (1+x^1+x^2+x^3+\ldots+x^{35})$, where x = (1/1 + r) and T = 35 is the end year of the project.

The commenter is correct that discounted costs in Table D-10 were rounded incorrectly. The calculated values have been restored in the Final SEIS-II.

**18.01 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-001 | 4 | Michael Jansky | United States Environmental Protection Agency Region 6 |
| BO1 | 51 | Charles Rice | Citizens Advisory Board Idaho National Engineering and Environmental Laboratory |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-087 | 3 | Charles Rice | Citizens Advisory Board Idaho National Engineering and Environmental Laboratory |
| C-130 | 5 | Susan L. Gawarecki | Oak Ridge Reservation Local Oversight Committee |
| C-152 | 58 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 188 | Robert H. Neill | Environmental Evaluation Group |
| DE1 | 47 | Kay Mack | |
| OR2 | 13 | Barbara A. Walton | Oak Ridge Reservation Local Oversight Committee |
| RL1 | 8 | F.R. Cook | |
| SF7 | 97 | Linda Larson | |
| SF7 | 130 | Lee Lysne | |

**Comment:**
Some commenters stated that the difference in operational period between the Proposed Action and the various alternatives precluded cost comparisons for waste disposal. Among the commenters' concerns was that DOE did not take into account waste storage costs at generator-storage sites and that lag storage costs were not consistently assessed. One commenter stated that there is a large difference in the volumetric disposal charge between the proposed Yucca Mountain facility and WIPP. Another commenter stated that the estimated cost of $19.1 billion for the Proposed Action could not cover the cost of the environmental impacts to people and the environment from TRU waste leaks and migrations and asked if the estimated costs covered potential lawsuits, excavation of the TRU waste, and the permanent marking of the site after closure. One commenter asked how DOE can spend $15 million per month at WIPP before it has opened.

Other commenters said that the costs were extreme, that DOE has a poor track record in predicting total project costs, and that the costs were not comparable between the Proposed Action and the action alternatives.

**Response:**
DOE believes the cost estimate of $19.03 billion for the Proposed Action is reasonable, including transportation and costs at the generator and treatment sites (see Section 5.1.7 of SEIS-II). The $19.03 billion does not include the cost of managing the Additional Inventory. The cost of managing that inventory is discussed in the Final SEIS-II. Costs of the permanent marking system are included in the estimates for WIPP closure and decommissioning. Costs of potential litigation are beyond the scope of SEIS-II and are not covered. Environmental impacts of postulated retrieval or recovery of emplaced waste are included in Section 5.7, but the costs of these activities are highly speculative and beyond the scope of SEIS-II. Analyses presented in SEIS-II for long-term repository performance in Sections 5.1.12, 5.2.12, 5.3.12, and 5.4.12 and Appendix H demonstrate there is little expectation of contamination from the WIPP repository migrating into the accessible environment.

While the actual cost figures are closer to $13 million per month, the commenter is correct in that it takes a large investment to keep WIPP operating. Many of the activities deal with meeting regulatory requirements, studies, inventory issues, planning, and training.

The total cost for the WIPP project is an important concern, and total life-cycle costs will be one factor considered in the final decision regarding the operation of WIPP. Disposal cost information is compiled in Table S-5 in the SEIS-II Summary and is contained in the applicable sections of Chapter 5 and in Appendix D in more detail. The disposal costs in Table S-5 would be equal to the "Total WIPP Budget" line.

**18.01 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-010 | 28 | Earl Leming | State of Tennessee Department of Environment and Conservation |

**Comment:**
"Appendix D, Page D-2, Tables D-1, D-2 and D-3 $1,124 million in waste treatment facility costs and a volume adjustment factor of 2.04 is stated for the proposed alternative. When compared with the volume in the Draft Waste Management Programmatic EIS document the costs of the Regionalized 2 alternative under WM PEIS is $678 million and the no action alternative in the SEIS-II costs are $1,401 million. The cost for a treatment facility is much less for ORNL as a decentralized site, $551 million only. Arguments in favor of the proposed alternative need serious justification, given the present state of the economy and dwindling budgets for many programs."

**Response:**
The life-cycle cost estimates for the Proposed Action are developed on the basis of the Decentralized Alternative as defined in the WM PEIS. The cost of $1,124 million and scale adjustment factor of 2.04 are specific to the proposed waste treatment and storage activities undertaken at the Oak Ridge site, reflecting an increase of 2.04 times the $551 million cost estimate reported under the Decentralized Alternative in the WM PEIS (Table II-10.3-12).

Waste treatment facility costs at ORNL are relatively less under the SEIS-II Proposed Action than under No Action Alternative 1 because of a relatively smaller waste volume scale factor (2.04 compared to 2.07). This slight change in the scale factor accounts for treatment to planning-basis WAC of waste to be shipped from small sites to ORNL. The cost analysis simply provides estimates of the life-cycle costs of each alternative for the DOE decisionmaker to evaluate prior to a decision of which alternative to select.

**18.01 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB4 | 60 | Lawrence Carter-Long | |

**Comment:**
"We need to address the cost factors."

**Response:**
The life-cycle costs can be found in the applicable subsections of Sections 5.1 through 5.6 and in Section D.1.

**18.01 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-058 | 5 | George L. Miller | |

**Comment:**
"What will this cost the Colorado taxpayers to construct and maintain this disposal site for Defense-Generated radioactive waste?"

**Response:**
The life-cycle costs for the construction and operation of the WIPP facility are discussed in the applicable section of Chapter 5 and in Appendix D of SEIS-II. Table D-11 in Appendix D provides a comparison of all alternatives under varying modes of transportation. The burden of these costs would be borne by all Americans. That portion attributed to the Colorado taxpayers would be based on the percentage of total federal tax paid by the residents of Colorado.

**18.01 (10)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-104 | 9 | Bob Slay | Savannah River Site Citizens Advisory Board |

**Comment:**
"For No-Action Alternative 2, the loss of life, cancer incidences, and criticality accidents should be included in current dollar costs."

**Response:**
The calculation of LCFs is a mathematical expression of a probability of a cancer incidence given an estimated environmental release. There is no currently known acceptable practice of converting LCFs to a dollar cost; DOE considers such a practice to be speculative and thus it has not been done for SEIS-II.

**18.01 (11)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-132 | 12 | Keith Tinno | Shoshone-Bannock Tribes |

**Comment:**
"The Proposed Action projects undiscounted costs for waste treatment at 11.82 billion and transportation costs at 1.59 billion. By comparison, Action Alternative 2A projects waste treatment costs of 27.7 billion and transportation costs of .723 billion, regular class rail. (It is

interesting to note that the number of rail shipments projected for 2A are more than 10,000 less than the number of shipments projected for the Proposed Action.) The total of waste treatment and transportation costs for the Proposed Action is therefore 13.4 billion and Alternative 2A combined costs are 28.4 billion. Granted, the costs for Alternative 2A are 2.1 times the cost of the Proposed Action, but 2.2 times the amount of waste is being processed.

"As far as WIPP operational costs are concerned, Alternative 2A would necessitate the need for more funds because of a longer time needed to emplace all waste, but the 150 year time frame projected in the EIS-II certainly does not seem credible in light of the reasons given above. Even so, once again, the additional costs represent the emplacement of all TRU waste. To start the process over by finding a repository for the additional inventory left under the Proposed Action, and paying for the construction of a new facility and the emplacement of waste therein, would surely equal or exceed the costs of expanded operations at WIPP required to handle waste under Action Alternative 2A."

**Response:**
The additional costs represent the emplacement of all TRU waste. To start the process over by finding a repository for the Additional Inventory left under the Proposed Action, and paying for the construction of a new facility and the emplacement of waste therein, would greatly exceed the costs of expanded operations at WIPP required to handle waste under Action Alternative 2A. The comment is accurate and reflects the apparent economies of regular-class rail relative to truck shipment. Note that a comparison of alternatives under the same mode of shipment yields a cost estimate of $30.7 billion under Action Alternative 2A ($27.69 billion for waste treatment plus $3 billion using truck transportation).

**18.01 (12)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 59 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page S-34. Table S-5. It is surprising that No Action Alternative 2 waste treatment costs are only 16% of those for the Proposed Action. There is no itemized waste treatment cost in Appendix D for the No Action Alternative 2. However, NAA2 is planning to treat all newly generated waste to WAC standards (73,000 $m^3$ CH and 32,000 $m^3$ RH). The Proposed Action would treat 168,500 $m^3$ CH and 50,000 $m^3$ RH. This needs to be explained. The sum of the parts of the Proposed Action is $18.7B while the total cost is $19.1B. While rounding off is expected, this fails to account for $0.4B or 2.2% of total."

**Response:**
No Action Alternative 2 involves the treatment of only newly generated waste to WAC standards (73,000 cubic meters [2.6 million cubic feet] of CH-TRU waste and 32,000 cubic meters [1.1 million cubic feet] of RH-TRU waste), while the Proposed Action involves the treatment of the entire Basic Inventory to WAC (168,500 cubic meters [6 million cubic feet] of CH-TRU waste and 50,000 cubic meters [1.8 million cubic feet] of RH-TRU waste). In addition, the treatment costs under No Action Alternative 2 reflect site-cost information

pertaining to the WM PEIS No Action Alternative, whereas the treatment costs under the Proposed Action reflect site-cost information associated with the WM PEIS Decentralized Alternative. The differences are significant.

Table S-5 has been revised to include the $0.4 billion cost of excess RH-TRU waste storage for the Proposed Action (noted in Section 5.1.7).

**18.01 (13)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| CA1 | 76 | John Heaton | |

**Comment:**
"There are many examples to point out the tremendous costs of storage that exists. There is one such event occurring on the east coast which represents one drum that's being stored at a $150,000.00 cost per year, which translates over the 10,000-year period of time into one trillion, five hundred billion dollars. Certainly an extreme example, but a realistic example in terms of what the cost of storage really is."

**Response:**
Actually, a drum being stored at $150,000 per year for 10,000 years would cost $1.5 billion. The life-cycle costs per drum of CH-TRU and RH-TRU waste, under the Proposed Action, would be $18,000 and $135,000, respectively. This includes the cost of treatment, storage, transportation, and disposal.

**18.01 (14)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| RL1 | 4 | Grady Cox | |

**Comment:**
"What is the cost of a WIPP drum after it's loaded and labeled and packaged and ready to go and sitting on a dock waiting to go? Is there a cost that can be assigned for that drum once it's been picked up and taken back down to WIPP?"

**Response:**
For SEIS-II, DOE estimated the cost of treating and packaging, transporting, and disposing of the waste at WIPP for the Proposed Action. The cost per CH-TRU waste drum was estimated to be $18,000. This estimate is based on 168,500 cubic meters (5.9 million cubic feet) of CH-TRU waste and a life-cycle cost of $14.31 billion. Similarly, the cost per RH-TRU waste drum was estimated to be $135,000. This estimate is based upon 7,080 cubic meters (250,000 cubic feet) of RH-TRU waste and a life-cycle cost of $4.72 billion.

**18.01 (15)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB4 | 62 | Lawrence Carter-Long | |
| BO1 | 76 | Steve Hopkins | |
| BO1 | 87 | Rebecca A. Nebelsick | |
| BO1 | 119 | Michele Kresge | |
| BO1 | 131 | Joanie Fauci | |
| BO1 | 135 | Martin Huebner | Federation of Western Outdoor Clubs |
| C-106 | 8 | Jerry L. Gerber | |
| C-129 | 14 | Richard A. Kenney | Coalition 21 |
| C-156 | 11 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |
| C-158 | 13 | Maureen Eldredge | Military Production Network |
| DE1 | 51 | Vince Likar | |
| E-054 | 1 | Amy V. Bunting | |
| E-056 | 52 | Linda Hibbs | |
| SF3 | 46 | Jai Lakshman | SEVA Foundation |
| SF3 | 64 | Bill Gould | |
| SF3 | 104 | Anhara Lovato | |
| SF4 | 101 | Joseph Oliaro | |
| SF7 | 31 | Suzanne Phillips | |
| V1 | 14 | Glen Lockhardt | |

**Comment:**
Many commenters stated that it was not logical for DOE to pursue the Proposed Action at a cost of $19.1 billion when, under No Action Alternative 2, DOE could provide for the safe storage of waste at current locations at a cost of only $2.7 billion. Some commenters said that the $16 billion in savings could be used to clean up the sites and make nuclear waste storage safer.

**Response:**
Both No Action Alternatives 1 and 2 provide a storage solution for 135 years, after which active institutional control is assumed to be lost. The Proposed Action and the action alternatives provide a disposal solution for the 10,000-year period of regulatory concern. Thus, there would be considerable additional costs incurred under the no action alternatives if monitored, retrievable storage were to continue for the 10,000-year period or if another method of disposal were assumed. DOE does not agree that TRU waste could safely remain where it is and has estimated in SEIS-II that approximately 800 deaths could result from No Action Alternative 2. In other words, $2.5 billion "buys" 135 years of safe storage, after which approximately 800 people could die. SEIS-II analyses show, however, that the $19.03 billion cost of the Proposed Action "buys" safe disposal over at least 10,000 years.

**18.01 (16)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-056 | 54 | Linda Hibbs | |

**Comment:**
"[The GAO states that] 'WIPP is likely to remain open, at a less-than-optimal capacity for many years beyond the currently planned operating life of 35 years.' Each additional year could cost at least $130 million."

**Response:**
The WIPP operations would require an approximate $150 million annual life-cycle budget, as reported in SEIS-II (see the sections on socioeconomics in Chapter 5). Even without disposal operations at WIPP, the cost to keep the facilities and staff in a state of readiness is accurately reflected by this estimate. If DOE selects an alternative that would require disposal of the Additional Inventory, WIPP would be able to operate at capacity well beyond the currently planned 35-year operational period.

**18.01 (17)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| V1 | 17 | Wally McCorkle | |

**Comment:**
"All the data in SEIS-II needs to be presented in the same time frame. The costs need to be given in present dollars."

**Response:**
At the time of the initial analysis, use of the 1994 dollars was all that was available. DOE has decided to keep the cost analysis as it appeared in the Draft SEIS-II because it is primarily intended to provide a comparison between alternatives and is based on the cost figures from the WM PEIS.

## 18.02 Psychological Impacts

**18.02 (01)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB5 | 63 | Lilly Rendt | |
| ALB6 | 134 | Amy Nixon | |

**Comment:**
A few commenters said they were concerned that if TRU waste were disposed of in the WIPP repository, it would eventually leak into Carlsbad Caverns. They said this scenario would adversely affect tourism.

**Response:**
The WIPP site is approximately 68 kilometers (40 miles) from Carlsbad Caverns. DOE believes that the design of the repository would ensure that radioactive material would not reach the immediate accessible environment at the boundary of the WIPP site. The relatively great distance between Carlsbad Caverns and the immediate accessible environment for the WIPP site, as well as a lack of a credible transport mechanism between the two locations, would preclude any reasonable scenario that would enable TRU waste to reach Carlsbad Caverns.

This has been confirmed by the long-term performance assessment analyses in SEIS-II, which indicated that no impacts to local groundwater or the Pecos River from an undisturbed WIPP repository would be expected for at least 10,000 years. DOE also analyzed the consequences of a potential future intrusion that penetrated the repository and subsequently encountered a pressurized brine reservoir. The analysis of an accidental intrusion into the repository showed that brine that might mix with waste in the repository would remain in the vicinity of the intrusion. Results of these analyses are detailed in Chapter 5 and Appendix H of SEIS-II.

**18.02 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| CA1 | 15 | Richard Boren | |

**Comment:**
"The risks of radioactive release could be devastating to the state of Texas, Texas' citizens, its natural resources, and its economy, particularly the agricultural industry located just miles from the WIPP site."

**Response:**
The WIPP site is approximately 61 kilometers (36 miles) from the Texas state line. DOE believes that the WIPP design would ensure that radioactive material would not reach the immediate accessible environment at the boundary of the WIPP site. The relatively great distance between the Texas/New Mexico state line and the immediate accessible environment for the WIPP site, as well as a lack of a credible transport mechanism between the two locations, would preclude any reasonable scenario that would enable TRU waste to reach the state line. This has been confirmed by the long-term performance analyses (see Section 5.1.12 for the Proposed Action).

**18.02 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 53 | Jeff Radford | Business People Concerned about WIPP |
| ALB2 | 70 | Charles Hyder | |
| ALB2 | 121 | Janet Greenwald | |
| ALB3 | 93 | Karen Navarro | |
| ALB4 | 76 | Marcus Fidel | |
| ALB4 | 77 | Marcus Fidel | |
| ALB5 | 89 | David Shepard | |
| ALB6 | 87 | Debra Tenney | |
| C-086 | 4 | Shelley T. Buonaiuto | |
| C-125 | 17 | Barbara H. Johnson | The Rio Grande Chapter of the Sierra Club |
| C-125 | 18 | Barbara H. Johnson | The Rio Grande Chapter of the Sierra Club |
| C-131 | 27 | Don Hancock | Southwest Research and Information Center |
| C-138 | 1 | Jeff Moyers | RPM2 Building Services Ltd. |
| C-141 | 32 | Margret Carde | Concerned Citizens for Nuclear Safety |
| C-154 | 14 | Tom Marshall, Jack Mento, et al. | Rocky Mountain Peace and Justice Center |
| CA1 | 45 | Jack White, Jr. | |
| E-012 | 8 | Charles Hyder | |
| E-012 | 21 | Charles Hyder | |
| E-012 | 24 | Charles Hyder | |
| E-056 | 50 | Linda Hibbs | |
| SF1 | 60 | Virginia Miller | |
| SF1 | 85 | Don Hancock | Southwest Research and Information Center |
| SF1 | 88 | Chris Moore | |
| SF2 | 42 | Elliott Skinner | |
| SF3 | 69 | Bill Gould | |
| SF3 | 107 | Anhara Lovato | |
| SF4 | 24 | Bonita McCune | |
| SF4 | 34 | Bonita McCune | |
| SF4 | 136 | Pat Larragoite | |
| SF5 | 23 | Susan Curtis | |
| SF5 | 60 | Alicia Katz | |
| SF6 | 4 | Ann Dasburg | |
| SF6 | 77 | Garland Harris | |
| SF6 | 78 | Garland Harris | |

**Comment:**

Many commenters stated that a TRU waste accident could adversely affect local economies along the transportation routes. Examples of potential adverse economic impacts cited by the commenters included the loss of tourism, depressed real estate values, and generally poor economic indicators (e.g., low investor interest, decreasing bond ratings, increasing insurance rates). In addition, commenters also said that SEIS-II should evaluate the impacts that transportation of TRU waste would have on the mental health or general attitudes of the public.

**Response:**
DOE has attempted in SEIS-II to analyze reasonably foreseeable, quantifiable environmental impacts that could result from the alternatives, including both routine and accident consequences. In Section 5.1.8.4 of SEIS-II, for example, DOE acknowledged that transportation events with very low probabilities of occurrence could occur, and estimates of LCFs that would result were provided.

The prosperity or economic development of an area depends on the characteristics or factors that define the particular economic region. Such factors as industrial development, entertainment resorts, casinos, nuclear facilities, etc., can be perceived to be either positive or negative, depending on the underlying value systems of the individuals forming the perception. DOE recognizes the possibility of negative public perceptions associated with its waste management program. It is possible, for example, that the value of real estate in the vicinity of a nuclear facility might decline and land development patterns and tourism might be negatively affected. However, assessing the impact of "stigma" is problematic, because it does not necessarily depend on the actual physical effects or risks of the proposed action, but on the negative perception of these effects or risks by some members of the public.

The extent of impacts from such perceptions is extremely speculative. NEPA does not require analysis of psychological impacts that are speculative; therefore, an analysis of such stigma and the possible mitigation of its impacts have not been included in SEIS-II. However, DOE works extensively with local communities and tribal nations to understand and mitigate potentially negative perceptions of DOE operations.

**18.02 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-136 | 3 | N. Watson | |
| C-137 | 3 | Herbert Arthur | |

**Comment:**
Two commenters opposed the selection of proposed sites or waste burial sites that are too close to major cities, especially Denver, which is 26 kilometers (16 miles) away from Rocky Flats and has a population of more than 1 million.

**Response:**
DOE is proposing to dispose of TRU waste only at WIPP. No waste burial sites are proposed at any of the generator sites, although long-term storage would occur under the no action alternatives and some lag storage would occur under the Proposed Action and action alternatives. Some of the generator sites have pre-1970 TRU waste that was buried in shallow pits. This volume of pre-1970 waste has been included as part of the Additional Inventory and would be excavated, packaged, and transported to WIPP for disposal under the action alternatives.

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# 19.0 TRANSPORTATION

## 19.01 General

### 19.01 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 1 | David Mitchell | |

**Comment:**
"Do the WIPP TRUPACT trucks have radiation and radionuclide sensors that transmit real-time data by satellite?"

**Response:**
The trucks that would be used to transport TRU waste to WIPP would have radiation detection equipment on board but would not be capable of transmitting real-time data from the radiation detection equipment. This equipment would be needed only in the event of a highly unlikely accident where the TRUPACT-II is breached.

However, an important feature of the transportation system is the Transportation Tracking and Communication System (TRANSCOM) that would be used to ensure efficient transportation of TRU waste. This system would combine navigation, satellite communication, and computer network technologies to monitor movement of a TRU waste shipment. Each tractor-trailer rig would automatically send a signal every 15 minutes to update its geographic location and indicate whether it is moving or stopped. The TRANSCOM system would be used primarily to track the location of the TRU waste shipment. It would also provide advance shipment information, current bills of lading, shipment location, and emergency response information.

### 19.01 (02)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-013 | 16 | Jennifer Salisbury | New Mexico Radioactive Waste Consultation Task Force |

**Comment:**
"In reviewing the transportation-related sections of the draft, we noted there was virtually no mention of relevant DOE Orders. This should be corrected by including references to at least the following directives in the transportation and other appropriate sections of the final SEIS-II:

- DOE Order 151.1 Comprehensive Emergency Management System
- DOE Order 425.1 Startup and Restart of Nuclear Facilities
- DOE Order 460.2 Departmental Materials Transportation and Packaging Management

- DOE Order 5632.1C Protection and Control of Safeguards and Security Interests
- DOE Order 5820.2A Radioactive Waste Management"

**Response:**
The Final SEIS-II includes a list of relevant DOE orders.

**19.01 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-131 | 32 | Don Hancock | Southwest Research and Information Center |

**Comment:**
"The D-SEIS-II uses various numbers of shipments for the same alternatives in the text and appendices D and E. DOE should decide and justify the actual number of projected shipments and use those numbers consistently throughout the SEIS-II."

**Response:**
The number of projected shipments is clearly presented in Section A.3.9. DOE has determined, justified, and used consistently the number of projected shipments. Differences between Appendices D and E are due to adding the number of shipments from small-quantity sites to those from larger generator storage sites for determining costs. The impacts from consolidating waste from small-quantity sites were included in the impacts presented for the 10 major generator sites as stated in Sections 5.1.8.2 and 5.1.8.3 of SEIS-II.

**19.01 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 94 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 3-8. Since the text cites U.S. DOT regulations (49 CFR Part 391) for driver qualification, also cite the appropriate DOT regulations for routing (49 CFR 177) and the Type A container certification (49 CFR 173)."

**Response:**
The citations have been added to the Final SEIS-II.

**19.01 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-009 | 2 | Sally Rakow | California Energy Commission |
| C-152 | 127 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
One commenter said the Draft SEIS-II was misleading when it stated that a majority of WIPP shipments are not HRCQs. This commenter said that any waste shipment containing over 6 curies of plutonium-239 or plutonium-240, 9 curies of plutonium-238, and 24 curies of americium-241 is an HRCQ and that, by this definition, virtually all WIPP CH-TRU waste shipments would be HRCQs. Another commenter stated that DOE has changed its claim that the shipments would be HRCQs.

**Response:**
DOE has agreed to use HRCQ routes for all shipments: empty, less than HRCQs, or HRCQs. This conservative assumption would force all shipments to use DOT-preferred routes as defined in 49 CFR Part 397 Subpart D. The commenter's claim that all CH-TRU waste shipments would be HRCQs is based on outdated limits for the definition of HRCQs. Packaging totals for HRCQs increased from 6 curies to 16.23 curies.

**19.01 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-150 | 5 | Mary Olson | |
| C-151 | 21 | Don Moniak | Serious Texans Against Nuclear Dumping |

**Comment:**
One commenter stated that the conditions most likely to be contributing factors to accidents and incidents are inclement weather, local or regional disturbances, construction, and schedule constraints. Another said that too many safety responsibilities would be left to the carrier, leaving too much room for human error.

**Response:**
DOE has implemented a number of programs and policies designed to reduce the likelihood and mitigate the potential consequences of accidental releases of TRU waste, which have been discussed in SEIS-I and SEIS-II. Under its current contract with DOE, Colorado Allstate Trucking (CAST) is required to have contingencies in place to address inclement weather, local or regional disturbances, and construction. Similar requirements would apply to any carrier.

Safety requirements include a multi-element emergency preparedness program for potential TRU waste transportation accidents designed to minimize the consequences of accidental releases; special driver training and qualification programs designed to ensure that high-quality, safe truck drivers transport TRU waste shipments; and use of the TRANSCOM satellite communications and tracking system, which can provide drivers with advance warning of poor weather, congested traffic, construction zones, and other potential hazards. The TRANSCOM system also can provide rapid notification and dissemination of information on traffic accidents involving TRU waste shipments to state, local, and tribal officials.

The trucking contractor would not be under any schedule constraints for the transportation of TRU waste. Appendix M of the 1990 SEIS provides a summary of the management plan for the trucking contractor. In addition, CAST has prepared its *CAST Transportation Management Plan* dated June 22, 1995.

**19.01 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-009 | 1 | Sally Rakow | California Energy Commission |

**Comment:**
"The number of projected transuranic waste shipments from LLNL to WIPP estimated in the WIPP SEIS-II are lower by a factor of 6 from estimates provided in an earlier WIPP SEIS-I (1990). WIPP SEIS-II estimates there will be 162 shipments from LLNL to WIPP, whereas WIPP SEIS-I estimated there would be 969 shipments from LLNL to WIPP. What is the basis for such a large disparity between these estimates? Do these estimates assume that a truck would carry three TRUPACT-II containers (42 drums per shipment)? Shipment estimates will be significantly affected by these assumptions."

**Response:**
The shipment estimates provided in SEIS-II are based upon the most recent information from the generator sites and the requirements of the WAC. The WAC establish conditions that govern the physical, radiological, chemical composition, and packaging requirements of TRU waste. The characterization of waste from the generator sites has improved since 1990, and the requirements of the WAC have changed. This has enabled DOE to determine more accurately shipment numbers from the generator sites. The trucks carrying the TRU waste could carry up to three TRUPACT-IIs per shipment. The number of TRUPACT-IIs carried would depend on the requirements of the planning-basis WAC and the legal weight limit of the truck.

**19.01 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-129 | 16 | Richard A. Kenney | Coalition 21 |

**Comment:**
"The SEIS-II should emphasize the high standards for safety that the current WIPP's TRU waste transportation system has set. The system includes: (1) WIPP trucks, operated by highly trained drivers, (2) NRC-certified containers, (3) transportation monitoring by a satellite tracking system, (4) trucks meeting the highest classification of federal transportation standards, (5) rigorous procedures for dealing with inclement weather, safe parking, and notification of incidents to the state, local, and tribal responders, and (6) WIPP-specific training of appropriate response personnel where needed."

**Response:**
DOE has implemented a number of programs and policies designed to reduce the likelihood and mitigate the potential consequences of accidental releases of TRU waste, which have been discussed in SEIS-I and SEIS-II. Accident-resistant Type B packaging systems to be used for TRU waste transportation would be the most significant measure taken to prevent accidental releases. Other elements of accident prevention would include extensive driver training and qualification programs, rigorous vehicle inspection and maintenance programs, and highway improvement projects. Elements of accident mitigation would include the TRANSCOM

satellite tracking and communication system; emergency response training programs for drivers, local first responders, and emergency room personnel; the DOE Radiological Assistance Program resources; and the TRUPACT-II Incident/Accident Response Team (IART).

**19.01 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-035 | 1 | Jim Hannan | |

**Comment:**
"Please hire non-smoking truck drivers."

**Response:**
The smoking preference of the truck drivers is outside the scope of SEIS-II.

**19.01 (10)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-131 | 45 | Don Hancock | Southwest Research and Information Center |

**Comment:**
"Has DOE ever published a sensitivity analysis for the version of RADTRAN which it used to do the risk assessment in the draft SEIS? If not, DOE should make such an analysis part of a revised and rereleased D-SEIS."

**Response:**
DOE published a document titled *Validation of the Transportation Computer Codes HIGHWAY, INTERLINE, RADTRAN 4, and RISKIND* in May 1995. The document number is DOE/ID-10511.

**19.01 (11)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 195 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"In Table E-10 (RADTRAN INPUT, Etc.), it is not clear why the number of people exposed per stop and the exposure distance [are] different for CH-TRU and RH-TRU."

**Response:**
Table E-10 erroneously presented RADTRAN input values for truck transportation under the CH-TRU waste heading and rail transportation under the RH-TRU waste heading. For

determining impacts using RADTRAN, the appropriate values for truck transportation were used. Table E-10 has been corrected in SEIS-II.

**19.01 (12)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-069 | 14 | Pat Clark | Snake River Alliance |

**Comment:**
"That [shipping] campaign would be lengthened considerably and the transportation risks doubled if WIPP did not work and the waste was returned."

**Response:**
Waste retrieval would consist of removing TRU waste from WIPP before salt creep would begin to crush the waste drums and canisters. The retrieval volumes were assumed to be the same as the emplacement volume. The waste would be shipped back to the originating generator-storage site. Transportation impacts were based on the number of shipments required to transport a designated volume of TRU waste to WIPP. With no additional waste to transport, the number of shipments required to transport the waste back would be the same as the number required to ship the waste to WIPP. Transportation impacts for retrieval would be identical to the transportation impacts associated with TRU waste emplacement.

**19.01 (13)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 197 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Scenarios for calculating doses to the maximum exposed individual (MEI) are described on page E-32 and the doses are shown in Table E-15. The scenario description does not provide all the assumptions necessary to make the calculations. We were able to reproduce the CH-TRU doses for the Departure Inspector, the State Inspector, and the rest stop employee within ± 12% by using either the TI values reported in Table E-11 or the 4 rem/h value (that the text said was being used). The scenarios are sufficiently conservative so that the MEI doses in Table E-15 adequately represent the doses to members of the public and to occupational workers that do not wear dosimeters. The calculated risk to these MEIs are not large. However, the doses average several hundred millirem/year for 10 years. This is somewhat greater than the 100 mrem/y value that most national and international agencies believe should not be exceeded from all radiation exposure combined (radiation doses from natural background and medical usage are not included in the 100 mrem/y value). These considerations suggest that the following operational control procedures should be implemented: (1) persons who routinely inspect vehicles should be classified as radiation workers and required to wear dosimeters. (2) normal procedures should not allow trucks carrying CH-TRU or RH-TRU wastes to routinely stop for long periods of time at locations where public exposure is likely to occur."

**Response:**
It is anticipated that departure site and state inspectors would be monitored for radiation exposure once TRU waste shipments began.

Also, the *CAST Transportation Management Plan* specifies that a document titled *Safe Parking Areas for WIPP Shipments*, prepared for the Western Governors Association, would be strictly adhered to by the drivers. DOE sites could be used for safe parking areas. Also, DOE has reached an agreement with the U.S. Department of Defense (DoD) to use its facilities along the WIPP route for emergency parking. If no DOE, DoD, or state-designated parking areas could be reached safely, the driver would be directed to select a safe parking area, avoiding highly populated areas, areas with difficult access or poor lighting, and crowded parking areas. The driver would then notify state police and the central dispatcher of the location.

**19.01 (14)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-012 | 10 | Kathleen E. Trever | State of Idaho Oversight Program |

**Comment:**
"Pages 5-16; Appendix A; pages E-30 and E-31. Transportation indices for loaded shipping containers are significantly lower than those estimated in 'Comparative Study of Waste Isolation Pilot Plant (WIPP) Transportation Alternatives' (February 1994; DOE/WIPP 93-058), presumably because of changes in per-container radioisotope inventories. The final SEIS should discuss this change, particularly since it is difficult to compare inventories between the two documents (inventories in the 'Comparative Study' are per container, while those in the SEIS-II are per site)."

**Response:**
The transportation indices (TIs) for each site were calculated to determine a bounding TI to use for estimating incident-free radiological impacts. The TI represents the dose at 1 meter (3 feet) from the surface of the shipping package in millirem per hour. The DOT has set a regulatory limit of 10 millirem per hour at 2 meters (6.5 feet). This indicates that a number of the generator sites analyzed in DOE/WIPP 93-058 could not ship their waste with the concentrations reported. SEIS-II represents an effort to use data that are more realistic (i.e., within limits for shipping). Numerous contacts were made with generator sites and personnel responsible for providing input for the development of the TRU waste database, the *Transuranic Waste Baseline Inventory Report* (DOE/CAO-95-1121), to resolve discrepancies.

The inventory information from each site is presented in Appendix A. No attempt was made to identify changes in reported inventories since data reported in 1994. However, it is recognized that generator sites have improved their waste characterization efforts. This could result in significant differences in radionuclide concentrations from each of the generator sites.

**19.01 (15)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| CA1 | 80 | John Heaton | |

**Comment:**
"The WIPP trucking transportation system is virtually impenetrable. It demands well-trained personnel, it provides complete emergency response, it has complete security, and it should be wholeheartedly endorsed."

**Response:**
DOE recognizes that traffic accidents cannot be completely prevented during the transportation of any commodity. That is why DOE has committed to using Type B shipping containers certified by the NRC for the TRU waste shipments and has implemented rigorous driver qualification and training requirements, as well as an extensive vehicle and container testing and maintenance program. These programs tend to reduce the number of traffic accidents that would occur relative to normal heavy-truck accident rates. In addition, DOE has committed to and funded emergency preparedness programs to help deal with accidents should they occur. DOE has instituted the States and Tribal Education Program to teach emergency response personnel safe and appropriate procedures for dealing with TRU waste transportation accidents. This program consists of six courses that focus on different aspects of emergency response. The States and Tribal Education Program would eventually be taught in all states where TRU waste transportation would occur.

**19.01 (16)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| DE1 | 62 | Margret Carde | Concerned Citizens for Nuclear Safety |

**Comment:**
"I ask that some tests for transportation be done that are perhaps not required but would be helpful. I ask that not every facility in the nation depend on the opening of a facility that hasn't been proven yet."

**Response:**
DOE recognizes the concerns of the public regarding the transportation of TRU waste to the WIPP site and has put several measures in place to minimize the risks of accidental releases. DOE would use Type B, accident-resistant shipping containers capable of withstanding severe accidents without releasing their contents. Trucks carrying TRU waste shipments would be subject to numerous separate inspections, many by independent state/tribal agencies. Drivers themselves would inspect the vehicle every two hours or 160 kilometers (100 miles). In addition, all TRU waste shipments would be placarded in accordance with DOT regulations. Radiation detectors would be carried in the tractors of all waste shipments, and the drivers would be trained in their proper use; however, because each shipment would be surveyed before its departure, drivers would not need to perform routine in-transit radiation monitoring.

Each driver would be required to obey posted speed limits, and each vehicle would be equipped with a speed governor set for a maximum speed of 105 kilometers (65 miles) per hour. The TRANSCOM satellite system would indirectly control speed limits by providing periodic locations of the vehicle. Additional safety-related transportation information can be found in Appendix E of SEIS-II and Appendices C and M of SEIS-I.

Although the WIPP facility has been a part of DOE's strategic planning since 1980, DOE has not yet decided whether to use the WIPP facility for the disposal of TRU waste, nor has it eliminated consideration of any of the alternatives presented in SEIS-II.

**19.01 (17)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-009 | 3 | Sally Rakow | California Energy Commission |

**Comment:**
"The State of California wishes to be notified at least 6 weeks in advance if planned TRU shipments are expected to exceed route-controlled quantities. Similarly, the planned quantities of transuranic materials to be shipped in California and their radioactive characteristics, packaging to be used, and routing should be provided to the State at least 6 weeks prior to shipment."

**Response:**
DOE will consult with the State of California to reach a mutually agreeable arrangement for notification of TRU waste shipments. Each state through which TRU waste would pass has designated or reviewed the routes that the TRU waste shipments would use.

## 19.02 Noise

**19.02 (01)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 57 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page S-32. Noise. It would be useful to state the normal non-WIPP truck and traffic through Carlsbad as a comparison to the relative noise effect of WIPP traffic."

**Response:**
Section 5.1.5 has been changed to reflect the above comment. Data provided by the New Mexico State Highway and Transportation Department showed annual average daily traffic at the intersection of Canal and Greene Streets in Carlsbad to be approximately 7,700 in 1994. Estimated 1996 daily traffic was approximately 7,900 vehicles. DOE believes WIPP-related truck and commuter traffic would make a negligible contribution to overall noise levels in Carlsbad.

## 19.03 Emergency Response

### 19.03 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-003 | 1 | T.C. Adams | State of Texas Office of the Governor |
| A-005 | 4 | Steven H. Gunderson | State of Colorado Department of Public Health and Environment |
| A-009 | 8 | Sally Rakow | California Energy Commission |
| ALB1 | 63 | Lisa Sparaco | |
| ALB2 | 101 | Lesley Weinstock | |
| ALB3 | 70 | Linda Sperling | |
| ALB4 | 92 | Jerry Messick | Local 1199NM/AFSCME |
| ALB4 | 93 | Jerry Messick | Local 1199NM/AFSCME |
| ALB4 | 123 | Jon Thomas-Weger | |
| ALB5 | 46 | Lilly Rendt | |
| ALB6 | 118 | Glenna Voigt | |
| ALB6 | 137 | Tom Metcalf | |
| ALB6 | 143 | Tom Metcalf | |
| ALB6 | 150 | Ted Davis | |
| BO1 | 74 | Steve Hopkins | |
| BO1 | 86 | Rebecca A. Nebelsick | |
| BO1 | 102 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| BO1 | 123 | Michele Kresge | |
| C-022 | 4 | Pam Lytle | |
| C-059 | 5 | Sam Volpentest | Tri-City Industrial Development Council |
| C-090 | 6 | Linda Ewald | |
| C-106 | 6 | Jerry L. Gerber | |
| C-127 | 4 | Thomas M. Rauch | |
| C-131 | 28b | Don Hancock | Southwest Research and Information Center |
| C-141 | 31 | Margret Carde | Concerned Citizens for Nuclear Safety |
| C-151 | 18 | Don Moniak | Serious Texans Against Nuclear Dumping |
| C-157 | 5 | Wendy Lynne Botwin | |
| C-158 | 11 | Maureen Eldredge | Military Production Network |
| C-159 | 4 | Susan Maret | Sierra Club National Nuclear Waste Task Force |
| C-159 | 14 | Susan Maret | Sierra Club National Nuclear Waste Task Force |
| C-162 | 6 | Kathleen Sullivan | |
| C-164 | 4 | Mansi Kern | |
| C-166 | 10 | Elliott H. Libman, MSW | |
| CA1 | 8 | Richard Boren | |
| CA1 | 37 | Robert Lee | |
| CA1 | 90 | Tom Duffin | |
| CA1 | 101 | Mark Schinnerer | |
| CA1 | 120 | Dan Funchess | |
| DE1 | 98 | Laura Kriho | |
| DE1 | 136 | Andrew Thurlow | |
| DE1 | 149 | Amory Narvaes | |
| DE1 | 168 | Tom Marshall | Rocky Mountain Peace and Justice Center |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| DE1 | 202 | David Granquist | |
| E-015 | 1 | Jerry Messick | Local 1199NM/AFSCME |
| E-015 | 5 | Jerry Messick | Local 1199NM/AFSCME |
| E-032 | 4 | Robert S. Light | New Mexico Representative (District 55) |
| E-069 | 13 | Pat Clark | Snake River Alliance |
| E-077 | 3 | Rebecca A. Nebelsick | |
| SF2 | 11 | Kathleen Sullivan | |
| SF2 | 21 | Benny Atencio | |
| SF3 | 58 | Bill Gould | |
| SF3 | 82 | Sasha Pyle | Religious Society of Friends |
| SF4 | 31 | Bonita McCune | |
| SF4 | 108 | Kathy Sanchez | |
| SF4 | 115 | Corrine Sanchez | |
| SF4 | 127 | Juan Montes | |
| SF4 | 138 | J. Gilbert Sanchez | |
| SF5 | 59 | Alicia Katz | |
| SF5 | 70 | Michael Collins | |
| SF6 | 38 | Pamela Baumgertel | |
| SF7 | 14 | Sister Penelope McMullen | |
| SF7 | 37 | Rosemary Lowe | |
| SF7 | 69 | Melissa McDonald | |
| V1 | 7 | Charmian Schaller | |
| V1 | 16 | Glen Lockhardt | |

**Comment:**
Numerous commenters said they were concerned about the level of emergency response training to communities along the WIPP transportation corridors. They stated that a lack of readiness on the part of emergency responders along the WIPP route is evident and that training for first responders (emergency medical technicians, fire and police departments, etc.) and medical providers must be completed before shipments begin. Some commenters stated that the federal government is required to provide financial and technical assistance for emergency preparedness. Others stated that the training that has been provided in the past was inadequate. A few commenters commended DOE for the availability and level of training for emergency response that DOE has already given to some of the communities along the WIPP routes. One commenter stated that hospitals participating in the training exercises exhibited a cavalier attitude towards the exercise. In particular, the commenter noted that air vents were not blocked in areas where contaminated individuals would be treated and that the hospital layout would preclude precautions to prevent other patients from being exposed.

**Response:**
Since the late 1950s, DOE has sponsored the Radiological Assistance Program. This program is designed to make DOE resources available to other DOE facilities, as well as state, tribal, local, and other governmental agencies, for the explicit purpose of assisting in the assessment and, to a lesser extent, mitigation of radiological incidents.

Most recently, the DOE Carlsbad Area Office added the TRUPACT-II IART to this program. The IART would be placed on standby status during all TRU waste shipments. Furthermore, drivers of the TRUPACT-II transportation trucks would receive extensive training on TRUPACT-II container recovery. Before shipping TRU waste to WIPP, DOE would be required by the LWA to provide technical assistance and funds for the purpose of training public safety officials and any other emergency responders in any state or Indian tribe through whose jurisdiction TRU waste would pass. Currently, that training has taken place only in the INEEL-to-WIPP transportation corridor. Other corridor states would receive training before WIPP shipments began.

DOE has entered into cooperative agreements with the host state, New Mexico; the Western Governors Association; Indian governments; and the Southern States Energy Board in a continuing effort to ensure that the emergency response community is well trained and equipped in the event of a WIPP-related transportation incident/accident. These agreements provide funding programs to address incident/accident prevention, emergency preparedness, and public information issues.

DOE has also instituted the States and Tribal Education Program to teach emergency response personnel along the transportation corridor safe and appropriate procedures for dealing with TRU waste transportation accidents. This program consists of six courses that focus on different aspects of emergency response. Since 1988, the States and Tribal Education Program has trained more than 11,000 students in 12 states on the actions necessary to protect emergency responders, incident/accident victims, the public, and the environment. OSHA and NIOSH reviewed the program and found it in compliance with 29 CFR Section 1910.120.

Also, the Radiation Emergency Assistance Center/Training Site has provided in-hospital training since 1989, with 883 students attending to date. Of these, 843 students were trained in the INEEL-to-WIPP transportation corridor states. This training would be offered to other states along transportation corridors prior to the shipment of waste. However, it is the decision of the individual hospitals whether to have their staff trained. The State of New Mexico has established a Governor's Medical Advisory Committee to review the medical training program annually and report its findings.

In addition to classroom training, DOE provides field incident/accident response exercises through its TRANSAX and WIPPTREX programs. Each program focuses on multi-agency cooperation and can serve as a model for effective integration of federal, state, and local emergency response planning activities. After each exercise, lessons learned regarding issues such as emergency response equipment and medical preparedness are distributed to all of the TRU waste corridor states.

DOE has no control over the attitude of hospital personnel or hospital facilities. DOE takes emergency preparedness exercises seriously.

Diethylenetriamine pentaacetic acid (DTPA) is a chemical used to reduce the absorption of metals such as plutonium and americium into organs in the body. DTPA and physicians authorized to administer DTPA can be found at DOE sites that handle or have handled plutonium. Typically, DTPA would not be found along the WIPP TRU waste transportation corridors. As indicated in SEIS-II, an accident severe enough to breach the TRUPACT-II is highly unlikely; therefore, there would be little need for DTPA. DTPA could still be made available, if it were determined at the accident scene to be necessary. An authorized physician could be flown to the accident site within six to eight hours. There would be no significant benefit in administering DTPA in the first hour; however, the earlier, the better.

**19.03 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| RL1 | 1 | Ken Niles | |

**Comment:**
"The Oregon Office of Energy's Nuclear Safety Division believes that we have developed a transport safety program which will greatly reduce the likelihood of an accident, result in a much more effective response to accidents that do occur, and increase the public's confidence in the safety of these shipments. However, we are concerned that neither Oregon nor Washington will receive sufficient funding to fully implement this transport safety program. Shipments from the Hanford site are currently scheduled to begin in October of 1998. If that schedule holds, there is a tremendous amount of work to be done yet along the shipping route both in Oregon and Washington to prepare for these shipments. The transport program is the most publicly-visible portion of the WIPP program. Accidents will happen, but they must be kept to a minimum, and the response to those accidents must be swift and effective. The U.S. Department of Energy must continue to honor both funding and the policy commitments that have been made to Western states if it hopes to successfully transport waste to WIPP."

**Response:**
A total of 46 students have taken the First Responder Course in Oregon. Additional training is planned before TRU waste would be shipped to WIPP.

In addition to classroom training, DOE provides field incident/accident response exercises through its TRANSAX and WIPPTREX programs. Each program focuses on multi-agency cooperation and can serve as a model for effective integration of federal, state, and local emergency response planning activities. After each exercise, lessons learned regarding issues such as emergency response equipment and medical preparedness are distributed to all of the TRU waste corridor states.

**19.03 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB6 | 96 | Debra Tenney | |
| C-131 | 30 | Don Hancock | Southwest Research and Information Center |
| C-132 | 5 | Keith Tinno | Shoshone-Bannock Tribes |
| C-138 | 4 | Jeff Moyers | RPM2 Building Services Ltd. |
| C-148 | 4 | Landi Fernley | |
| C-154 | 11 | Tom Marshall, Jack Mento, et al. | Rocky Mountain Peace and Justice Center |
| DE1 | 7 | Leroy Moore | |
| DE1 | 25 | Kathleen Sullivan | |
| DE1 | 70 | Sam Cole | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| DE1 | 153 | James Ciarlo | |
| E-056 | 13 | Linda Hibbs | |
| E-056 | 42 | Linda Hibbs | |
| E-063 | 7 | Tom Moore | |
| SF2 | 1 | Don Hancock | Southwest Research and Information Center |
| SF3 | 11 | Betty Platts | |
| SF3 | 38 | Jai Lakshman | SEVA Foundation |
| SF4 | 140 | J. Gilbert Sanchez | |
| SF7 | 123 | Lee Lysne | |
| SF7 | 155 | Norah Pierson | |

**Comment:**
Several commenters expressed concern about the safety of emergency responders and the public in an accident, especially in rural areas where commenters said the response time could be from one to five hours and there would be fewer trained responders.  A few commenters stated that no evacuation plan was in place for their communities or tribes.  Others stated that they do not have the proper equipment to respond to an accident.

**Response:**
It is highly unlikely that, in a transportation accident, a radioactive release would occur.  Local law enforcement agency officers and the carrier drivers would immediately evaluate any TRU waste incidents.  Upon their evaluation and recommendation, a tiered DOE Radiological Assistance Program response would be initiated quickly.  A tiered level of incident classification and response has been developed to handle any level incident.  The initial response to a TRU waste incident would be from state, tribal, or local emergency response agencies, followed by the appropriate DOE Radiological Assistance Team.  Later, the DOE response could be augmented by the IART, which would be on standby during all TRU waste shipments.  The Radiological Assistance Team and IART are composed of experts in radiological and packaging evaluation and incident mitigation.

In the unlikely event of a transportation accident involving the release of radioactive material, the state, tribal, or local government would be initially responsible for taking any emergency protective actions, such as evacuation.  DOE would assist state and local responders and, at a minimum, would follow the Federal Emergency Management Agency guidance documentation and the DOT's *Emergency Response Guidebook*, which recommend establishing "an upwind exclusion area of at least 150 feet" after an accident involving radioactive materials.  In addition, DOE or its contractors would clean up any contamination and the public would be excluded from the area until it is safe.

DOE has entered into cooperative agreements with the host state, New Mexico; the Western Governors Association; Indian governments; and the Southern States Energy Board in a continuing effort to ensure that the emergency response community is well trained and equipped in the event of a WIPP-related transportation incident/accident.  These agreements provide funding programs to address incident/accident prevention, emergency preparedness, and public information issues.

DOE has also instituted the States and Tribal Education Program to teach emergency response personnel along the transportation corridor safe and appropriate procedures for dealing with TRU waste transportation accidents. This program consists of six courses that focus on different aspects of emergency response. Since 1988, the States and Tribal Education Program has trained more than 11,000 students in 12 states on the actions necessary to protect emergency responders, incident/accident victims, the public, and the environment. OSHA and NIOSH reviewed the program and found it in compliance with 29 CFR Section 1910.120.

Before shipping TRU waste to WIPP, DOE would be required by the LWA to provide technical assistance and funds for the purpose of training public safety officials and any other emergency responders in any state or Indian tribe through whose jurisdiction TRU waste would pass. Local communities are trained in the types of equipment needed in an emergency response. In addition, the TRANSCOM system can be used in the event of an accident involving contamination to identify the location of the accident scene and provide the communications link to identify the nearest facility to handle contaminated accident victims and to provide any specialized equipment needed.

**19.03 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB6 | 143 | Tom Metcalf | |
| BO1 | 123 | Michele Kresge | |
| C-090 | 6 | Linda Ewald | |
| C-131 | 26 | Don Hancock | Southwest Research and Information Center |
| C-151 | 18 | Don Moniak | Serious Texans Against Nuclear Dumping |
| C-151 | 20 | Don Moniak | Serious Texans Against Nuclear Dumping |
| C-158 | 10 | Maureen Eldredge | Military Production Network |
| E-069 | 13 | Pat Clark | Snake River Alliance |
| SF1 | 84 | Don Hancock | Southwest Research and Information Center |
| SF3 | 63 | Bill Gould | |

**Comment:**
Several commenters asked why DOE does not plan to use escorts with the TRU waste shipments. One commenter requested that DOE include an analysis comparing escorted and unescorted TRU waste shipments to WIPP.

**Response:**
DOE does not believe that escorts would be necessary to ensure public safety and would result in additional costs, and may result in additional accidents because of the additional vehicles that would travel the routes. Transportation safety procedures would include (1) yearly reevaluation of security and safety issues, (2) use of vehicle equipment to restrict speed (governor), (3) use of the TRANSCOM and redundant communications systems, (4) numerous inspections while en route, and (5) strict notification procedures. In addition, at least one of the two drivers assigned to each shipment would maintain constant surveillance of each shipment at all times during transportation to WIPP.

Because no data concerning accident rates for escorted shipments was available, comparing the impacts of escorted and unescorted shipments was not performed. However, as stated above, DOE believes that its extensive training and stringent driver qualifications would provide adequate public safety.

**19.03 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF4 | 113 | Jennifer Salisbury | New Mexico Radioactive Waste Consultation Task Force |

**Comment:**
"We believe that the Transportation Safety Program, developed jointly by the Department of Energy and New Mexico and other western states, will greatly minimize those risks posed by the WIPP shipping campaign. We are convinced it will severely reduce the probability and severity of any WIPP transportation accidents."

**Response:**
Thank you for your comment.

**19.03 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-015 | 3 | Jerry Messick | Local 1199NM/AFSCME |

**Comment:**
"The training conducted by the Department of Energy (DOE) for WIPP related emergencies, in New Mexico, in some respects has been adequate. However, a minority of the members of the WIPP Medical Working Group feel such a level of frustration over a failure to protect the first responders and health care workers of New Mexico that a minority report is justified and warranted."

**Response:**
The effectiveness of the WIPP Medical Working Group is outside the scope of SEIS-II.

**19.03 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-150 | 3 | Mary Olson | |

**Comment:**
"How many heavily contaminated victims can the hospital in this community handle?"

**Response:**
DOE is not aware of the number of heavily contaminated victims that a specific hospital could handle. However, the TRANSCOM system can be used in the event of an accident involving contamination to identify the location of the accident scene and provide the communications link to identify the nearest facility to handle contaminated accident victims. This is analogous to a severe traffic accident in a rural area requiring facilities or capabilities not available in the local area.

Before shipping TRU waste to WIPP, DOE would be required by the LWA to provide technical assistance and funds for the purpose of training public safety officials and any other emergency responders in any state or Indian tribe through whose jurisdiction TRU waste would pass. Specifically, hospital training has been provided through the Radiation Emergency Assistance Center/Training Site since 1989, with 883 students attending to date. Of these, 843 students were trained in the INEEL-to-WIPP transportation corridor states.

The course is intended for doctors and nurses who may be required to treat a patient who is potentially contaminated with TRU material from a WIPP transportation incident/accident. The students are introduced to the concepts of radiation physics and radiobiology, which prepare them for a more detailed explanation of exposure, contamination, and internal contamination. The course enables students to properly select and prepare an appropriate treatment/decontamination area within the hospital and perform necessary decontamination of the patient.

**19.03 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-151 | 8 | Don Moniak | Serious Texans Against Nuclear Dumping |

**Comment:**
"Since this [Pantex to WIPP] was not a major route, what is the additional cost of emergency preparedness, particularly for the more isolated portions of the region?"

**Response:**
Under the Proposed Action, shipments would not take place directly to WIPP from Pantex Plant (Pantex). Waste would be consolidated at LANL before shipment to WIPP. The TRU waste stored at Pantex has already been moved to LANL without incident.

**19.03 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-115 | 6 | Melvin M. Vuk | |

**Comment:**
"It is stated in the Draft SEIS-II that emergency response teams in towns along highway routes for TRU waste shipments have been offered emergency response training and presumably

many towns have already taken advantage of the opportunity. Why can't the same ER training be planned for towns along potential rail routes? On page E-58 the concept is simply noted as 'Similar training or planning has not been accomplished for rail.' Why cannot the same ER training be applied for rail shipped waste? Is it merely an oversight or is there something unique to rail shipments?"

**Response:**
DOE has not eliminated consideration of rail transportation during the disposal phase; that decision and its basis will be provided in DOE's ROD. However, before shipping TRU waste to WIPP, DOE would be required by the LWA to provide technical assistance and funds for the purpose of training public safety officials and any other emergency responders in any state or Indian tribe through whose jurisdiction TRU waste would pass. Therefore, before TRU waste could be shipped by rail, this training would be provided to emergency responders along the rail transportation corridor.

**19.03 (10)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-011 | 1 | Willie R. Taylor | U.S. Department of the Interior |

**Comment:**
"The Department of Energy (DOE) estimated anywhere from 3 to 331 nonradiological accidents which might occur during the transportation of wastes to WIPP. These are potential accidents not associated with external radiation or breach of TRU waste packages. If the proposed alternative were selected, as many as 76 accidents involving tractor-trailers could occur during the project. Each fully loaded tractor-trailer weighs about 80,000 pounds and has a fuel (diesel) capacity of 1,100 pounds (125 gallons). These 76 accidents have the potential to release 9,500 gallons of diesel fuel into the environment. Depending on the amount released, its timing, location, and proposed method of cleanup (or lack thereof), the accident may adversely affect fish and wildlife and their habitats. This potential impact was not addressed by the SEIS-I or SEIS-II.

"The Department [of the Interior] believes that the DOE needs to address the impacts to the environment from the release of materials other than TRU wastes in the accident scenarios. However, rather than spend an inordinate amount of time modeling and predicting the amount and location of diesel fuel spills during any particular accident scenario, the Department recommends the development of a spill contingency plan under the Oil Pollution Act of 1990. The plan should be coordinated with the Environmental Protection Agency, the Department of Transportation, the Department of the Interior, state governments, and the Native American Tribes along the proposed transportation routes. One possible alternative that is practical and feasible from a technical and economic standpoint would be to provide spill containment materials (e.g., polymer encapsulation products, booms, sorbent pads, etc.) either with the driver of the tractor-trailer or with the emergency on-scene commander. The DOE could identify the type, quantity, and source of materials best suited for a diesel spill, train the driver to utilize these spill containment materials, and develop a method to evaluate the timing of their use given other spill contingency plans. In the event of a diesel spill, the fuel could be contained using containment materials to prevent migration to the soil and subsequent contamination of natural resources. Such planning would result in increased protection for the environment and decreased costs as well as collateral injury during the cleanup of the spill."

**Response:**
To deal with the possibility of a diesel fuel spill resulting from a traffic accident, DOE requires that its WIPP trucking contractor hire subcontractors to clean up spills of radioactive and hazardous materials. Furthermore, the trucking contractor is required to carry a $5 million motor carrier insurance policy. This insurance would be used to cover accidents, and any accident involving a release of radioactive materials would be covered under the carrier's insurance and/or the Price-Anderson Act. DOE would also consider developing a spill contingency plan and adding spill containment materials to WIPP trucks as mitigation measures in the ROD.

**19.03 (11)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| DE1 | 137 | Andrew Thurlow | |

**Comment:**
"Until the DOE can answer these questions [concerning emergency response readiness], or at least include them in their considerations, WIPP should not be opened."

**Response:**
Before shipping TRU waste to the WIPP site, DOE would be required by the LWA to provide technical assistance and funds for the purpose of training public safety officials and other emergency responders in any state or Indian tribe through whose jurisdiction TRU waste would pass. DOE has instituted the States and Tribal Education Program to teach emergency response procedures for TRU waste transportation accidents. As part of the overall emergency response planning, DOE currently provides field incident/accident response exercises through its TRANSAX and WIPPTREX programs. Each program focuses on multi-agency cooperation and can serve as a model for effective integration of federal, state, tribal, and local emergency response planning activities. After each exercise, a report on issues such as emergency response equipment and medical preparedness is distributed to all of the TRU waste corridor states and tribes.

## 19.04 General Risk

**19.04 (01)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 21 | Maria Santelli | |
| ALB1 | 40 | Sally Alice Thompson | |
| ALB2 | 13 | Maurice Weisberg | |
| ALB2 | 18 | Sean Asghar | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 37 | Virginia Kotler | |
| ALB2 | 74 | Charles Hyder | |
| ALB2 | 81 | Charles Hyder | |
| ALB2 | 87 | Jamal McGrath | |
| ALB2 | 100 | Lesley Weinstock | |
| ALB2 | 106 | Zelda Gatuskin | |
| ALB2 | 115 | Sandra Schroeder | |
| ALB3 | 28 | Robin Seydel | |
| ALB3 | 67 | Linda Sperling | |
| ALB3 | 91 | Karen Navarro | |
| ALB4 | 20 | Andy Lenderman | |
| ALB4 | 54 | Lawrence Carter-Long | |
| ALB4 | 55 | Lawrence Carter-Long | |
| ALB4 | 71 | Marcus Fidel | |
| ALB4 | 119 | Janet Greenwald | |
| ALB4 | 121 | Jon Thomas-Weger | |
| ALB5 | 49 | Aanya Adler Friess | |
| ALB5 | 55 | John McCall | |
| ALB6 | 18 | Victoria Michelle | |
| ALB6 | 131 | Patrick Tyrrell | |
| ALB6 | 159 | Rich Weiner | |
| ALB6 | 160 | Rich Weiner | |
| BO1 | 34 | Delbert Farmer | |
| BO1 | 120 | Michele Kresge | |
| C-036 | 1b | Sarah Stout | |
| C-048 | 3 | Ronald Forthofer | |
| C-060 | 2 | Jeff Moyers | RPM2 Building Services Ltd. |
| C-062 | 2 | R. J. Peterson, Ph.D. | |
| C-070 | 5 | Alice H. Gray | |
| C-071 | 3 | Diane Stayner | |
| C-086 | 2 | Shelley T. Buonaiuto | |
| C-110 | 2 | Rafaelita Bachicha | |
| C-118 | 2 | David Proctor | |
| C-121 | 1 | Bob McEnaney | |
| C-128 | 3 | Mary Fran O'Connor | |
| C-131 | 42 | Don Hancock | Southwest Research and Information Center |
| C-132 | 3 | Keith Tinno | Shoshone-Bannock Tribes |
| C-136 | 6 | N. Watson | |
| C-137 | 4 | Herbert Arthur | |
| C-141 | 27 | Margret Carde | Concerned Citizens for Nuclear Safety |
| C-148 | 5 | Landi Fernley | |
| C-150 | 1 | Mary Olson | |
| C-151 | 28 | Don Moniak | Serious Texans Against Nuclear Dumping |
| C-153 | 4 | Martin Huebner | Federation of Western Outdoor Clubs |
| C-158 | 9 | Maureen Eldredge | Military Production Network |
| C-160 | 4 | Julie R. Sutherland | |
| CA1 | 113 | Don Kidd | |
| DE1 | 3 | Jeffrey Pecka | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| DE1 | 6 | Leroy Moore | |
| DE1 | 13 | Michael Hoffman | |
| DE1 | 18 | Nicholas Helburn | |
| DE1 | 44 | Kay Mack | |
| DE1 | 67 | Sam Cole | |
| DE1 | 68 | Sam Cole | |
| DE1 | 69 | Sam Cole | |
| DE1 | 87 | Ben Lipman | |
| DE1 | 112 | Foster Goodwill | |
| DE1 | 129 | Kathleen Sullivan | |
| DE1 | 142 | Kenneth Worth | |
| DE1 | 144 | Magdalen Seaman | |
| DE1 | 148 | Amory Narvaes | |
| DE1 | 152 | James Ciarlo | |
| DE1 | 165 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| DE1 | 186 | Amy Marschak | |
| DE1 | 201 | David Granquist | |
| E-012 | 6 | Charles Hyder | |
| E-056 | 41 | Linda Hibbs | |
| E-063 | 6 | Tom Moore | |
| OR2 | 9 | Barbara A. Walton | Oak Ridge Reservation Local Oversight Committee |
| SF1 | 55 | Lois Goodman | |
| SF1 | 86 | Chris Moore | |
| SF1 | 114 | Peggy Prince | |
| SF2 | 19c | Tai Bixby | |
| SF2 | 27 | Shawn Sigsredt | |
| SF2 | 63 | Nancy Judd | |
| SF3 | 6 | Cathy Swedlund | |
| SF3 | 10 | Eva Wohl | |
| SF3 | 20 | Eleanor Ponce | |
| SF3 | 53 | Michael Motley | |
| SF3 | 62 | Bill Gould | |
| SF4 | 19 | Bonita McCune | |
| SF4 | 72 | Mary Riseley | |
| SF4 | 99 | Joseph Oliaro | |
| SF4 | 109 | Kathy Sanchez | |
| SF5 | 24 | Susan Curtis | |
| SF5 | 96 | Sonja Swanson | |
| SF6 | 20 | Susannah Harrison | |
| SF6 | 52 | Janet Degan | |
| SF6 | 90 | Pia Gallegos | |
| SF7 | 13 | Sister Penelope McMullen | |
| SF7 | 15 | Sister Penelope McMullen | |
| SF7 | 26 | Suzanne Phillips | |
| SF7 | 60 | Alan Hamilton | |
| SF7 | 62 | Margaret Cohen | |
| SF7 | 93 | Linda Hibbs | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF7 | 99 | Linda Larson | |
| SF7 | 100 | Linda Larson | |
| SF7 | 118 | Charlotte Cooke | |
| SF7 | 121 | Lee Lysne | |
| SF7 | 125 | Lee Lysne | |
| SF7 | 128 | Lee Lysne | |
| SF7 | 136 | Dominique Mazeaud | |
| SF7 | 150 | Nova Priest | |
| SF8 | 28 | Ruth Sougstad | |

**Comment:**
Many commenters said they were concerned about the potential for accidents and their consequences during the shipment of TRU waste. The commenters cited a number of contributing factors, including traffic, human error, poor weather, falling objects, drunk and bad drivers, and poor roads.

**Response:**
DOE recognizes that accidents during the transportation of any commodity cannot be completely prevented. For this reason, DOE has implemented a number of programs and policies designed to reduce the likelihood and mitigate the potential consequences of accidental releases of TRU waste. Accident-resistant Type B packages to be used for TRU waste transportation would be the most significant measure taken to prevent accidental releases. Other elements of accident prevention would include extensive driver training and qualification programs, rigorous vehicle inspection and maintenance programs, and highway improvement projects. Elements of accident mitigation would include the TRANSCOM satellite tracking and communication system; emergency response training programs for drivers, local first responders, and emergency room personnel; the DOE Radiological Assistance Program resources, and the TRUPACT-II IART.

Type B transportation packages such as the TRUPACT-II can withstand the thermal and mechanical stresses produced in more than 99 percent of truck accidents. Consequently, nearly all accidents would be less severe than the type of accident severe enough to result in package failure and a subsequent release of radioactive material. As discussed in Section 5.1.8 of SEIS-II, most accidents would not result in the release of any radioactive material. However, to bound the analysis and to illustrate the effects of such an unlikely severe accident, DOE analyzed the impacts associated with highly unlikely, very severe accidents. The severe accident was assumed to occur in an urban area to maximize the potential impacts. The bounding accident assumes that a TRUPACT-II fails, resulting in a release to the environment. When conservative release factors and inventories are factored into this accident analysis, no prompt fatalities and 16 LCFs were estimated to result within an urban population of approximately 10,000 people per square mile.

In any event, all TRU waste shipments would be placarded in accordance with DOT regulations. Radiation detectors would be carried in the tractors of all waste shipments, and the drivers would be trained in their proper use. Because each shipment would be surveyed before its departure, drivers would not need to perform routine in-transit radiation monitoring. Each driver would be required to obey posted speed limits, and each vehicle would be equipped with a speed governor set for a maximum speed of 105 kilometers (65 miles) per hour. Driver logs would be used to chart the speeds traveled quarterly. The TRANSCOM system would update the driver on approaching inclement weather conditions, or, if a trip has already been initiated, direct the driver to the nearest safe parking area until the trip could safely resume.

Additional safety-related transportation information can be found in Appendix E of SEIS-II and Appendices C and M of the 1990 SEIS-I.

**19.04 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB4 | 75 | Marcus Fidel | |
| C-056 | 2 | Marian Cook March | |
| C-150 | 2 | Mary Olson | |

**Comment:**
Several commenters said DOE has underestimated the consequences that would occur in the event of an accident. One of the commenters stated that DOE's estimate of three deaths during 35 years of TRU waste shipments is not accurate. The commenter said it is naive to believe that only one serious accident would occur during such a massive transportation effort and further indicated that one accident alone could cause hundreds or thousands of deaths.

**Response:**
Under the Proposed Action, in addition to three deaths that could occur from radiation exposure, SEIS-II estimated that for 37,723 shipments over 35 years, five fatalities would occur, independent of the cargo being shipped, solely because of the additional trucks on the road (i.e., nonradiological impacts) (see Section 5.1.8 of SEIS-II). These estimates were derived from truck accident statistics representative of the type of trucks that would be used to transport TRU waste to WIPP. These statistics are believed to be conservative, primarily because the drivers who would transport TRU waste would be highly trained and experienced, with a higher-than-average awareness of transportation risk. In addition, the transportation trailers, tractors, and shipping containers would be subjected to significantly higher test and maintenance standards than typical combination trucks. Therefore, DOE expects that actual accident rates would be lower than projected.

DOE does not agree that one accident alone could cause hundreds or thousands of deaths. As discussed in Section 5.1.8.4 of SEIS-II, a bounding case accident was analyzed to illustrate the effects of an unlikely severe accident. The severe accident was assumed to occur in an urban area to maximize the potential impacts. The bounding accident assumes that a TRUPACT-II fails, resulting in a release to the environment. When conservative release factors and inventories are factored into this accident analysis, no prompt fatalities and 16 LCFs were estimated to result within an urban population of approximately 10,000 people per square mile. However, based on the design and tested performance of the Type B TRUPACT-II packaging and the historical performance of Type B packaging in general, a major breach of a TRUPACT-II or RH-72B is not considered reasonable or probable.

**19.04 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 12 | Blaine Hadden | |
| ALB5 | 19 | Robert H. Neill | Environmental Evaluation Group |
| ALB5 | 76 | Paul Anderson | |
| C-080 | 1 | Mike Dempsey | |
| C-161 | 2 | William L. Partain | |
| CA1 | 51 | Dick Means | |
| CA1 | 96 | Tom Quintela | |
| SF2 | 52 | Mary Barr | |
| SF2 | 55 | Mary Barr | |
| SF7 | 87 | Tony Marlow | |

**Comment:**
A few commenters stated that SEIS-II clearly presents the probable number of accidents that would occur in shipping waste to WIPP. One commenter said that the risk to the public would be thousands of times lower than is commonly accepted for the truck and train transportation of fuels and hazardous chemicals.

**Response:**
DOE agrees with the comments. In SEIS-II, DOE analyzed the impacts associated with the transportation of TRU waste. The analyses performed addressed transportation issues such as incident-free exposures, nonradiological impacts (accidents, injuries, and fatalities), and radiological accident-related impacts. The results of these analyses indicated that the impacts from the transportation of TRU waste would be minor.

**19.04 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 27 | Robin Seydel | |
| ALB3 | 73 | Jack Uhrich | |
| ALB5 | 81 | Melinda Stanley | |
| ALB6 | 98 | Debra Tenney | |
| C-106 | 4 | Jerry L. Gerber | |
| E-012 | 7 | Charles Hyder | |

**Comment:**
Some commenters stated that the number of accidents calculated in SEIS-II was too low and the methodology used to calculate them was inaccurate.

**Response:**
The accident statistics used in SEIS-II were derived from the best available data provided by state highway traffic departments to the DOT. In addition, these estimates were derived from accident statistics involving heavy combination trucks representative of the type of trucks that would be used to transport TRU waste to WIPP. The accident statistics used to estimate nonradiological impacts from the transportation of TRU waste to WIPP included the effects

from highway segments that have relatively high accident rates. In fact, the impacts presented in SEIS-II (56 accidents and 5 deaths for the Proposed Action) are believed to be conservative, primarily because the drivers who would transport TRU waste would be highly trained and experienced, with a higher-than-average awareness of transportation risk. In addition, the transportation trailers, tractors, and shipping containers would be subjected to significantly higher test and maintenance standards than typical combination trucks. Therefore, accidents caused by equipment failures and driver errors would be less likely to occur under the WIPP transportation system than under typical truck transportation systems, and DOE expects that actual accident rates would be lower.

**19.04 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF1 | 78 | Don Hancock | Southwest Research and Information Center |
| SF1 | 79 | Don Hancock | Southwest Research and Information Center |

**Comment:**
One commenter questioned the differences in estimates of nonradiological impacts between SEIS-I and the Draft SEIS-II. The commenter stated that SEIS-I estimated there would be 4.9 fatalities and 63 injuries from 20,903 shipments of CH-TRU waste to WIPP. He further stated that the Draft SEIS-II estimates there would be 5 fatalities (one-tenth of a percent more fatalities) and 37 injuries (more than 40 percent fewer injuries) from almost 9,000 more shipments (29,766 CH-TRU waste shipments). A similar trend was questioned regarding RH-TRU waste shipments.

**Response:**
SEIS-I and SEIS-II used different data sources to determine nonradiological impacts (accidents, injuries, and fatalities) for both CH-TRU and RH-TRU waste shipments. SEIS-I used nationwide averages for rural, suburban, and urban areas for injury and fatality rates. SEIS-II used state- and population-specific accident, injury, and fatality data. This approach allowed DOE to consider the different accident rates encountered in rural and urban areas in different states. For either approach, the dominant contributor to nonradiological impacts would be the accident, injury, or fatality rate in a rural area. This is because more than 80 percent of the travel for the transportation routes would occur in a rural area.

For example, if one compares the fatality rate from SEIS-I for a rural area anywhere nationwide with the fatality rate from SEIS-II for a rural area in Colorado, the values are $1.1 \times 10^{-7}$ fatalities per mile and $3.9 \times 10^{-8}$ fatalities per mile, respectively. This indicates a difference of approximately 35 percent. Similar differences would be expected for accident, injury, and fatality rates for other states.

The accident, injury, and fatality data used in the Draft SEIS-II for the State of New Mexico was from Federal-Aid Interstate (urban and rural) highway system data. However, for New Mexico it may be more appropriate to use Federal-Aid Primary (rural) highway system data. SEIS-II has been modified to reflect the change in data for New Mexico.

**19.04 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-131 | 29 | Don Hancock | Southwest Research and Information Center |
| C-131 | 49 | Don Hancock | Southwest Research and Information Center |
| C-152 | 128 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
One commenter said SEIS-II noted that WIPP-bound trucks would stop primarily in designated parking areas (chosen primarily for lack of population) in the event that they were temporarily pulled out of service or were unable to proceed due to severe weather or other unavoidable conditions. Another commenter questioned where the safe parking areas would be located; what the procedure would be if a safe parking area were unavailable; and what the environmental impacts would be if trucks carrying TRU waste parked at safe parking areas.

**Response:**
The *CAST Transportation Management Plan* cites a document titled *Safe Parking Areas for WIPP Shipments*, which was prepared for the Western Governors Association. WIPP drivers would be required to adhere to the safe parking areas discussed in that document. DOE sites could be used for safe parking areas. Also, DOE has reached an agreement with the DoD to use its facilities along the WIPP route for emergency parking. If no DOE, DoD, or state-designated parking areas could be reached safely, the driver would be directed to select a safe parking area, avoiding highly populated areas, areas with difficult access or poor lighting, and crowded parking areas. The driver would then notify state police and the central dispatcher of the location.

In SEIS-II, DOE analyzed the impacts associated with the transportation of TRU waste. The analyses performed addressed transportation issues such as incident-free exposures, nonradiological impacts (accidents, injuries, and fatalities) and radiological accident-related impacts.

**19.04 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 12 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 18 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 194 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 196 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 199 | Robert H. Neill | Environmental Evaluation Group |
| CA1 | 29 | Don Gray | |
| CA1 | 41 | Christen Nuget | |
| SF1 | 14 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
Several commenters stated that the Draft SEIS-II transportation risk analysis was adequately conservative. One of the commenters performed confirmatory calculations of the

transportation impacts of the TRU waste transportation and indicated good agreement with the DOE estimates.

**Response:**
DOE agrees that the analysis of transportation accidents in SEIS-II is conservative and adequate to support the decisions outlined in SEIS-II. In addition, DOE believes that transportation of TRU waste to WIPP can be conducted safely and efficiently with minimal impact to the public and environment. In Section 5.1.8 of SEIS-II, a text box presents the uncertainties in the transportation impact analyses. These uncertainties are presented to provide an understanding of the need for conservatism in the analyses.

**19.04 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 69 | Linda Sperling | |
| ALB4 | 72 | Marcus Fidel | |
| ALB4 | 79 | Shari Sommers | |
| ALB4 | 82 | Wendy Cory | |
| ALB6 | 117 | Glenna Voigt | |
| SF4 | 114 | Corrine Sanchez | |
| SF4 | 116 | Corrine Sanchez | |

**Comment:**
Several commenters stated that our highways are not suitable for transportation of TRU waste because of poor or dangerous conditions. They questioned how DOE is going to ensure the safety of the highways before shipments occur. They also questioned the increase in speed limits in some areas to 120 kilometers (75 miles) per hour.

**Response:**
DOE has no authority over roadway conditions. These responsibilities reside with the DOT and the concerned states. However, DOE does and will comply with all directives issued by state authorities in response to poor roadway conditions. DOT regulations provide that a state routing agency, following DOT guidelines, may designate routes as alternates to the interstate highway system. As they became effective, state-designated alternate routes would be incorporated into the WIPP transportation plan system.

The condition of the interstate highway system is generally better than that of state, county, and municipal road systems. This would tend to result in higher average transportation speeds, thus minimizing transit times and reducing public exposures to the shipments. Consequently, DOE believes the use of the interstate highway system, where reasonable and practical, would result in lower transportation risks than the use of other highway routing options. Alternative routes could be designated by states or other recognized routing authorities.

The top speed of trucks carrying TRUPACT-IIs would remain at 105 kilometers (65 miles) per hour. In addition, if a driver were convicted of a moving violation, his or her employment would be terminated. Therefore, there would be no incentive for drivers to speed.

**19.04 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB6 | 17 | Victoria Michelle | |

**Comment:**
"I think it's safe to assume that fire is a likely occurrence on an impact involving one of these trucks."

**Response:**
According to a recent NRC-sponsored study, the probability of fire is a function of the type of accident in which the vehicle is involved (e.g., collision, overturn, etc.). Statistics indicate that fire is involved in about 2.4 percent of collision accidents, 1.1 percent of accidents in which a vehicle runs off the road, 1.2 percent of overturns, and as much as 13 percent of other non-collision accidents (Fischer, L.E., et al., 1987, *Shipping Container Response to Severe Highway and Railway Accident Conditions: Volumes 1 and 2*, NUREG/CR-4829, Lawrence Livermore National Laboratory, Livermore, California). Therefore, DOE disagrees that fire is a likely occurrence in an impact accident involving TRU waste shipments.

Still, the TRUPACT-II was tested and certified according to standards in 10 CFR Part 71. The testing includes exposure to an engulfing fire with a minimum temperature of 800ºC (1,472ºF) for 30 minutes.

**19.04 (10)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB6 | 93 | Debra Tenney | |

**Comment:**
"The large size of the canisters requires they be moved by rail at speeds of 30 to 35 miles per hour in order to meet safety criteria, creating the possibility of exposing the fuel to potential gamma radiation without the benefits of cooling the fuel, releasing radiation into the air as it travels, which becomes even more problematic when traveling through desert areas such as New Mexico during intense summer heat, and through populous areas. The tremendous distances they will travel also holds a potential for aging fuel products to lose integrity and crumble during transport."

**Response:**
The commenter appears to be referring to the transportation of spent nuclear fuel. The impact analysis of the shipment of spent fuel is outside the scope of SEIS-II. The impacts from the shipment of TRU waste to WIPP were analyzed in SEIS-II. The results of these analyses are contained in Section 5.1.8 of SEIS-II. Details are contained in Appendix E.

**19.04 (11)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-012 | 22 | Charles Hyder | |
| SF4 | 88 | Bonita McCune | |

**Comment:**
One commenter stated that the satellite system would not prevent accidents and that satellites could notify emergency responders only after an accident. Another commenter stated that DOE has made no provisions for WIPP-bound trucks during adverse weather; he said WIPP-bound trucks must not be allowed to travel, especially on stretches of road with long downhill grades, during adverse weather.

**Response:**
The TRANSCOM system would not be intended to prevent accidents. However, it would be capable of providing advance warning to truck drivers of poor weather conditions, traffic congestion, construction, and other potential hazards. This would help truck drivers avoid these hazards and, in this sense, would serve as an accident-prevention measure.

With regard to weather conditions, WIPP truck shipments would follow official state and local public safety warnings on hazardous road conditions, road closures, etc. The TRANSCOM system would provide severe weather warnings and public safety information to the truck drivers. DOE has also identified safe parking areas (DOE or DoD sites) along the routes for TRU waste shipments that become delayed in transit due to severe weather. This information would be provided to the truck drivers for each shipment. A second element of safety during severe weather conditions would be the drivers themselves. Special driver qualification and training requirements have been implemented by the TRU waste carrier company. Consequently, TRU waste truck drivers would a higher-than-average awareness of the hazards their cargo represents and would focus on safety and accident prevention.

**19.04 (12)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-056 | 47 | Linda Hibbs | |
| SF3 | 102 | Anhara Lovato | |

**Comment:**
Several commenters stated that there appears to be a credible potential for methane generation rates so high that methane concentrations might reach the nominal flammable/detonatable limits in an individual drum in a TRUPACT-II. The commenters stated that the worst-case scenario would be a spontaneous fire or an explosion involving a drum. One of the commenters objected to the practice of venting Type A drums.

**Response:**
The container slated for transportation of CH-TRU waste to WIPP, the TRUPACT-II, is a nonvented, doubly contained package that has been certified by the NRC as a Type B package.

The secondary containers, which would be transported in the TRUPACT-II shipping package, would be 55-gallon drums or a standard waste box containing the CH-TRU waste. Each drum or standard waste box to be transported in the TRUPACT-II package may be vented through carbon composite filters of a specified material, capacity, and hydrogen diffusivity.

Gas generation from TRU waste has been thoroughly assessed in the *TRUPACT-II Safety Analysis Report for Packaging*. These analyses have considered both the effects of hydrogen gas generation and pressure increases resulting from total gas generation. These analyses have demonstrated that the payload would be suitably controlled during transportation and would be operated within the margins of safety established by NRC regulations.

Specifically, TRU waste shipped in the TRUPACT-II can generate hydrogen through radiolysis of hydrogenous materials (plastics, organics, and residual waste). This could lead to an increase in the hydrogen concentration within the TRUPACT-II package. The *TRUPACT-II Safety Analysis Report for Packaging* limits the waste contents so that the hydrogen concentration in any void space within the package would not exceed 5 percent (by volume) during a 60-day period. The 5 percent figure was chosen because it is the lower flammable limit for hydrogen in air. A 60-day period is conservative because actual shipments would be expected to require only 3 to 5 days.

**19.04 (13)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| BO1 | 103 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| DE1 | 166 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| SF1 | 81 | Don Hancock | Southwest Research and Information Center |

**Comment:**
Two commenters asked why DOE’s analysis for an accident in an urban area assumes trucks would move at very slow speeds of about 24 to 40 kilometers (15 to 25 miles) per hour.

**Response:**
DOE estimated nonradiological accidents, injuries, and fatalities based upon heavy combination truck accident statistics representative of the type of trucks that would be used to transport TRU waste to WIPP. These statistics include accidents involving trucks moving at a variety of speeds reflecting actual driving conditions at the time the accident occurred (i.e., weather, road conditions, traffic congestion).

However, to conservatively estimate incident-free radiation exposures while the truck is moving, it was assumed that the trucks were traveling approximately 24 kilometers per hour (15 miles per hour) in an urban zone and 40 kilometers per hour (25 miles per hour) in a suburban zone. The lower assumed speeds conservatively result in higher estimated potential exposures to bound any impacts.

**19.04 (14)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-151 | 21 | Don Moniak | Serious Texans Against Nuclear Dumping |
| E-012 | 22 | Charles Hyder | |
| SF7 | 63 | Margaret Cohen | |
| SF7 | 145 | Mick Helean | |

**Comment:**
Several commenters said they were concerned about the training and responsibilities of the truck drivers who would transport TRU waste shipments to WIPP. One commenter asked if WIPP truck drivers would be pressured to meet unrealistic deadlines. Another said that too many safety responsibilities would be left to the carrier, leaving too much room for human error. Another commenter stated that DOE has made no provisions for drivers of WIPP-bound trucks to deal with adverse weather conditions. Another said that after talking to several WIPP truck drivers, he was convinced that WIPP drivers would obey all traffic laws and adhere strictly to all WIPP transportation system rules and regulations.

**Response:**
Two qualified drivers would accompany each shipment of TRU waste and would alternate driving shifts of approximately five hours' duration. There would be no scheduled overnight stops. Salary incentives would encourage drivers to maintain safe driving speeds. Additionally, speeds would be mechanically controlled by a governor on each tractor and indirectly controlled by real-time tracking. Any driver receiving a moving violation would be dismissed.

With regard to weather conditions, WIPP truck shipments would follow official state and local public safety warnings on hazardous road conditions, road closures, etc. The TRANSCOM system would provide severe weather warnings and public safety information to the truck drivers. DOE has also identified safe parking areas (DOE and DoD sites) along the routes for TRU waste shipments that become delayed in transit due to severe weather. This information would be provided to the truck drivers for each shipment. A second element of safety during severe weather conditions would be the drivers themselves. Special driver qualification and training requirements have been implemented by the TRU waste carrier company. Consequently, TRU waste truck drivers would have a higher-than-average awareness of the hazards their cargo represents and would focus on safety and accident prevention.

**19.04 (15)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-012 | 19 | Charles Hyder | |

**Comment:**
"The 3762 WIPP-bound Cancer Cargos (almost on Billion lethal doses of Pu each) that would travel the sixty miles (20 mi. of 2-lane road) from Los Alamos to I-25 would normally be expected to be involved in two to four accidents. Normal statistics do not apply to the 2-lane

down grade from Los Alamos to the Rio Grande River. So there would probably be four or more WIPP-bound truck accidents along that 60 mi. stretch. That's about one accident every 15 miles from LANL to I-25!"

**Response:**
Using the methodology and data employed in SEIS-II, the commenter's estimate of the number of accidents that would occur between Los Alamos and Santa Fe appears to be high and without basis. SEIS-II analysts calculated that about 1.3 accidents would occur on this stretch of highway over the entire WIPP operations period for the Proposed Action. This estimate was based on (1) a total of 5,376 shipments of CH-TRU and RH-TRU waste, (2) the commenter's suggested 100-kilometer (60-mile) one-way shipping distance, and (3) an accident rate of $12.2 \times 10^{-7}$ accidents per kilometer for secondary roads in New Mexico. Truck travel to and from Los Alamos was considered. Note that the accident rate used here is the fourth highest in the contiguous 48 states for rural highways. In addition, the estimated number of accidents includes both loaded and empty shipments; therefore, the number of accidents involving a loaded container would be approximately one-half of the 1.3 accidents calculated above, or less than one accident.

**19.04 (16)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-009 | 7 | Sally Rakow | California Energy Commission |
| A-013 | 15 | Jennifer Salisbury | New Mexico Radioactive Waste Consultation Task Force |

**Comment:**
Two commenters stated that discussions in Sections 3.1.2, "Transportation Activities," and 3.1.2.1, "Shipping Procedures," do not mention the considerable safety precautions being jointly instituted for all WIPP shipments by DOE, affected states, and Indian tribes. The commenters said these transportation safety precautions, which include accident prevention and emergency response measures, are specified in the Western Governors Association *WIPP Transportation Safety Program Implementation Guide.*

**Response:**
A brief discussion of the Western Governors Association *WIPP Transportation Safety Program Implementation Guide* and a Memorandum of Agreement between the western states and DOE titled *Regional Protocol for the Safe Transport of Transuranic Waste to the WIPP* has been provided in the Final SEIS-II.

**19.04 (17)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-088 | 3 | Victoria Parrill | |

**Comment:**
"I did not find a clear description of how the waste will be transported from the additional storage and generation sites to the ten consolidation sites. The EIS is incomplete without this analysis."

**Response:**
Routes have not been established for small-quantity sites and therefore cannot be included in SEIS-II. However, DOE would establish routes for these shipments in the same manner it has established routes from the major storage sites.

**19.04 (18)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 205 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"A large number of comparisons are made about the transportation effects between alternatives in Appendix E. These comparisons include expected radiological and non-radiological risks from both incidents free and accident conditions. The consequences of severe low probability accidents are also evaluated. Yet there is no discussion in this Appendix of using this information to aid in the selection of the appropriate action. The impression given at this time is that the Proposed Action is the only one being considered."

**Response:**
The rationale for DOE's decision will be explained in the ROD based on SEIS-II. DOE's decision on whether to proceed to the disposal phase or leave TRU waste in engineered facilities at the sites will be based on environmental, legal, policy, cost, institutional, and other aspects of each alternative evaluated in SEIS-II. The impacts of transportation presented in SEIS-II are just part of the impacts that DOE will consider to make its decision.

**19.04 (19)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB4 | 78 | Marcus Fidel | |
| ALB5 | 44 | Lilly Rendt | |

**Comment:**
Two commenters said DOE should wait until roads in New Mexico are in better condition before beginning waste shipments. One of the commenters expressed concern about radiation

spreading after an accident. The other said DOE should wait until shipping containers are 100 percent breach-proof.

**Response:**
WIPP trucks (without TRU waste) have logged almost 1.6 million kilometers (1 million miles), much of it on New Mexico's roads, without encountering any problems due to the condition of the road surface. Plans to upgrade the roads in New Mexico that would be used for waste shipments could only increase the safety of waste transportation destined for the WIPP site. Transportation packages (TRUPACT-II, RH-72B) must meet NRC requirements to be certified for the shipping of TRU waste. To achieve certification, DOE must demonstrate that the packages can withstand a variety of tests, including drop tests, freeze and thaw cycles, immersion, and fire, and still contain their contents. Although these requirements are relatively rigorous, NRC does not require that packages be “breach-proof.” DOE has analyzed the environmental consequences of a breach of a TRUPACT-II; the results are presented in Section 5.1.8 of SEIS-II.

**19.04 (20)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB6 | 161a | Rich Weiner | |

**Comment:**
“In the Supplemental EIS, it was mentioned that they had submitted that six people will die, and maybe 40 or 50 or 70 will be injured in 35 years due to dealing with the transportation and the emplacement of nuclear wastes at WIPP. I wonder how they get these figures. It seems to me these are statistics based on wishful thinking.”

**Response:**
In SEIS-II, it was estimated that under the Proposed Action (38,708 shipments in 35 years), five fatalities would be expected to occur, independent of the cargo being shipped, due solely to the additional trucks on the road (i.e., nonradiological impacts) (see Section 5.1.8). These estimates were derived from accident statistics involving heavy combination trucks, representative of the type of trucks that would be used to transport TRU waste to WIPP. These statistics are believed to be conservative, primarily because (1) the drivers who would transport TRU waste would be highly trained and experienced, with a higher-than-average awareness of transportation risk and (2) the transportation trailers, tractors, and shipping containers would be subjected to significantly higher test and maintenance standards than typical combination trucks. Therefore, DOE expects that actual accident rates would be lower.

**19.04 (21)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB6 | 161b | Rich Weiner | |
| C-121 | 3 | Bob McEnaney | |

**Comment:**
Commenters expressed concern about the predicted number of traffic accidents and fatalities and precautions taken to prevent or mitigate accidents.

**Response:**
In SEIS-II, DOE estimated that under the Proposed Action (38,708 shipments in 35 years), five fatalities could be expected to occur independent of the cargo being shipped, due solely to the additional trucks on the road (i.e., nonradiological impacts) (see Section 5.1.8).

Also, DOE acknowledges that when shipments of any kind are made on our highways, the potential for an accident exists. That is why DOE has taken serious measures to both prevent accidents (severe-accident resistant shipping containers, extensive driver training and qualification requirements, vehicle maintenance, etc.) and mitigate the consequences of accidents, should one occur, through an extensive emergency response program (e.g., first-responder training, hospital emergency room staff training, multi-agency event exercises, etc.). The transportation analysis in SEIS-II used both a probabilistic and a deterministic approach to determine impacts from transportation accidents. The probabilistic approach, in part, relied on statistics regarding accident probabilities and consequences. These statistics were used to estimate the overall risk of the shipping campaign for the various alternatives. The deterministic or bounding case accidents were analyzed to estimate the potential consequences of severe, highly unlikely accidents. SEIS-II analyses show that the transportation-related risks would be small.

It should be noted that a transportation accident involving TRU waste, unlike an accident involving explosives or noxious gases, would not be likely to require an evacuation. In the unlikely event that some radioactive material were released, it could be necessary to establish a control zone (with a radius of 46 meters [150 feet]) from which people would be excluded until cleanup was complete. If an area became contaminated, DOE would remove the contamination to levels below which unrestricted public access would be allowable; markers or warning signs would not be needed after cleanup was completed.

**19.04 (22)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 86 | Janet Greenwald | |
| SF3 | 36 | Jai Lakshman | SEVA Foundation |

**Comment:**
Commenters expressed concern about waste transportation in New Mexico with respect to poor drivers, hazardous road conditions, and the lack of a transportation analysis for St. Francis Drive in Santa Fe.

**Response:**
SEIS-II analyses show that permanent waste disposal at the WIPP site would result in less overall long-term risk than leaving the waste on site. A comparison of the action alternatives to the no action alternatives is found in Table 3-18. WIPP shipments would be limited with regard to the hazardous weather conditions under which they could travel. SEIS-II

transportation analyses in Appendix E estimate there would be no fatalities and fewer than three accidents during waste transportation from LANL to WIPP. Chapter 5 contains a text box comparing the impacts of transporting TRU waste through Santa Fe along the Santa Fe bypass or on St. Francis Drive.

The proposed routes presented and analyzed in SEIS-II are based upon DOT regulations (49 CFR Part 171). The regulations require carriers to use the interstate highway system, to the extent possible and reasonable, as the preferred route for shipping hazardous material. Where no interstate highway exists, the shortest reasonable route must be used. States or other recognized routing authorities also may designate alternate routes in accordance with procedures stated in 49 CFR Part 171.

**19.04 (23)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-013 | 23 | Jennifer Salisbury | New Mexico Radioactive Waste Consultation Task Force |

**Comment:**
"In reviewing this appendix and other transportation-related sections of the SEIS-II, it is apparent our recommendation has been implemented. We thank DOE for this and believe it has resulted in a more comprehensive, useful assessment of potential transport impacts."

**Response:**
Thank you for your comment.

## 19.05 Liability

**19.05 (01)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB6 | 94 | Debra Tenney | |
| C-060 | 5 | Jeff Moyers | RPM2 Building Services Ltd. |
| C-138 | 2 | Jeff Moyers | RPM2 Building Services Ltd. |
| E-012 | 14 | Charles Hyder | |
| SF4 | 141 | J. Gilbert Sanchez | |

**Comment:**
Several commenters stated that nuclear accidents are not covered under homeowners and car insurance. The commenters wanted to know who would be liable in the event of an accident and who carries the liability insurance.

**Response:**
The trucking contractor, currently CAST Transportation, Inc., is, at a minimum, required to carry a $5 million motor carrier insurance policy. This insurance would be used to cover accidents, and any accident involving a release of radioactive materials would be covered under

the carrier's insurance and/or the Price-Anderson Act, depending on the circumstances. By providing government indemnity to pay claims up to approximately $7.3 billion per incident, this Act provides a system of financial protection arising out of or in connection with DOE contractor activity. Additional information regarding liabilities can be found in Appendix C of SEIS-I.

## 19.06 Packaging

### 19.06 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-009 | 10 | Sally Rakow | California Energy Commission |
| ALB2 | 26 | Sean Asghar | |
| ALB2 | 71 | Charles Hyder | |
| ALB3 | 12 | Bruce Trigg | New Mexico Public Health Association |
| ALB4 | 73 | Marcus Fidel | |
| ALB4 | 74 | Marcus Fidel | |
| ALB4 | 108 | Mary Steele | |
| ALB5 | 47 | Lilly Rendt | |
| ALB6 | 92 | Debra Tenney | |
| BO1 | 85 | Rebecca A. Nebelsick | |
| BO1 | 101 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| BO1 | 134 | Martin Huebner | Federation of Western Outdoor Clubs |
| C-070 | 6 | Alice H. Gray | |
| C-086 | 3 | Shelley T. Buonaiuto | |
| C-090 | 7 | Linda Ewald | |
| C-133 | 8 | Bonnie Bonneau | Legions of Living Light |
| C-148 | 6 | Landi Fernley | |
| CA1 | 9 | Richard Boren | |
| E-012 | 5 | Charles Hyder | |
| E-012 | 11 | Charles Hyder | |
| E-012 | 15 | Charles Hyder | |
| E-012 | 18 | Charles Hyder | |
| SF3 | 108 | Anhara Lovato | |
| SF4 | 100 | Joseph Oliaro | |
| SF5 | 75 | Michael Collins | |
| SF7 | 39 | Rosemary Lowe | |
| SF7 | 80 | Bonnie Bonneau | Legions of Living Light |
| SF8 | 77 | Willem Malten | |

**Comment:**
Several commenters stated that the Type B containers were not safe. Some commenters said DOE has not performed the necessary tests or proven that the container passed the tests to certify the Type B containers (TRUPACT-II, RH-72B, and HALFPACK). Others stated that DOE does not have a package to transport RH-TRU waste to WIPP. Others criticized DOE for not testing the Type B containers under more realistic conditions or to failure. One commenter stated that the HALFPACK would be much more dangerous, because of its size, than a TRUPACT-II. Another commenter stated that DOE should use roll cages around the TRUPACT-II. One commenter requested that DOE use only NRC-certified containers and that

the State of California be notified if DOE plans to use packaging other than a TRUPACT-II for shipping TRU waste through California.

**Response:**
DOE has committed to using only NRC-certified Type B packages for the shipment of TRU waste. Notification of the future certification of Type B packaging would be published in the Federal Register, providing notice to California and other states. The NRC certified the TRUPACT-II reusable package as a Type B packaging system on August 30, 1989, to comply with all of the applicable regulations (10 CFR Part 71) for transportation of CH-TRU waste. No compromises to packaging safety were permitted in the TRUPACT-II design. The design of the cask proposed for RH-TRU waste transportation (the RH-72B) was submitted to the NRC in December 1996 (Docket No. 71-9212). The HALFPACK is also a Type B container and is required to demonstrate compliance with 10 CFR Part 71 before its use. A SAR for the HALFPACK is scheduled to be submitted to the NRC in July 1998.

The type, number, and conditions of the tests for the Type B package are dictated by the requirements of 10 CFR Part 71. Specifically, under accident conditions a Type B package must withstand the following:

- A free drop from a height of 9 meters (30 feet) onto an unyielding surface.
- A free drop from a height of 100 centimeters (40 inches) onto a vertical steel bar 15 centimeters (6 inches) in diameter and no less than 20 centimeters (8 inches) long.
- Exposure to an engulfing fire with a minimum temperature of 800°C (1,475°F) for 30 minutes.
- Immersion in at least 15 meters (50 feet) of water for eight hours.

In addition, under normal conditions a Type B package must withstand the following:

- Heat 38°C (100°F) and cold -40°C (-40°F).
- External pressure changes from 3.5 psi to 20 psi.
- Normal vibration experienced during transportation.
- Simulated rainfall of 5 centimeters (2 inches) per hour for one hour.
- A free drop from 0.3 to 1.2 meters (1 to 4 feet), depending on the package weight.
- Impact from a 6-kilogram (13-pound) steel cylinder dropped from a height of 100 centimeters (40 inches) onto the most vulnerable surface of the package.

In the event of an accident, it is the energy absorbed by the shipping package, not the speed of the vehicle, that is important. In a highway accident, factors such as angle of deflection, energy absorbed by another involved vehicle, and braking reduce the forces imposed on the vehicle and the TRUPACT-II. In fact, most vehicles would have to strike the truck hauling the TRUPACT-II from the side to even come in contact with the shipping container.

The hypothetical accidents used in testing the TRUPACT-II and other Type B packages are based on engineering criteria and are not intended to duplicate actual expected accidents. Instead, they are designed to produce packaging damage equivalent to that observed in severe transportation accidents. In fact, it has been shown that for actual severe accident conditions with impact and fire, more than 99.5 percent of all accidents produce damage less severe than these regulatory criteria (Fischer, L.E., et al., 1987, *Shipping Container Response to Severe Highway and Railway Accident Conditions: Volumes 1 and 2*, NUREG/CR-4829, Lawrence Livermore National Laboratory, Livermore, California). Consequently, the use of Type B packaging systems to transport TRU waste would provide a safe and effective barrier to prevent releases of TRU waste material in potential transportation accidents.

Given the small probability of a TRUPACT-II breach and given that SEIS-II analyzes the impacts of a TRUPACT-II breach (see Chapter 5), the information to be gained from testing the TRUPACT-II to failure would provide few useful insights that could help improve transportation safety. Such a program would require fabricating multiple test packages and conducting multiple tests to determine failure thresholds under impact, puncture, thermal, and immersion conditions. In addition, such tests are not required by federal regulations.

**19.06 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 74 | Jack Uhrich | |
| ALB4 | 73 | Marcus Fidel | |
| ALB4 | 74 | Marcus Fidel | |
| ALB4 | 108 | Mary Steele | |
| ALB6 | 16 | Victoria Michelle | |
| ALB6 | 59 | David Pace | |
| ALB6 | 142 | Tom Metcalf | |
| BO1 | 101 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| C-148 | 6 | Landi Fernley | |
| C-154 | 9 | Tom Marshall, Jack Mento, et al. | Rocky Mountain Peace and Justice Center |
| C-163E | 20 | No name provided | Citizens for Alternatives to Radioactive Dumping |
| CA1 | 9 | Richard Boren | |
| DE1 | 14 | Michael Hoffman | |
| DE1 | 56 | Margret Carde | Concerned Citizens for Nuclear Safety |
| DE1 | 167 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| E-012 | 16 | Charles Hyder | |
| E-056 | 45 | Linda Hibbs | |
| SF4 | 48 | Deborah Reade | |
| SF4 | 49 | Deborah Reade | |
| SF5 | 9 | Marilyn Hoff | |
| SF8 | 1 | Elliott Skinner | |
| SF8 | 2 | Elliott Skinner | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF8 | 52 | Katherine Lage | |
| SF8 | 81 | Elliott Skinner | |

**Comment:**
Several commenters requested that DOE perform a crush test on the Type B containers it would use to transport TRU waste to WIPP. They said that a crush test would provide what would be a likely scenario in the event of an accident. Commenters also asked why DOE tested the TRUPACT-IIs at 800°C (1,472°F) instead of the higher flame temperatures of many hazardous chemicals currently transported on the roadways. Some said higher temperatures could cause the containers to explode and release radiation. One commenter stated that 21 chemicals are routinely transported on highways, with flame temperatures twice as hot as the DOE test temperatures. The commenter said a DOE test temperature of 66°C (150°F) was used for the TRUPACT-II shipping containers. Another commenter wanted to know the burning temperature of liquid oxygen.

**Response:**
Although a dynamic crush test has been added to the NRC regulations for Type B packages, it would apply to packages that are minimally vulnerable to damage in the drop test but have a high potential for radiation hazard if package failure occurred. The NRC crush test requirement would apply only to packages 500 kilograms (1,100 pounds) or less, possessing a low density, and containing a highly radioactive material. The net weight of a TRUPACT-II is 5,550 kilograms (12,250 pounds); therefore, the TRUPACT-II falls outside the criteria for the required NRC crush test. Additionally, following the same criteria, the HALFPACK or the RH-72B would not be required to be crush-tested.

The regulatory engulfing hypothetical fire (800°C [1,472°F] for 0.5 hour) is modeled with the flames surrounding the entire shipping cask as if the cask were placed in an 800°C (1,472°F) oven. In a “real” fire, the shipping cask would be partially shielded from the heat by either the ground or the transportation vehicle. In addition, the side of the shipping container away from the flame would conduct some of the heat away from the container. These effects are ignored in the hypothetical fire test. Therefore, to meet the regulatory engulfing fire conditions, a “real” fire of 927°C (1,700°F) would be required. The 66°C (150°F) quoted in the above comment represents the temperature reached by the payload after one-half hour in an engulfing 800°C (1,472°F) fire. This is well below the temperature that would cause the internal waste containers (metal drums, boxes, and canisters) to fail, burn combustible waste forms, or pressurize the containers. Therefore, no release of TRU waste would be expected to occur under these conditions.

Oxygen itself is nonflammable but is essential for combustion. Vapors from liquefied gas are initially heavier than air and spread along the ground. The presence of liquid oxygen may enhance the burning of combustibles if an ignition source is present.

**19.06 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-009 | 4 | Sally Rakow | California Energy Commission |
| ALB1 | 61 | Lisa Sparaco | |
| ALB4 | 108 | Mary Steele | |
| ALB6 | 65 | David Pace | |
| E-056 | 46 | Linda Hibbs | |

**Comment:**
A few commenters stated that the Type A drums to be placed inside the Type B containers cannot meet the WAC, citing incidents of fire, explosion, and overpressurization.

**Response:**
DOE has issued WAC that, among other things, recognize vulnerabilities to internal container failure mechanisms such as free liquids, gas generation, combustible materials, explosives, etc., and impose requirements designed to prevent container failures in transit. The WAC established conditions that govern the physical, radiological, chemical composition, and packaging requirements of TRU waste. Before any waste would be transported to WIPP, DOE must demonstrate that the waste in drums and the waste package meet the WAC. If the WAC were not met, the waste would not be shipped to WIPP.

**19.06 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-009 | 5 | Sally Rakow | California Energy Commission |
| A-009 | 11 | Sally Rakow | California Energy Commission |

**Comment:**
One commenter said that the State of California should have the option of conducting on-site, independent safety inspections of package preparation and loading at DOE facilities in California prior to shipment.

**Response:**
DOE will consult with the State of California to reach a mutually agreeable arrangement regarding shipment inspections.

**19.06 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-013 | 9 | Jennifer Salisbury | New Mexico Radioactive Waste Consultation Task Force |

**Comment:**
"Page 2-3: In the discussion of *TRU Waste Transportation Packaging*, there is no mention of 'Type A' containers such as carbon steel 55-gallon drums, standard waste boxes, or 10-drum overpacks that will be emplaced in TRUPACTs. These packagings, while less robust than 'Type B' containers, nevertheless represent the first line of defense to contain WIPP TRU waste and should therefore be addressed. In addition, it is recommended that the 'Pipe Overpact' (which is intended to be used for higher fissile gram-equivalent plutonium residues) be discussed in relatively explicit detail here or elsewhere in the SEIS-II."

**Response:**
Type A secondary containers are discussed in Section E.4.2.1. As the severity of an accident increases, the fraction of failed Type A containers in the TRUPACT-II increases. However, to maximize the impacts from transportation for determining shipment numbers, the use of 55-gallon drums was assumed. The use of the pipe overpack has been recently approved by the NRC; a discussion of the use of the pipe overpack has been included in SEIS-II.

**19.06 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB5 | 8 | Robert H. Neill | Environmental Evaluation Group |
| BO1 | 122 | Michele Kresge | |
| C-141 | 33 | Margret Carde | Concerned Citizens for Nuclear Safety |
| C-151 | 19 | Don Moniak | Serious Texans Against Nuclear Dumping |
| C-152 | 26 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 79 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 192 | Robert H. Neill | Environmental Evaluation Group |
| C-158 | 12 | Maureen Eldredge | Military Production Network |
| CA1 | 22 | Don Gray | |
| E-012 | 10 | Charles Hyder | |
| E-056 | 8 | Linda Hibbs | |
| E-056 | 44 | Linda Hibbs | |
| E-069 | 12 | Pat Clark | Snake River Alliance |
| SF1 | 9 | Robert H. Neill | Environmental Evaluation Group |
| SF4 | 129 | Juan Montes | |
| SF7 | 126 | Lee Lysne | |

**Comment:**
Several commenters stated that DOE has not submitted the application for NRC certification of the RH-72B shipping container. Other commenters stated that DOE has not specified what kind of container it would use to transport RH-TRU waste to WIPP. One commenter said

SEIS-II erroneously gave September 1996 as the date of submittal for the application for RH-72B certification.

**Response:**
The design of the cask proposed for RH-TRU waste transportation (the RH-72B) has been completed and an application for a Certificate of Compliance was submitted to the NRC in December 1996 (Docket No. 71-9212). No RH-TRU waste would be shipped to WIPP until the NRC approves the RH-72B. The incorrect date for submittal of the application has been corrected in SEIS-II.

**19.06 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-125 | 6 | Barbara H. Johnson | The Rio Grande Chapter of the Sierra Club |
| C-159 | 2 | Susan Maret | Sierra Club National Nuclear Waste Task Force |

**Comment:**
Two commenters stated that the Government Accounting Office found that about 41 percent of the waste is expected to be too heavy for efficient transportation in the existing type of container. The commenters said that DOE has not addressed the U.S. Government Accounting Office concerns and questioned how DOE would transport CH-TRU waste.

**Response:**
The Draft SEIS-II did address the issue of high waste densities (Section A.3.9) and indicated that certain CH-TRU waste density configurations would require that shipments be made using only two TRUPACT-IIs rather than three. DOE agrees that this would not be the most efficient way to ship the TRU waste, but the TRU waste would still be shipped in this manner.

To potentially address the efficiency issue, a smaller Type B package has been proposed. A discussion of the HALFPACK reusable package has been added in the Final SEIS-II; this package will undergo the same level of scrutiny and testing as the TRUPACT-II, which was certified as Type B by the NRC on August 30, 1989. A SAR for the HALFPACK is scheduled to be submitted to the NRC in July 1998.

**19.06 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-133 | 4 | Bonnie Bonneau | Legions of Living Light |

**Comment:**
"The Columbus lab has 580 cu/meters of 'RH-TRU waste' which is one of the issues not properly addressed in the SEIS's. Until RH-TRU waste transport, packaging and handling is explained and clarified, this whole project should be put on hold. What is the time line for answering RH-TRU questions?"

**Response:**
SEIS-II addressed the transportation of both CH-TRU and RH-TRU waste (See Appendix E and Section 5.1.8). As stated in Sections 5.1.8.2 and 5.1.8.3, the impacts from consolidating waste from small-quantity sites were included in the impacts presented for the 10 major generator sites. Consistent with the WM PEIS preferred alternative, the Final SEIS-II analyzes the impacts of transporting RH-TRU waste at Battelle Columbus directly to WIPP, without consolidation at ORNL.

**19.06 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-165 | 1 | Steven M. Herman | Stan A. Huber Consultants, Inc. |

**Comment:**
"[Stan A. Huber Consultants, Inc.] proposed using 55 gallon shielded containers. These containers are constructed with Depleted Uranium (DU) and Concrete. The TRUPACT was made for these size containers.

"The material used to build the containers is recycled-contaminated material. The cost of this material is inexpensive, therefore, the containers would be inexpensive. We estimated approximately $300 per container. This inexpensive container was, and should be, attractive to Westinghouse and the DOE. Savings as high as $3,700 per container would be reached. Mike Brown estimated that approximately 200,000 containers would be needed. This would be a large saving for the U.S. DOE. In return, the taxpayers of the United States would save a large amount of money."

**Response:**
The secondary containers that would be transported in the TRUPACT-II shipping package are 55-gallon drums that contain the CH-TRU waste. The additional shielding provided by drums constructed with depleted uranium and concrete would not be needed for the CH-TRU waste.

**19.06 (10)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 13 | Blaine Hadden | |
| CA1 | 42 | Christen Nuget | |
| CA1 | 46 | Jack White, Jr. | |
| CA1 | 78 | John Heaton | |
| CA1 | 89 | Tom Duffin | |
| CA1 | 102 | Mark Schinnerer | |
| CA1 | 115 | Carroll Leavell | |
| CA1 | 118 | Dan Funchess | |
| CA1 | 122 | Dan Funchess | |
| SF7 | 88 | Tony Marlow | |

**Comment:**
Several commenters stated that the Type B containers that would be used for shipment of TRU waste to WIPP are adequately designed, tested, and certified to be safe.

**Response:**
DOE is confident in the process that led to certification of the TRUPACT-II. The NRC certified the TRUPACT-II reusable package as Type B packaging on August 30, 1989; the TRUPACT-II complies with all of the applicable regulations (10 CFR Part 71) for transportation of CH-TRU waste. No compromises to packaging safety were permitted in the TRUPACT-II design. The design of the cask proposed for RH-TRU waste transportation (the RH-72B) was submitted to the NRC in December 1996 (Docket No. 71-9212). No RH-TRU waste would be shipped to WIPP until the NRC approves the RH-72B. The HALFPACK, another Type B container, would be required to meet the same rigorous tests that the TRUPACT-II and RH-72B must pass.

**19.06 (11)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF1 | 67 | Virginia Miller | |
| SF7 | 39 | Rosemary Lowe | |
| SF8 | 52 | Katherine Lage | |

**Comment:**
Several commenters stated that unbreached containers would emit radiation. They asked how much radiation would be emitted from the Type B containers.

**Response:**
Based on the design of the waste package and its contents, DOE has concluded that the incident-free exposures would be small. For example, an individual living along the transportation route was conservatively assumed to be 30 meters (98 feet) from every passing shipment. Under the Proposed Action, this individual would receive approximately 9 millirem per year from the transportation of TRU waste. Also, the incident-free exposures would be less than or equal to the levels allowed by transportation regulations (10 millirem per hour at 2 meters [6.5 feet]) (10 CFR Part 71).

**19.06 (12)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF1 | 82 | Don Hancock | Southwest Research and Information Center |
| SF1 | 83 | Don Hancock | Southwest Research and Information Center |

**Comment:**
One commenter stated that there were manufacturing flaws in the first 15 full-scale TRUPACT-IIs; therefore, manufacturing errors should be considered in the SEIS-II transportation analysis. The commenter also stated that any container that is used often will

develop deformities and problems over time. He said an adequate transportation analysis should consider that containers will become damaged and will be less reliable.

**Response:**
The NRC regulations in 10 CFR Part 71 include requirements for implementing a quality assurance program that is used in the design, purchase, fabrication, shipping, storing, cleaning, assembly, inspection, testing, operation, maintenance, repair, and modification of those components of the TRUPACT-II container and RH-72B that are important to safety. The quality assurance program provides a systematic approach to ensuring that a design, and the resulting product or service, are safe and satisfactory for the intended use.

It is true that the first 15 TRUPACT-IIs had flaws and could not be used for transportation; this alone demonstrates the effectiveness of the quality assurance program in identifying flaws and implementing corrective actions before the TRUPACT-IIs could be used. Therefore, manufacturing errors do not need to be included in the analysis, because they would be dealt with before the containers could be used.

Any significant problems or discrepancies with the packaging other than minor cosmetic damage would be corrected before the package is returned to service. Routine package maintenance would be performed at WIPP. Designated contract personnel would routinely inspect packages after each trip. An external inspection would be performed upon arrival. An internal inspection, especially of the sealing surfaces, would be performed after the package has been unloaded. In addition, a detailed maintenance program prepared by DOE and approved by the NRC for the TRUPACT-II requires a structural pressure test on the inner and outer containment once every five years. Any maintenance required for safe operation would be performed before the package is returned to service.

**19.06 (13)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF3 | 100 | Anhara Lovato | |

**Comment:**
"I object to the way the TRUPACT containers sit on the truck. They just look like they're top-heavy. It just looks ridiculous to me."

**Response:**
The weight in a TRUPACT-II would be evenly distributed; therefore, the container would not be top-heavy. The TRUPACT-II, including the tie-down system, has been certified by the NRC and, therefore, has shown compliance with all applicable NRC and DOT regulations. Specifically, the tie-down restraint applied to the TRUPACT-II package has been designed to satisfy the requirements of 49 CFR Section 393.102 and the NRC requirements of 10 CFR Section 71.45. Additional details on the trailer, tie-down system, and other features can be found in Appendices L and M of SEIS-I.

**19.06 (14)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF4 | 25 | Bonita McCune | |

**Comment:**
"The chance of a spill of radioactive and hazardous waste from a waste drum during transport is considered to be relatively high. Fires in a waste drum is a lower probability but higher consequence."

**Response:**
As discussed in Section 5.1.8 of SEIS-II, most accidents would not result in the release of any radioactive material. The most important barriers to a release are the accident-resistant Type B packages (TRUPACT-II, RH-72B) and the requirements placed on the TRU waste form and waste containers (metal drums, boxes, and canisters) that minimize their vulnerability to failures in transportation accidents and reduce their dispersibility in the event of a package failure. DOE concluded that, based on the design and tested performance of the Type B TRUPACT-II container and the historical performance of Type B radioactive containers in general, a major breach of these containers is not considered reasonable or probable. Therefore, the actual risk of a severe accident would be low.

The 14 waste drums that would be transported in the TRUPACT-II are Type A packages. The Type A package is not required to meet the stringent requirements imposed on a Type B package such as the TRUPACT-II. Any breach of the drums would be contained in the TRUPACT-II. Transportation of combustible materials in the waste drums is not limited in the WAC because they would not affect the safe handling or transportation of TRU waste. The TRUPACT-II testing showed that after the container was exposed to an 800°C (1,472°F) fire for 30 minutes, the maximum payload temperature was approximately 66°C (150°F). Combustibles will not ignite or sustain a fire at this temperature.

## 19.07 Radiation Exposure

**19.07 (01)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-106 | 7 | Jerry L. Gerber | |
| E-069 | 10 | Pat Clark | Snake River Alliance |

**Comment:**
One commenter stated that a bottleneck of waste shipments is certain to occur at WIPP and that this will put the public at great risk of exposure. Another commenter also stated that transporting TRU waste would place the public at risk due to radioactive exposure.

**Response:**
In SEIS-II, DOE analyzed the impacts associated with the transportation of TRU waste. The analyses performed addressed transportation issues such as incident-free exposures,

nonradiological impacts (accidents, injuries, and fatalities) and radiological accident-related impacts. The results of these analyses indicated that the impacts from the transportation of TRU waste would be minor.

DOE does not believe that any bottlenecks would occur at WIPP. Currently, WIPP can handle 50 TRUPACT-IIs and 8 RH-72Bs per week. There is also limited storage outside the Waste Handling Building at the WIPP site. However, all CH-TRU waste shipments would be required to comply with the NRC limit of 60 days for waste to be sealed in the TRUPACT-II container.

**19.07 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-131 | 44 | Don Hancock | Southwest Research and Information Center |

**Comment:**
"The urban population density which DOE has used is roughly 10,000 persons per square mile. In NRC's 1977 analysis, the Commission used a figure of 40,000 inhabitants per square mile. DOE should explain why it rejected that figure, particularly given that TRUPACT-II shipments from Lawrence Livermore Laboratory will pass through Los Angeles."

**Response:**
For the bounding case accident, the NRC's use of 15,444 people per square kilometer (40,000 people per square mile) was judged too conservative for a residential population density, because that density only applies now and for the foreseeable future to certain neighborhoods of New York City and other urban neighborhoods in the country where no WIPP shipments are planned.

The preferred route for LLNL TRU waste shipments to the WIPP site is proposed to pass through the greater Los Angeles urban area. According to existing-year and long-range (year 2010) forecasts by the Southern California Association of Governments, the only community within 3 kilometers (2 miles) of the route with a forecasted population density of greater than 3,861 people per square kilometer (10,000 people per square mile) is a 5-kilometer-long (3-mile-long) segment through central Pasadena. All other segments are forecasted to have less dense populations (some significantly less). For the bounding case accident analysis, it is possible to define an accident occurring in the near- or long-range future with a LLNL-origin shipment on Interstate-215 in Pasadena. This accident is estimated to produce an elliptical plume of radioactive aerosolized, respirable particles that would stretch to the neighborhood of central Los Angeles, which has a population density exceeding 3,861 people per square kilometer (10,000 people per square mile). However, when comparing the typical or average inventory shipped from LLNL to the bounding case inventory, the plutonium equivalent curies from LLNL are approximately a factor of 10 lower. Therefore, a LLNL shipment would not represent the system-wide bounding case accident scenario.

However, based on the transportation accident analyses done for SEIS-II, the consequences for a shipment from LLNL could range from 3 LCFs to 16 LCFs to the exposed population and a 0.04 to 0.06 probability of an LCF to the MEI.

**19.07 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-028 | 7 | C. M. Wood | Centers for Disease Control |

**Comment:**
"Table E-15 on page E-39 shows dose in rem 'from CH-TRU and RH-TRU Waste Shipments' to Maximally Exposed Individuals in various categories. Some of the doses are between 2.5 and 3.0 rem. If this is an aggregate number from all shipments over a period of years (p. E-32), these are very safe numbers. If these exposures are possible from a single shipment, then people like 'rest stop employees' are exceeding the 10 CFR 20 limits for occupational exposure (exposures to radiation workers). This would be unacceptable, and the SEIS-II would have to be amended to show positive measures to prevent overexposure to members of the general public."

**Response:**
In Section E.4.1.1 of SEIS-II, where exposure scenarios for each MEI are described, these doses are aggregate exposures over the entire shipping campaign. The title of Table E-15 has been revised to reflect that these doses are aggregate, and further explanation has been added to SEIS-II.

**19.07 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-141 | 7 | Margret Carde | Concerned Citizens for Nuclear Safety |

**Comment:**
"The SEIS II clearly indicates that any transportation, whether to WIPP or to consolidate waste at regional facilities for treatment, adds to the cost and danger of this waste to the public. CCNS, therefore, recommends that no nuclear waste be shipped under current conditions. In the future, if DOE can demonstrate that shipping nuclear waste will significantly improve public safety, CCNS recommends that DOE use the safest, which would appear to be rail transport."

**Response:**
In SEIS-II, DOE analyzed the impacts associated with the transportation of TRU waste. The analyses performed addressed transportation issues such as incident-free exposures, nonradiological impacts (accidents, injuries, and fatalities) and radiological accident-related impacts. The SEIS-II analysis shows that waste transportation will increase the cost and danger to the public. It also shows that all actions analyzed, including the no action alternatives that involve leaving the waste where it is currently stored, also add to the cost and danger of the waste. All of the alternatives involve cost and risk. However, DOE will balance the costs and risks associated with each alternative with other factors in reaching its decision.

**19.07 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-021 | 7 | Ruth Weiner | |

**Comment:**
"The greatest risks associated with transportation are the risks of a transportation accident that does not involve the cargo at all. This risk is directly proportional to the total distance that the waste travels, and increases in direct proportion to the number of trips and trip-miles. If treated waste requires more trips, the non-radiological risk (which greatly exceeds the radiological risk anyway) is proportionally increased. In recognition of this risk, shipping waste around the country for treatment wouldn't make much sense. If risk is the main consideration, waste should be treated either at its present location or at the WIPP. Radiological risks to the public from normal, incident-free transportation are greater than accident risks, for the same shipment, because of the relatively low probability of accidents, in particularly accidents involving a breach of containment. Incident-free radiological risks should be reported as population dose or MEI dose, rather than as LCF, and the off-link population dose, reported in the Draft SEIS as 'non-occupational along route' (cf. Table E-14), is the risk of interest and should be reported separately in chapter 1 and not combined with the stop dose. Even a cursory perusal of Table E-14 shows that the stop dose dominates and the dose along the route, which potentially affects most of the public, is simply lost as an addendum."

**Response:**
DOE agrees that the nonradiological risks (accident, injuries, and fatalities) would be the largest impacts associated with TRU waste transportation and would be independent of the cargo shipped. Therefore, any increase in shipments to treat waste at a site other than WIPP or its current location would increase the impacts.

Appendix E presents both the dose and the LCFs. Estimates of LCFs are presented in addition to the doses to clarify the actual health effects of ionizing radiation for the nontechnical public.

The nonoccupational incident-free or routine exposures were separated into "stops," "sharing route," and "along route" in Table E-14 to emphasize the point made in the comment that most of the exposure would occur at stops.

**19.07 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-056 | 12 | Linda Hibbs | |

**Comment:**
"Since the dose on the surface of an RH-TRU canister can be up to 1000 rem per hour, a person in contact with an undamaged canister could experience:

- genetic damage in 18-90 seconds
- alteration of white blood cells in 3 minutes
- radiation sickness in 5-8 minutes
- death in 35-60 minutes.

"Even a CH-TRU container is like a traveling X-ray machine. Regulations allow the dose 3 feet from a normal transportation container to be the same as an average chest X-ray (10 millirem per hour). The nuclear industry does not have the ability to bring the dose down to zero."

**Response:**
It is possible that the commenter has confused the RH-TRU waste canister and the RH-TRU waste shipping cask. It is true that significant radiation effects could occur if a person came in contact with the surface of an RH-TRU waste canister. That is why the RH-TRU waste shipping container would incorporate massive shielding layers designed to reduce the direct radiation dose rate to below regulatory requirements. All of the TRU waste shipments (CH-TRU and RH-TRU waste) must meet the DOT limit for external exposure (10 millirem per hour at 2 meters [6.5 feet]). The maximum allowable dose rates have been judged by the NRC to provide adequate protection of the public and environment from external penetrating radiation. Furthermore, SEIS-II provides incident-free radiation dose estimates for MEIs. The calculated exposures are below levels that would result in health effects.

The average chest X-ray is 100 millirem. This is an instantaneous exposure at a distance much less than 2 meters (6.5 feet). The regulatory limit for radioactive materials shipments is 10 millirem per hour at 2 meters (6.5 feet). This is one-tenth of the dose from an X-ray received over 3,600 seconds compared to an X-ray exposure of approximately one second.

The shielding that would be necessary to bring the dose to approximately zero would be so heavy that it would decrease substantially the waste payload a TRUPACT-II could carry. This would result in an increased number of shipments and thus an elevated number of nonradiological impacts (accidents, injuries, and fatalities), which dominated the transportation impacts in SEIS-II analysis.

**19.07 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| BO1 | 45 | Charles Rice | Citizens Advisory Board Idaho National Engineering and Environmental Laboratory |
| BO1 | 46 | Charles Rice | Citizens Advisory Board Idaho National Engineering and Environmental Laboratory |
| BO1 | 47 | Charles Rice | Citizens Advisory Board Idaho National Engineering and Environmental Laboratory |
| BO1 | 48 | Charles Rice | Citizens Advisory Board Idaho National Engineering and Environmental Laboratory |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| BO1 | 49 | Charles Rice | Citizens Advisory Board Idaho National Engineering and Environmental Laboratory |
| BO1 | 63 | John Commander | |
| BO1 | 64 | John Commander | |
| BO1 | 65 | John Commander | |
| C-087 | 5 | Charles Rice | Citizens Advisory Board Idaho National Engineering and Environmental Laboratory |
| C-087 | 6 | Charles Rice | Citizens Advisory Board Idaho National Engineering and Environmental Laboratory |
| C-129 | 15 | Richard A. Kenney | Coalition 21 |

**Comment:**
A number of commenters stated that the transportation analysis was overly conservative. One of the commenters said the conservatism resulted in unrealistic estimates of risk to the general public. He said the analysis can be easily misinterpreted and should be corrected. He cited examples of assumptions that involve unreasonably long exposure times during traffic jams, inspections, shipments en route, and rest stops. The commenter also asked that the Final SEIS-II (1) include a clearer discussion of the assumptions used to complete risk calculations, and (2) clarify the radiological impacts and the relationship between numerical LCFs and the percentage chances for LCFs.

**Response:**
To provide a bounding estimate of potential incident-free exposures to individuals along the shipping routes, conservative assumptions were used. The results presented in Table E-15 indicate that even with the very conservative assumptions used, the impacts to MEIs would be low. DOE recognizes that potential impacts could be considerably lower and will give these conservative results the appropriate weight during decisionmaking. However, DOE is confident that the transportation impact analysis presented in SEIS-II is reasonably conservative and adequate to support the decisions outlined in the document. This analysis and its conservatism are similar to other DOE NEPA documents.

**19.07 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-131 | 47 | Don Hancock | Southwest Research and Information Center |

**Comment:**
"With regard to the derivation of the fraction of accidents involving a thermal event (FAT), DOE has forgotten that it is supposed to be examining a bounding scenario. Given that context, the rate of accidents involving a fire cannot be averaged over all accident categories (yielding $1.7 \times 10^{-2}$) but rather should be 1.0 for category VIII accidents. That is, DOE must assume a full fire occurs in this scenario, instead of assuming that $1.7 \times 10^{-2}$ fires would occur. By itself, this change does not materially affect the 0.02% fraction, since it is heavily dominated by the impact, rather than the thermal event."

**Response:**
As described in Section E.4.3.1, DOE analyzed the consequences of a bounding case accident and assumed with a probability of one that a bounding case accident occurred, including the occurrence of a severity category VIII fire. When the potential spectrum of accidents (severity categories I – VIII) is examined, the value of $1.7 \times 10^{-2}$ represents the fraction of accidents involving a fire, and the severity of that fire increases with the accident severity category.

**19.07 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 153 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 204 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
One commenter asked DOE to justify its assumption that thermal treatment of waste reduces the release fraction by a factor of 1,000.

**Response:**
The respirable impact releases were determined using impact test data for vitrified materials. Under thermal conditions, vitrified materials are expected to behave like a refractory brick. A discussion of the basis for the reduction in the release fraction has been added to Appendix E of the Final SEIS-II.

**19.07 (10)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 83 | Charles Hyder | |

**Comment:**
"That huge inventory must not be allowed to leak even at the tiniest amounts. So only a zero release policy can make it safe for the people along the transport routes and anywhere near WIPP or downstream or downwind from WIPP. The DOE has a normal truck transport program. Truck transport programs normally release one part in a thousand, and that's the optimistic side to one part in a hundred, of whatever inventory they transport. The TRUPACTS are better than that, but they are not better at the level of one part in a million. So it's this enormous inventory that must be kept under control. The transport guarantees that it will not be kept under control."

**Response:**
DOE is not aware of the source or basis for the stated estimates. DOE estimates that in the case of a severe, low-frequency accident, 2 parts in 10,000 would be released from the TRUPACT-II in the form of respirable particles (see Table E-20). Under normal, non-accident conditions, the TRUPACT-II packages would be sealed so that no radioactive material would leak to the environment and only very low levels of penetrating radiation would be emitted from the TRUPACT-II surfaces. Even so, DOE has implemented accident prevention and

mitigation programs to protect the public and the environment from potential accidental releases. The accident prevention aspect of DOE's WIPP transportation program includes (1) commitments to use only NRC-certified accident-resistant Type B transportation packages and (2) rigorous requirements for driver training and qualification and vehicle maintenance. In terms of accident mitigation, DOE has provided an extensive program of training for potential first responders to a transportation accident and emergency room personnel, accident/incident response exercises, and other emergency response programs to deal with an accident should one occur.

**19.07 (11)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 55 | David Mitchell | |
| E-021 | 8 | Ruth Weiner | |

**Comment:**
A couple of commenters questioned the relative exposures to rest stop employees and departure site inspectors. One of the commenters said that inspections at each state line would be unnecessary.

**Response:**
Conservative assumptions were used when determining the exposures to the MEIs. For example, DOE conservatively assumed that the rest stop employee worked at a rest stop south of Denver along Interstate 25; this assumption maximizes the number of shipments to which the employee was exposed. In addition, although the distance from the TRUPACT-II is farther for the rest stop employee, the exposure duration is longer. The departure inspector was assumed to work at Hanford, which is projected to have the largest number of shipments. Also, for the rest stop employee it was assumed that there would be three shifts of employees, whereas for the departure inspector it was assumed there would be two shifts of employees. In actual practice, however, the shipments would avoid stops to the extent practical and the exposures to rest stop employees and to the public at stops would be lower than those estimated in SEIS-II. Additional information on these maximum individual exposure scenarios is presented in Appendix E. Even with these conservative assumptions, exposure levels and projected LCFs would be expected to be minimal.

**19.07 (12)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB1 | 62 | Lisa Sparaco | |

**Comment:**
"The risks involved in transporting the waste material are numerous, not the least of which is the potential hazard of coming into contact with other chemical elements."

**Response:**
Specifically, the transportation analysis considered very severe conditions, including those involving severe mechanical and thermal conditions such as collisions and long-duration fires. This includes accidents in which a TRU waste shipment is involved in a severe accident with a tanker carrying other chemical elements such as highly flammable materials. The analysis encompassed accident environments that are far more severe than the Type B hypothetical accident conditions prescribed in 10 CFR Part 71. These impacts were analyzed to bound the analysis and to illustrate the effects of an unlikely severe accident. Based on the design and tested performance of the Type B TRUPACT-II container and the historical performance of Type B radioactive containers in general, a major breach of these containers is not considered probable.

**19.07 (13)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 69 | Charles Hyder | |
| ALB5 | 45 | Lilly Rendt | |
| ALB6 | 58 | David Pace | |
| C-103 | 1 | Judith Babka | |
| C-150 | 4 | Mary Olson | |
| C-150 | 6 | Mary Olson | |
| C-154 | 8 | Tom Marshall, Jack Mento, et al. | Rocky Mountain Peace and Justice Center |
| DE1 | 71 | Sam Cole | |
| DE1 | 165 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| SF4 | 46 | Deborah Reade | |
| SF6 | 29 | Amy Stix | |
| SF6 | 88 | Pia Gallegos | |
| SF7 | 149 | Nova Priest | |
| SF8 | 51 | Katherine Lage | |

**Comment:**
A number of commenters stated that severe consequences could result from accidents involving a TRU waste shipment. Some said that if a TRUPACT-II were breached, the impacts would be catastrophic and possibly fatal.

**Response:**
The impacts presented in SEIS-II indicate that there could be 56 accidents over 35 years for the Proposed Action (see Table 5-6). These estimates are conservative, primarily because (1) the drivers who would transport TRU waste would be highly trained and experienced, with a higher-than-average awareness of transportation risk, and (2) the transportation trailers, tractors, and shipping containers would be subjected to significantly higher test and maintenance standards than typical combination trucks. Therefore, DOE expects that actual accident rates would be lower than projected.

DOE acknowledges that events with very low probabilities of occurrence can occur with very severe consequences. However, the NRC estimates that only 0.6 percent of truck shipments involving Type B packages such as the TRUPACT-II could cause a radiation hazard to the public in the event of an accident. In any event, the bounding accident assumes that a TRUPACT-II fails, resulting in a release to the environment. When conservative release factors and inventories are factored into this accident analysis, 16 LCFs were estimated to result within an urban population of approximately 10,000 people per square mile.

**19.07 (14)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB4 | 16 | Don Thompson | |
| SF3 | 92 | Anhara Lovato | |

**Comment:**
Commenters said they were concerned about the dose rate emitted from RH-TRU waste containers and the RH-TRU waste shipping package, the RH-72B. Specifically, one of the commenters stated that, “you come into contact with one of the remote containers, it will kill you in 35 minutes, just passing it, just driving by it if it should become loose.”

**Response:**
DOE is not aware of the source or basis for the stated health effect estimates. There is no evidence of health effects to pregnant women, their offspring, or any other individual at dose rates the RH-72B shipping containers must meet. It is possible that the commenters have confused the RH-TRU waste canister and the RH-TRU waste shipping cask. It is true that significant radiation effects could occur if a person came in contact with the surface of an RH-TRU waste canister. That is why the RH-TRU waste shipping container would incorporate massive shielding layers designed to reduce the direct radiation dose rate to below regulatory requirements. All of the TRU waste shipments, including the RH-72B, must meet the DOT limit for external exposure (10 millirem per hour at 2 meters [6.5 feet]).

**19.07 (15)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB4 | 41 | Jeri Rhodes | |

**Comment:**
“Are the trucks passing through our state going to be indicating to people on the highways and in the towns that radiation can pass through the walls of these trucks?”

**Response:**
All TRU waste shipments would be placarded in accordance with DOT regulations. In addition, the CH-TRU and RH-TRU waste would be shielded by the shipping containers to keep the radiation dose rate emitted from the shipments below regulatory limits set forth in 49 CFR Part 173, Subpart I.

**19.07 (16)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB4 | 109 | Mary Steele | |
| CA1 | 36 | Robert Lee | |
| CA1 | 100 | Mark Schinnerer | |
| E-069 | 10 | Pat Clark | Snake River Alliance |
| SF4 | 32 | Bonita McCune | |
| SF5 | 55 | Amy Mohr | |
| SF6 | 19 | Susannah Harrison | |
| SF8 | 49 | Katherine Lage | |

**Comment:**
Several commenters said they were concerned about potential releases of radioactive material under incident-free conditions.

**Response:**
The TRU waste transportation containers would be certified to be in compliance with federal radioactive and hazardous material transportation regulations. Among these are requirements that specify allowable leakage rates and external radiation dose rates. Under normal conditions, no TRU waste materials would be allowed to escape from the shipping container. Radiation that penetrates and is emitted from the shipping container would be limited to a dose rate not to exceed 10 millirem per hour at 2 meters [6.5 feet] from the vehicle, a very low dose rate. The radiation doses to MEIs that may travel alongside a TRU waste shipment are presented in Section E.4.1. Under accident conditions, the TRUPACT-II retained its integrity and leak-tightness after being subjected to the impact, puncture, thermal, and immersion test conditions specified by the NRC. Consequently, with the exception of the very low radiation dose rates that are emitted from the shipping container, it is extremely unlikely that any member of the public would be exposed to radiation or radioactive material that escaped the shipping container.

**19.07 (17)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB6 | 60 | David Pace | |
| ALB6 | 132 | Amy Nixon | |

**Comment:**
Two commenters said they were concerned about the regulatory maximum external dose rates and the protection provided by limiting TRU waste shipments to these levels.

**Response:**
During routine or incident-free transportation, workers and the public would be exposed to very low doses of radiation. Incident-free exposures would be less than the levels allowed by transportation regulations; i.e., 10 millirem per hour at 2 meters (6.5 feet) (10 CFR Part 71).

SEIS-II provides incident-free radiation dose estimates for MEIs; the calculated exposures are below levels that would result in health effects.

**19.07 (18)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB6 | 97 | Debra Tenney | |

**Comment:**
"Do you live 250 miles away from the rails and highways upon which the waste will travel? That is the radius area of contamination to be expected from a major accident. Even waste that has been classified as low-level waste is capable of killing humans in small doses."

**Response:**
DOE is not aware of the data source for the 400-kilometer (250-mile) radius of contamination in a transportation accident. In a transportation accident, the state, tribal, or local government would be responsible for taking emergency protective actions such as evacuation. However, a transportation accident involving radioactive materials, unlike an accident involving explosives or noxious gases, is not likely to require an evacuation. Federal Emergency Management Agency guidance documentation and the DOT's *Emergency Response Guidebook* recommend establishing an upwind exclusion area of at least 46 meters (150 feet) after an accident involving radioactive materials. At most, in the unlikely event that some radioactive material were released, it could be necessary to establish a small control zone (with a radius of 46 meters [150 feet]) from which people would be excluded until cleanup was complete.

The effects of radiation from a range of doses have received extensive study; however, controversy still exists concerning the risks from low-level doses.

**19.07 (19)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF1 | 80 | Don Hancock | Southwest Research and Information Center |

**Comment:**
"The population densities that the Draft SEIS-II uses for urban, suburban and rural populations -- and they break the analysis down into those three categories -- are based on the 1970 census. We've had two censuses since then and some of the information on population densities in urban, suburban and rural areas could and, in fact, should be updated."

**Response:**
The population densities used in SEIS-II are based upon 1990 census data. See Sections E.2.1 and 5.1.8.

**19.07 (20)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB2 | 38 | Virginia Kotler | |
| C-125 | 13 | Barbara H. Johnson | The Rio Grande Chapter of the Sierra Club |
| E-056 | 43 | Linda Hibbs | |
| SF1 | 66 | Virginia Miller | |
| SF2 | 62 | Nancy Judd | |
| SF3 | 101 | Anhara Lovato | |
| SF5 | 55 | Amy Mohr | |
| SF7 | 96 | Linda Hibbs | |

**Comment:**
A number of commenters said they were concerned about the estimated health effects from routine transportation of TRU waste.

**Response:**
During routine or incident-free transportation, workers and the public would be exposed to very low doses of radiation. Incident-free exposures would be less than the levels allowed by transportation regulations; i.e., 10 millirem per hour at 2 meters (6.5 feet) (10 CFR Part 71). Using conservative dose rates and modeling techniques, SEIS-II calculations indicate that approximately three cancer fatalities may occur in the exposed population as a result of incident-free TRU waste shipments under the Proposed Action. However, these are statistical health effects, obtained by multiplying a calculated population dose by a health effects conversion factor. There is significant controversy in the health physics community on the health effects of low radiation doses, such as those received from passing TRU waste shipments. SEIS-II used the most recent guidance from the health physics community in estimating health effects from the calculated population doses.

**19.07 (21)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| DE1 | 19 | Nicholas Helburn | |
| E-008 | 3 | Bruce Trigg | New Mexico Public Health Association |

**Comment:**
Two commenters stated that transportation of TRU waste creates a severe public health hazard.

**Response:**
The transportation of TRU waste does not pose a potential health hazard to a large number of people or constitute a potentially significant national health hazard. In SEIS-II, DOE analyzed the impacts associated with the transportation of TRU waste. The analyses performed addressed transportation issues such as incident-free exposures, nonradiological impacts (accidents, injuries, and fatalities) and radiological accident-related impacts.

During routine or incident-free transportation, workers and the public would be exposed to very low doses of radiation. Incident-free exposures would be less than the levels allowed by transportation regulations; i.e., 10 millirem per hour at 2 meters (6.5 feet) (10 CFR Part 71). Using conservative dose rates and modeling techniques, SEIS-II calculations indicate that approximately three cancer fatalities may occur in the exposed population as a result of incident-free TRU waste shipments under the Proposed Action. However, these are statistical health effects, obtained by multiplying a calculated population dose by a health effects conversion factor. There is significant controversy in the health physics community on the health effects of low radiation doses, such as those received from passing TRU waste shipments. SEIS-II used the most recent guidance from the health physics community in estimating health effects from the calculated population doses.

**19.07 (22)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-008 | 5 | Tom Udall | Attorney General of New Mexico |
| SF1 | 97 | Tom Udall | Attorney General of New Mexico |

**Comment:**
One commenter said that the study of risks associated with transportation of radioactive waste assumes there is a limit on the amount of particulate waste that can be contained in each waste drum. The commenter said that DOE has rescinded that requirement.

**Response:**
In the past, analyses were performed using the WAC operations and safety requirement for the waste container radionuclide inventory that waste must be immobilized if particulate material less than ten microns in diameter comprises more than 1 percent of its weight or if particulate matter less than two hundred microns in diameter comprises more than 15 percent of its weight. This requirement has been deleted because of (1) the difficulty in characterizing the size distribution of deposited radionuclide surface contamination on combustible and noncombustible solids and (2) the risk and cost associated with size distribution characterization activities.

DOE has performed an analysis based on a maximum reasonable waste container radionuclide inventory used in a conservative safety analysis with updated airborne release and respirable fractions and the radionuclide limitations for untreated waste. It resulted in potential dose consequences due to inhalation by immediate workers, the on-site individual, and the maximally exposed off-site individual that were within the risk evaluation guidelines established in Section 5.2.4 in the 1997 WIPP SAR.

The transportation analysis in SEIS-II does address the transportation risks associated with particulate waste. The transportation analysis uses a mean aerodynamic diameter of 10 microns, because larger particles would be trapped in mucous membranes and expelled from the body.

**19.07 (23)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-133 | 1 | Bonnie Bonneau | Legions of Living Light |

**Comment:**
"If WIPP opens, you need to know how much radiation will stay with each truck. It will accumulate and each vehicle will become more toxic but they will do it at various amounts dependent on the content of each drum, time, length and other variable of exposure. After some time a truck may become hot enough to cause radiation sickness in the driver. Are there any plans to test these vehicles and drivers or to remove residual radiation from TRUPACT's and the vehicles? How will this be done and under what controls? What testing has been done around this issue? What questions have been addressed, how and by whom?"

**Response:**
The only potential contamination to the TRUPACT-IIs would be from removable external contamination. It is not possible for the TRUPACT-IIs to become radioactive from the shipping of TRU waste. To ensure that external contamination would not occur, an initial radiological survey would be performed on each shipment before it left the site of origin and when it arrived on site at WIPP. At WIPP, as the lid was removed from the shipping package, a radiological survey would be performed. Also, after the shipping package had been unloaded, a radiological survey would be conducted to prepare the shipping packages for reuse. This would ensure that no surface contamination is present on the truck and shipping packages during and after unloading of the waste drums.

**19.07 (24)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| DE1 | 45 | Kay Mack | |

**Comment:**
"[There would be] three deaths from radiation exposures from accident-free shipments. Since illness or death caused by radiation exposure can occur anywhere from hours up to 25 to 30 years or more, how can the number of deaths be so surely projected, and why are debilitating illnesses caused by radiation exposures not mentioned at all?"

**Response:**
The effects of radiation from a range of doses have received extensive study; however, controversy still exists concerning the risks from low-level doses. Radiation exposures required to cause death or illness within hours are well documented and are not credible for even the bounding case accident. The methodology used to estimate radiological impacts in SEIS-II is presented in text boxes in Sections 5.1.8.3 and 5.1.8.4. A discussion of the radiological impacts other than LCFs is presented in a text box in Chapter 5 of SEIS-II.

**19.07 (25)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF3 | 68 | Bill Gould | |

**Comment:**
"Does the SEIS-II discuss genetic or nonfatal injuries caused by radiation exposure to the public through transportation?"

**Response:**
Genetic and nonfatal effects caused by radiation exposure are addressed in SEIS-II, Appendix F, Section F.1.1.

**19.07 (26)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 129 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 5-18. Lines 11 and 12. The statement is made that state inspectors 'dose would be limited by administrative rules and the inspector would be rotated to a new position.' Unless DOE knows the requirements of the various states, they should not take credit for actions of the states. Table 5-8 is said to indicate that site and state inspectors would receive the highest probability of health effects. Table 5-8 and Appendix E indicate that the rest stop employee has the highest probability."

**Response:**
As stated in Section 5.1.8.3, DOE did not take credit for actions of the states regarding state vehicle safety inspections.

The statement regarding site and state inspectors actually reads, "The departure and state inspectors would have the highest probability of health effects due to the performance of their responsibilities associated with TRU waste shipments." This was stated to indicate the health effects due to individuals, such as state inspectors, having responsibilities associated with WIPP shipments. SEIS-II has been revised to clarify the discussion of the MEI with the highest probability of health effects. It is also important to note that the assumptions used to determine MEIs are conservative. For example, a rest stop employee would not generally stand in place for two hours at 20 meters (66 feet) from the truck.

**19.07 (27)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 198 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"EEG-46 calculated a maximum of 10 LCFs from a category VIII accident in North Carlsbad with an average SRS shipment (1,670 PE-Ci in 3 TRUPACTs). The probability of this event was calculated as $4.7 \times 10^{-8}$. SEIS-II calculated a bounding accident value of 16 LCF with a maximum allowable PE-Ci content in a TRUPACT-II (928 PE-Ci) and 3 LCF with an average inventory (191 PE-Ci). There were numerous differences in assumptions and there is an uncertainty about the actual population density used in EEG-46. Attempts to extrapolate EEG-46 LCFs resulted in only about 60% of the doses reported in SEIS. The SEIS-II bounding values are appropriately conservative and indicate that very low probability accidents could have serious consequences. It was noted in the PEIS (page E-77) that 'waste shipments from LANL were found to result in the highest potential transportation accident doses.' SEIS-II did not give highest potential transportation accident doses by site. The PEIS (footnote to Table E-26) assumed that all 3 TRUPACTs would fail in an accident. SEIS-II (page E-42) assumed only one would fail."

**Response:**
DOE agrees that the accident analysis is appropriately conservative. The intent of the bounding case accident analysis was to examine the consequences of a low-probability (less than 1E-07), high-consequence event. For SEIS-II, DOE examined two accident scenarios for both CH-TRU and RH-TRU waste. It was assumed that all of these scenarios occurred in an urban population zone (with a mean population density of 3,861 persons per square kilometer) and, for truck accidents, involved the failure of only one TRUPACT-II. The difference between the two scenarios is the amount of radioactive material available in the TRUPACT-II or RH-72B for release. The first scenario involved a TRUPACT-II or an RH-72B containing the maximum inventory allowed by the planning-basis WAC. This inventory was chosen to maximize potential impacts from a low-probability, high-consequence accident and does not represent the characteristics of waste that would typically be shipped to WIPP. The second scenario assumed a typical or average inventory in the TRUPACT-II or RH-72B.

In its comment, EEG reports a maximum of 10 LCFs from a category VIII accident involving the failure of three TRUPACT-IIs in North Carlsbad, New Mexico. EEG then compares the results of that accident to the analysis in SEIS-II for a TRUPACT-II containing the maximum allowed under the planning-basis WAC. A more appropriate comparison to the SEIS-II impacts would be for the average or typical inventory in a TRUPACT-II. For that scenario, SEIS-II reports 3 LCFs to the exposed population. However, as discussed above, for that scenario it is assumed that only one TRUPACT-II is breached and the accident occurs in an urban population zone. If it were assumed that three TRUPACT-IIs failed, impacts would increase by approximately a factor of three.

SEIS-II assumed that only one TRUPACT-II would fail in an accident for the following reasons:

- Hard targets, such as bridge abutments, that are sufficient to breach a TRUPACT-II on impact would be scarce along the designated transportation routes.

- In the unlikely event that a truck transporting TRU waste struck a hard target, the impact would have to be directed in such a way that one of the TRUPACT-IIs absorbed most of the energy from the impact. Other factors such as angle of deflection, energy absorbed by the object striking the TRUPACT-II, and braking would reduce the forces imposed on the vehicle and the TRUPACT-II.

Even if three TRUPACT-IIs were involved in an engulfing fire, the release fraction from fire is three orders of magnitude below the release fraction from impact events.

**19.07 (28)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF5 | 77 | Michael Collins | |

**Comment:**
"Please elaborate on the danger of exposure being higher for people near the truck than a puncture of a container. I understand that a puncture of a container is the fifth most dangerous and, actually, someone walking by a truck or driving by a truck is in higher danger. This is according to the SEIS."

**Response:**
Radiological risks to the public from normal, incident-free transportation would be greater than accident risks, for the same shipment, because of the relatively low probability of accidents (in particular, accidents involving a breach of containment).

**19.07 (29)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF4 | 50 | Deborah Reade | |

**Comment:**
"When calculating population doses for resuspension, you assume that particles will have a half-life of only 365 days before being removed from the accessible environment. I believe they could be around indefinitely. And if not, where will they go? They don't just disappear. Will they end up in the Rio Grande or irrigating someone's crops?"

**Response:**
The text has been revised to clarify that the radioactive material is no longer subject to resuspension, although it may still be in the accessible environment. Depending upon the location and nature of the hypothetical release, the material could potentially be transported to the Rio Grande or into irrigation water. However, Type B transportation packages such as the TRUPACT-II can withstand the thermal and mechanical stresses produced in more than

99 percent of truck accidents. Therefore, nearly all accidents would be less severe than the type of accident severe enough to result in package failure and a subsequent release of radioactive material. Consequently, DOE is confident that the use of Type B packaging systems to transport TRU waste would provide a safe and effective barrier to prevent releases of TRU waste material in potential transportation accidents.

**19.07 (30)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF7 | 114 | Monika Steinhoff | |

**Comment:**
"We have trucks coming through here [Santa Fe] right now with plutonium all the time."

**Response:**
The impacts of the transportation of materials other than TRU waste associated with WIPP through Santa Fe, including plutonium, are considered in the cumulative impacts analysis in SEIS-II. Impacts associated with certain of these materials are addressed in other EISs such as the *Final Environmental Impact Statement for the Continued Operation of the Pantex Plant and Associated Storage of Nuclear Weapon Components*, DOE/EIS-0225.

**19.07 (31)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-125 | 14 | Barbara H. Johnson | The Rio Grande Chapter of the Sierra Club |

**Comment:**
"It is important to remember that TRU waste is not 'low-level waste.' It includes 141 radioactive elements, 47 organic and 13 non-organic contaminants of concern. An individual exposed for one hour to organic and inorganic contaminants at concentrations meeting emergency response 3 (ERG3) guidelines would develop or experience life-threatening effects. The SEIS-II considers exposure time for its accident scenarios to be less than 30 minutes. How that time is arrived at, when DOE's satellite tracking alert system requires from one to five hours for regionalized staff to arrive at an accident scene, is unclear. A safer transportation system would seem to be the most important alternative to consider."

**Response:**
As explained in SEIS-II, TRU waste is waste materials (excluding high-level waste and certain other waste types) contaminated with alpha-emitting radionuclides that (1) are heavier than uranium with half-lives greater than 20 years and (2) occur in concentrations greater than 100 nanocuries per gram. TRU waste results primarily from prior plutonium reprocessing and fabrication as well as research activities at DOE defense installations.

In SEIS-II (Section E.5.2), hazardous chemical impacts were evaluated for a bounding, severity category VIII accident. The MEI (receptor) was assumed to be located 1,000 meters

(3,300 feet) downwind from the accident, exposed at the centerline of the plume for two hours under stable meteorological conditions and low wind speed. The hazardous chemicals analyzed and the impacts to the MEI as a fraction of the chemical-specific IDLH value are presented in Section E.5.2. For all chemicals analyzed, the concentration to which the MEI would be exposed would be no more than approximately $1.1 \times 10^{-4}$ (for 1,2-dichloroethane) of the chemical's IDLH value. Therefore, no human health effects would be expected from acute exposure to hazardous chemicals released from a severe transportation accident.

The important parameter to consider during hazardous chemical exposures is the IDLH value. At no time during a postulated accident would the concentration of a hazardous chemical reach over 0.1 percent of its IDLH value.

The 30-minute exposure time referenced in the comment is the time assumed, for purposes of SEIS-II non-transportation accident analysis, for evacuation of involved workers. In contrast, the satellite system involves potential transportation accidents ; response times would vary depending upon the circumstances, and first responders would likely respond well before the one to five hour time frame.

**19.07 (32)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-012 | 12 | Charles Hyder | |
| E-012 | 25 | Charles Hyder | |

**Comment:**
One commenter stated that each TRUPACT-II would carry about one billion lethal doses of radioactivity, and even an unbelievably tiny release of one part in 100,000 would release 10,000 lethal doses of radioactivity onto a public highway. The commenter said no community near such a release along Interstate 25 or US-285 WIPP routes could survive even that tiny release of radioactivity from a TRUPACT-II. The commenter also said that, to date, big trucking operations lose at least one part in a thousand of the most hazardous cargoes over 25 years.

**Response:**
DOE cannot determine how the commenter arrived at the estimated one billion lethal doses. However, it appears to be an extreme exaggeration; SEIS-II estimates that there would be no prompt radiation-induced fatalities and 16 LCFs from a highly unlikely severe accident in a densely populated area.

DOE is not aware of the source or basis for the estimate of released waste during shipment. However, DOE can say that a loss rate of one part in 1,000 would grossly overstate the historical loss rate from radioactive material shipments in Type B containers because there has never been a release of radioactive materials from a Type B package during transportation, based on information from the Radioactive Materials Incident Report database maintained by SNL.

However, DOE recognizes that it cannot prevent all accidents from occurring in the highway transportation of any commodity. As a result, DOE has implemented stringent requirements designed to minimize (1) the frequencies of accidental releases (e.g., the use of Type B accident-resistance packages, stringent driver qualification and training requirements, rigorous vehicle inspection and maintenance) and (2) the consequences should an accident occur (through implementation of emergency preparedness programs). DOE is confident that the accident prevention and mitigation programs would effectively control the risks of transportation accidents to acceptable levels.

**19.07 (33)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-012 | 17 | Charles Hyder | |

**Comment:**
"Each WIPP-bound TRUPACT would contain about one billion lethal doses (l.d.'s) of Pu-239, so the number of radioactive lethal doses released for a given fractional release from a TRUPACT can be determined. Further, there would be a total of about 500 WIPP-bound truck accidents in the U.S. and an estimated total of about 50 radioactive releases nationwide. This assumes that truck accidents causing serious injuries would make a 'TRUPACT' leak. Thus, the total number of lethal doses released nationwide during the 25 years planned for WIPP loading can be determined. The results of these calculations are presented in the following tables. Releases of $10^{-3}$ to $10^{-2}$ are typical.

5 Catastrophic Releases

| | | | |
|---|---|---|---|
| Average Individual Release (l.d.'s) | $10^{7}$ | $10^{8}$ | $3 \times 10^{8}$ |
| Total Release (l.d.'s) | $0.5 \times 10^{9}$ | $5 \times 10^{9}$ | $15 \times 10^{9}$ |
| Fraction Released (f) | $10^{-2}$ | $10^{-1}$ | 0.3 |

$50 \times 10^{9}$ l.d's involved in ~50 Radioactive Releases Nationwide

| | | | | |
|---|---|---|---|---|
| Fraction Released (f) | $10^{-3}$ | $10^{-4}$ | $10^{-5}$ | $10^{-6}$ |
| | 45 Med-to-Low Releases | | | |
| Total Release in U.S. (l.d.'s) | $50 \times 10^{6}$ | $5 \times 10^{6}$ | $5 \times 10^{5}$ | $5 \times 10^{4}$ |
| Avg. Individual Releases. (l.d.'s) | $10^{6}$ | $10^{5}$ | $10^{4}$ | $10^{3}$ |

l.d.'s = lethal doses

For 15 (10 to 20) Releases in New Mexico from (15 x $10^9$ ld's)
with Catastrophic Releases

| | | | | |
|---|---|---|---|---|
| Fraction Released (f) | 0.3 | $10^{-1}$ | $10^{-2}$ | $10^{-3}$ |
| Total l.d.'s Released | 4.5 x $10^9$ | 1.5 x $10^9$ | 1.5 x $10^8$ | 1.5 x $10^7$ |
| Avg. Individual Releases | 3 x $10^8$ | $10^8$ | $10^7$ | $10^6$ |

Normal Range

| | | | |
|---|---|---|---|
| Fraction Released (f) | $10^{-4}$ | $10^{-5}$ | $10^{-6}$ |
| Total l.d.'s Released | 1.5 x $10^6$ | 1.5 x $10^5$ | 1.5 x $10^4$ |
| Avg. Individual Releases | $10^5$ | $10^4$ | $10^3$ |

Radioactive Releases/Fraction Released During WIPP-Bound Truck Accidents.

| Comments | Fraction Released per 25 years | Approximate minimum Lethal Doses Released | |
|---|---|---|---|
| | | USA | New Mexico |
| Usual Release Fractions for Hazardous Materials Transport | 1/100 = $10^{-2}$ | 230 Billion | 56 Billion |
| | 1/1000 = $10^{-3}$ | 23 Billion | 5.6 Billion |
| High Technology & Many $ | 1/10,000 = $10^{-4}$ | 2.3 Billion | 560 Million |
| | 1/100,000 = $10^{-5}$ | 230 Million | 56 Billion |
| Beyond Modern Transport Technologies | $10^{-6}$ | 23,000,000 | 5.6 Million |
| | $10^{-7}$ | 2.3 Million | 56,000 |
| | $10^{-10}$ | 2300 | 560 |
| | $10^{-12}$ | 23 | 5.6 |

"'In New Mexico,' which of these 'Lethal Doses Released' values are acceptable to the people living along the main north south WIPP Route: Raton to Canyoncito via I-25, then I-25 to WIPP via US 285 and 62."

**Response:**
The commenter does not provide sufficient information for DOE to evaluate the approach and data used to derive these estimates. Therefore, DOE has developed responses to the results and conclusions provided by the commenter.

1. Fifty radioactive releases nationwide: Using the best available traffic accident data for heavy-combination trucks (similar to the TRUPACT-II trucks), DOE in SEIS-II estimated a total of 56 traffic accidents nationwide involving the CH-TRU and RH-TRU waste shipments in the Proposed Action. Less than 1 percent of all traffic accidents would exceed the conditions that the shipping containers are designed to

withstand without compromising packaging integrity. Therefore, DOE estimates that less than one accidental release would occur during the entire TRU waste operations period (35 years in the Proposed Action), including shipments from all generator sites. Therefore, DOE believes the estimates provided by the commenter are unnecessarily conservative.

2. Fatal traffic accidents lead to a release: DOE believes this assumption is unnecessarily conservative and potentially misleading. Although fatal accidents are tragedies and should not be understated, there is no way of relating the occurrence of a fatal traffic accident to the occurrence of package failures and subsequent releases of radioactive material from a failed package. The hypothetical accident conditions that the TRU waste shipping containers are designed and tested to withstand are far more severe than the accident conditions that could result in a fatality. For example, a person in a vehicle is not likely to survive a 30-minute, engulfing fire but the shipping containers exposed to the same conditions would retain their integrity. Therefore, DOE believes this assumption leads to unnecessarily conservative results and potentially invalid conclusions.

**19.07 (34)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| E-012 | 23 | Charles Hyder | |

**Comment:**
"If the WIPP radioactive loading goes according to the DOE's current plans (1995), WIPP-bound trucks loaded with radioactive wastes will start rolling in mid-1998. After 25 years, and more than 30,000 truckloads of radioactive wastes, WIPP loading would be complete. During that time about 486 +/- 22 highway accidents involving WIPP-bound trucks would occur. Each WIPP-bound truck would carry about 800 million lethal doses of plutonium. During those 486 expected accidents, somewhere between 40 and 486 of them would release some fraction of their deadly loads. Stretches of highway contaminated by these radioactive releases must be clearly marked. In general, more severe accidents would be expected to cause greater radioactive releases. Accidents involving fires would be expected to yield even larger radioactive releases and to distribute that released radioactivity far and wide in local winds and waters. About 320 of the expected 486 WIPP-bound accidents would occur along the route from the Hanford National Lab (HNL) in south-central Washington to WIPP in southeastern New Mexico. Along that route the average distance between accidents involving WIPP-bound trucks (carrying hundreds of millions of lethal doses of plutonium) will range from 2.4 miles between WIPP and Vaughn, New Mexico, ('The Chute') to 12 mi. between the HNL and the junction of I-15 with I-80N in northern Utah. The close proximity between these WIPP-bound truck accidents and their associated, 32 to 320 radioactive releases will make that route WIPP's Most Deadly Radioactive Corridor. That's between 1 and 13 radioactive releases per year along that Deadly Corridor. People who travel that route after the year 2000 would be exposed to the residual radioactive releases from 32 to 320 WIPP-bound truck accidents and their associated radioactive releases. By 2023 those exposures would be inescapable, and many ordinary citizens who travel along that route would contract countless deadly cancers during the

following 5 to 25 years. Once the WIPP-bound truck accidents and radioactive releases start to occur in 1998-2000, many people will leave these contaminated regions along the WIPP transport routes. Local Winds would spread the radioactivity 20-30 mi. on both sides of those transport routes."

**Response:**
The information presented by the commenter is not sufficient to independently review the calculations and comment on the applicability of the results. However, DOE disagrees with the results, primarily because the impact calculations in SEIS-II are believed to be bounding and appropriately conservative. Following are observations on the results presented by the commenter:

1. The commenter stated that after 25 years, and more than 30,000 truckloads of radioactive waste, WIPP loading would be complete. The commenter estimated that during that time, about 486 ± 22 highway accidents involving WIPP-bound trucks would occur.

   DOE used the best available, verifiable, highway accident statistics for heavy-combination trucks and predicted a total of 56 traffic accidents over 35 years for the Proposed Action, including both loaded and empty shipments. Therefore, the values calculated by the commenter appear to be unnecessarily conservative.

2. The commenter estimated that each WIPP-bound truck would carry about 800 million lethal doses of plutonium.

   DOE cannot determine how the commenter arrived at the estimated 800 million lethal doses. However, it appears to be an extreme exaggeration; SEIS-II estimates that there would be no prompt radiation-induced fatalities and 16 LCFs from a severe accident in a densely populated area.

3. The commenter estimated that during those 486 expected accidents, somewhere between 40 and 486 of them would release some fraction of their deadly loads.

   According to a 1987 NRC study titled *Shipping Container Response to Severe Highway and Railway Accident Conditions*, more than 99 percent of all highway accidents are less severe than the hypothetical accident conditions that Type B transportation packages such as the TRUPACT-II can withstand without compromising package integrity. Based on this statistic and the 56 total traffic accidents predicted to occur under the Proposed Action, less than one accident is predicted to result in a release of any kind.

4. The commenter stated that stretches of highway contaminated by these radioactive releases must be clearly marked.

   If a stretch of highway became contaminated, DOE would remove the contamination to levels below which unrestricted public access would be allowable. Any stretches of contaminated highway would be appropriately marked and controlled; markers or warning signs would not be needed after cleanup was completed.

5. The commenter estimated that between 1 and 13 radioactive releases would occur per year along a deadly corridor from Hanford to WIPP.

   DOE disagrees with the estimated number of releases from transportation accidents. In response number 3 above, DOE estimated that less than one accidental release of any size would occur over the entire TRU waste shipping campaign (35 years), including shipments from all generator sites (not just from Hanford).

6. The commenter estimated that people who travel that route after the year 2000 would be exposed to the residual radioactive releases from 32 to 320 WIPP-bound truck accidents and their associated radioactive releases.

   As noted above, if a stretch of highway became contaminated, DOE would be obligated to remove the contamination to levels below which unrestricted public access would be allowable. Following cleanup of the accident site and removal of residual contamination, travelers would not be exposed to residual radioactive contamination on or near a highway.

7. The commenter stated that by the year 2023, those exposures would be inescapable, and many ordinary citizens who travel along that route would contract countless deadly cancers during the following 5 to 25 years.

   If an accidental release occurred, the accident site would be cleaned up and contamination removed such that residual contamination would not represent a significant hazard. DOE has committed to and implemented a TRU waste transportation emergency preparedness program that is designed to minimize and mitigate the effects of accidental releases. Even if a severe, but extremely low-frequency, accident occurred in a densely populated area, SEIS-II estimates that no prompt fatalities and up to 16 LCFs would result. Therefore, DOE disagrees with the statement that countless fatal cancers would be caused by residual contamination.

**19.07 (35)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-132 | 23 | Keith Tinno | Shoshone-Bannock Tribes |

**Comment:**
"Pg. [Summary] S-39 - It is surprising that the LCFs resulting from the breach of a TRUPACT-II (which is understood to be CH waste only) with a maximum radionuclide inventory is exactly the same as the LCFs resulting from the breach of RH-72B with maximum radionuclide inventory. Even more surprising are the much, much lower LCFs associated with breach of an RH cask with average concentrations of radionuclides as compared to the breach

of a TRUPACT-II with average concentrations of radionuclides. With RH waste being hotter radioactively it would seem that such waste should pose more of a risk. Please explain."

**Response:**
There are two reasons for the differences between accident impacts from CH-TRU and RH-TRU waste. The first is the waste volume associated with the CH-TRU and RH-TRU waste inventories. A TRUPACT-II can hold fourteen 55-gallon drums, while the RH-72B canister can only hold slightly greater than three 55-gallon drums. Therefore, the potential inventory at risk is much greater for CH-TRU waste. Second, the typical radionuclides that cause the TRU waste to be classified as RH (gamma-emitting) do not contribute significantly to the exposures received during an accident.

**19.07 (36)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-164 | 5 | Mansi Kern | |

**Comment:**
"Once a spill has occurred, the surrounding area would become radioactive over a wide area. Local people and all life would become poisoned. The destruction of the natural resources would gradually take place. Our much loved land in parts of New Mexico would face desertion."

**Response:**
It is highly unlikely that, in a transportation accident, a radioactive release would occur. Local law enforcement agency officers and the carrier drivers would immediately evaluate any TRU waste incidents. Upon their evaluation and recommendation, a tiered DOE Radiological Assistance Program response would be initiated quickly. A tiered level of incident classification and response has been developed to handle any level incident. The initial response to a TRU waste incident would be from state, tribal, or local emergency response agencies, followed by the appropriate DOE Radiological Assistance Team. Later, the DOE response could be augmented by the IART, which would be on standby during all TRU waste shipments. The Radiological Assistance Team and IART are composed of experts in radiological and packaging evaluation and incident mitigation.

In the unlikely event of a transportation accident involving the release of radioactive material, the state, tribal, or local government would be initially responsible for taking any emergency protective actions, such as evacuation. DOE would assist state and local responders and, at a minimum, would follow the Federal Emergency Management Agency guidance documentation and the DOT's *Emergency Response Guidebook*, which recommend establishing "an upwind exclusion area of at least 150 feet" after an accident involving radioactive materials. In addition, DOE or its contractors would clean up any contamination and the public and natural resources would be protected.

**19.07 (37)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 203 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"The results of Alternative Impacts from accidents, vehicle pollution, and routine radiological that are presented in various tables were studied to see if the values were reasonable compared to the Proposed Action. In all cases, the values appear to deviate in the expected direction from the Proposed Action and the magnitude of the deviation seemed reasonable. More description in the text explaining these differences would be helpful however. For example, is the lower (relative to the Proposed Action) non-occupational radiation dose total in Table E-14 for CH-TRU waste in Alternatives 2A and 2B due solely to the fact that there are fewer miles traveled (which can be implied from Table E-9)? Does this calculation use the TI values from Table E-11, or does it use a TI of 4 in both cases?"

**Response:**
Specifically, the nonoccupational exposures are dominated by the exposures at stops. The length of time at stops is determined by the number of miles or kilometers traveled. For example, RADTRAN IV, the code used to estimate incident-free exposures, uses a default value for stop time of 0.011 hours per kilometer of travel. Therefore, as noted by the commenter, the nonoccupational exposures depend directly on the number of miles traveled. However, the number of shipments for Action Alternatives 2A and 2B showed a notable increase from the Draft SEIS-II to the Final SEIS-II. The higher shipment numbers resulted in higher exposures from CH-TRU waste transportation for Action Alternatives 2A and 2B than for the Proposed Action. The estimated CH-TRU waste shipments are 29,766 for the Proposed Action and 42,775 and 42,774 for Action Alternatives 2A and 2B, respectively. This indicates that the number of miles traveled, and therefore the nonoccupational exposures, would be greater for Action Alternatives 2A and 2B.

The TIs assumed for the Proposed Action and all alternatives are 4 millirem per hour for CH-TRU waste shipments and 10 millirem per hour for RH-TRU waste shipments.

## 19.08 Rail

**19.08 (01)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-002 | 2 | Gedi Cibas | New Mexico Environment Department |
| ALB1 | 64 | Lisa Sparaco | |
| ALB5 | 20 | Robert H. Neill | Environmental Evaluation Group |
| ALB6 | 91 | Debra Tenney | |
| BO1 | 10 | Governor Phillip Batt | |
| BO1 | 22 | Brian Whitlock | |
| BO1 | 57 | Fred Sica | |
| BO1 | 85 | Rebecca A. Nebelsick | |
| BO1 | 104 | Tom Marshall | Rocky Mountain Peace and Justice Center |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| BO1 | 121 | Michele Kresge | |
| C-015 | 3 | Geri Velasquez | |
| C-059 | 4 | Sam Volpentest | Tri-City Industrial Development Council |
| C-069 | 2 | William Schaefer | |
| C-115 | 3 | Melvin M. Vuk | |
| C-115 | 8 | Melvin M. Vuk | |
| C-125 | 12 | Barbara H. Johnson | The Rio Grande Chapter of the Sierra Club |
| C-129 | 17 | Richard A. Kenney | Coalition 21 |
| C-130 | 7 | Susan L. Gawarecki | Oak Ridge Reservation Local Oversight Committee |
| C-139 | 4 | Judy Herzl | |
| C-141 | 7 | Margret Carde | Concerned Citizens for Nuclear Safety |
| C-151 | 17 | Don Moniak | Serious Texans Against Nuclear Dumping |
| C-152 | 19 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 200 | Robert H. Neill | Environmental Evaluation Group |
| C-152 | 202 | Robert H. Neill | Environmental Evaluation Group |
| C-154 | 10 | Tom Marshall, Jack Mento, et al. | Rocky Mountain Peace and Justice Center |
| C-154 | 12 | Tom Marshall, Jack Mento, et al. | Rocky Mountain Peace and Justice Center |
| C-156 | 3 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |
| C-158 | 10 | Maureen Eldredge | Military Production Network |
| C-159 | 12 | Susan Maret | Sierra Club National Nuclear Waste Task Force |
| C-162 | 4 | Kathleen Sullivan | |
| CA1 | 30 | Don Gray | |
| DE1 | 43 | Kay Mack | |
| DE1 | 64 | Margret Carde | Concerned Citizens for Nuclear Safety |
| DE1 | 169 | Tom Marshall | Rocky Mountain Peace and Justice Center |
| E-024 | 4 | Robert H. Neill | Environmental Evaluation Group |
| E-069 | 11 | Pat Clark | Snake River Alliance |
| E-077 | 2 | Rebecca A. Nebelsick | |
| OR1 | 10 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |
| OR1 | 13 | Stanley Reel | Oak Ridge Regional Planning Commission |
| OR1 | 33 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |
| OR1 | 40 | Bob Peele | |
| OR2 | 18 | Alfred Brooks | |
| SF2 | 9 | Kathleen Sullivan | |
| SF2 | 39 | Marion Seymour | |
| SF2 | 64 | Nancy Judd | |
| SF3 | 34 | Jai Lakshman | SEVA Foundation |
| SF3 | 84 | Sasha Pyle | Religious Society of Friends |
| SF4 | 23 | Bonita McCune | |
| SF4 | 47 | Deborah Reade | |
| SF5 | 73 | Michael Collins | |
| SF6 | 89 | Pia Gallegos | |
| SF7 | 32 | Amy Bunting | |

**Comment:**
Many commenters stated that rail transportation needs to be analyzed more thoroughly. Their main concerns were that rail cost and human health and environmental impacts would be much less than the costs and impacts associated with truck transportation. Other commenters stated that DOE has already excluded rail transportation as an alternative because of the existing trucking contract.

**Response:**
DOE believes the rail impact analysis performed in SEIS-II was adequate and appropriate to support the decisions to be made with respect to the Proposed Action and alternatives. DOE has undertaken many studies that evaluate the efficacy and environmental consequences of transporting TRU waste by rail. As an example, in the 1990 SEIS-I, the environmental impacts of rail transportation were evaluated and discussed. In 1994, DOE reported to the U.S. Congress the transportation risks, emergency response capabilities and program planning, and costs to transport TRU waste by rail. In addition, it should be noted that DOE has not eliminated consideration of rail transportation during the disposal phase.

**19.08 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 112 | Peter Kalberer | |

**Comment:**
"Those old Atchison, Topeka & Santa Fe tracks are not in very good shape. We'd go over tracks where I'm surprised that the train doesn't get tossed off."

**Response:**
Individual railroads own the land over which trains travel and are responsible for the condition of the tracks. However, the Federal Railroad Administration, as the delegated enforcement arm of the DOT, is responsible for inspecting tracks and evaluating the safety of the proposed rail routes.

**19.08 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB6 | 88 | Debra Tenney | |

**Comment:**
"The Nuclear Information and Resource Service states that transport of nuclear waste in casks by rail is planned through 43 states."

**Response:**
The commenter may have misunderstood the reference, which appears to refer to the potential transportation of spent nuclear fuel to the Yucca Mountain site in Nevada. Shipment of spent nuclear fuel to the Yucca Mountain site is outside the scope of SEIS-II. DOE has undertaken

many studies that evaluate the efficacy and environmental consequences of transporting TRU waste by rail to WIPP. As an example, in the 1990 SEIS-I, the environmental impacts of rail transportation were evaluated and discussed. In 1994, DOE reported to the U.S. Congress the transportation risks, emergency response capabilities and program planning, and costs to transport TRU waste by rail. In addition, in SEIS-II DOE has not eliminated consideration of rail transportation during the disposal phase.

**19.08 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-052 | 1 | Melvin M. Vuk | |
| C-115 | 2 | Melvin M. Vuk | |
| C-115 | 7 | Melvin M. Vuk | |
| SF7 | 124 | Lee Lysne | |

**Comment:**
Commenters asked why DOE has not considered rail seriously. They stated that rail has a lower accident rate and could carry many more TRUPACT-IIs than trucks, thereby reducing the number of shipments, the cost, and the impacts.

**Response:**
The rate of underground emplacement at WIPP would restrict the maximum rail shipment size that could be received at one time to 50 TRUPACT-IIs of CH-TRU waste and eight RH-72Bs of RH-TRU waste per week. Also, larger rail shipments were not considered for the following reasons:

- Smaller generator facilities that could transport by rail would have a burden of surface storage until all of the shipping containers were filled.
- A larger number of shipping containers would be required; this would be more costly and less efficient because the shipping containers would stand empty and idle for longer periods of time waiting for a larger train load shipment.
- To meet gas generation regulatory requirements, once a TRUPACT-II was sealed at the waste generator site, the container would be required to reach WIPP within 60 days.

DOE has not eliminated consideration of rail transportation during the disposal phase.

**19.08 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-106 | 5 | Jerry L. Gerber | |

**Comment:**
"I understand rail companies won't even consider this task because of the hazards it presents to its employees and the public."

**Response:**
DOE has been unable to find rail carriers interested in transporting TRU waste. DOE is not aware of the reasons why rail carriers are not interested in performing this service.

**19.08 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-115 | 4 | Melvin M. Vuk | |

**Comment:**
"In Appendix E you also stated that 'In the event of an accident, a rail line could be disabled during the accident investigation, with the possibility of no alternative routing for both WIPP and non-WIPP related rail shipments' (E-60). Are highways immune to such interruptions or inconvenience to shippers? I think not. A flat tire, mechanical failures, or traffic accidents on the roadways used to carry TRU waste would not impact the traveling public any less than a train derailment or accident. I believe it is a relatively simple data search to show that (1) there are far more truck-auto accidents, and (2) a greater number of fatalities involve trucks rather than trains. Therefore, the statement that '...a commercial train is just as likely to be in an accident whether it hauls TRU waste or not' (E-60) is simply incorrect."

**Response:**
If an accident occurred on a rail line, it would be more difficult to establish detours around the accident site to keep traffic flowing than it would be to establish detours around the site of a truck accident. For example, in the event of a truck accident, a breakdown lane on an interstate highway could be used to divert traffic around the accident site.

The statement on page E-60 of the Draft SEIS-II was made to stress the point that the probability of an accident occurring is independent of the cargo being hauled. This statement was not meant to compare accident probabilities between truck and rail transportation. The text has been modified to clarify this statement.

**19.08 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-115 | 5 | Melvin M. Vuk | |

**Comment:**
"There is a public concern for exposure to radiation during the time any mode of transportation is stopped for any reason (accident, repair, weather, or traffic delays, etc.). The Draft SEIS-II states that '...dedicated rail service would have a stop time exposure about eight times lower than for regular rail, and the estimated dose from rail stops would be 64 times lower than the estimated dose from the truck stops' (E-62). From a public psychological standpoint, it makes sense to consider dedicated rail shipment."

**Response:**
During routine or incident-free truck transportation (including delays caused by accident, repair, weather, traffic, etc.), workers and the public would be exposed to very low doses of radiation. DOE has not eliminated consideration of rail transportation during the disposal phase.

**19.08 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 80 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 2-3. The text refers to a 'specially adapted rail car.' EEG is unaware of an existing rail car nor have we received plans of a design. Please provide them in text."

**Response:**
DOE recognizes that a specialized rail car would be needed for shipping TRU waste, but in light of the inability to obtain suitable rail service to date, DOE has not spent funds on designing such a rail car.

**19.08 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 151 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 5-60. Detailed evaluations of rail mileage in the SEIS-I and other earlier documents indicate that rail mileage from the major generating sites to WIPP is 16%-26% greater than truck mileage, not similar as claimed here."

**Response:**
SEIS-II has been modified to reflect the relationship of rail miles to truck miles. The number of miles traveled by rail was not used to estimate impacts from TRU waste transportation by rail. Instead, the estimate of fatalities from rail transportation assumed a reduction by a factor of two over truck shipment fatalities based on the reduction in shipments by a factor of two. Additionally, since the incident-free exposures during stops would dominate the impacts, the miles traveled would have a negligible impact on the incident-free exposure impacts.

**19.08 (10)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 201 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"The values reported in Tables E-29 through E-32 were 'determined by adjusting the transportation impacts from truck shipments' (page E-58). Examples of questionable assumptions used in this analysis are: The average speed in all population zones was said to be 55 miles per hour for truck transport. This is inconsistent with Table E-10; The total miles assumed to be the same for truck and rail. SEIS-I actually developed rail route distances (see Table D.4.2). Distances by rail were 16%-26% greater for all of the major generating sites; The origin of the 89% rural, 10% suburban, and 1% urban breakdown is not given. The mileage average for the distances in SEIS-I (weighted for the number of SEIS-II shipments) is 87%, 12%, and 1%. The basis for the assumption that the number of individuals sharing the transportation corridor is at least two orders of magnitude less is not given: We cannot reproduce the value in equation E-5 from equation E-4. The value of TI in E-4 should be 0.033 (from the previous page). Also, a value is needed for N (number of rail shipment transfers per shipment). If N were about 3.2 and TI were .033 the dose would be $1.7 \times 60^{-4}$ (TI) M. The logic for assuming that the aggregate radiological consequences of rail accidents were identical to truck accidents (first paragraph under E.7.3, page E-62) is unclear (same miles traveled times less frequency for rail accidents = same as truck). Is this because the release would be double in rail accidents?"

**Response:**
The values in Table E-10 are used as input for determining incident-free exposures in RADTRAN. The text in Section E.7.2.1 has been modified to correctly state the assumed average highway speeds.

The number of miles traveled by rail was not used to estimate impacts from TRU waste transportation by rail. Instead, the estimate of fatalities from rail transportation assumed a reduction by a factor of two over truck shipment fatalities based on the reduction in shipments by a factor of two. Additionally, since the incident-free exposures during stops would dominate the impacts, the miles traveled would have a negligible impact on the incident-free exposure impacts.

For the SEIS-II transportation analysis, more than 70 percent of the shipments would travel routes designated as rural over at least 90 percent of their distances.

Trains do not typically encounter other traffic of the number and in the vicinity of that encountered on our nation's highways. Therefore, it was conservatively assumed that the number of individuals sharing the rail transportation corridor is at least two orders of magnitude less that of truck transportation. Since the incident-free impacts are already low, this is not expected to have a noticeable effect on the impacts.

The value of TI is 4 for CH-TRU waste and 10 for RH-TRU waste. The value of 0.033 is the stop time per trip in hours per kilometer traveled. There is an error in equation E-4; the value of T should have been identified as 0.033 instead of 0.011.

SEIS-II has been modified to reflect the relationship of rail miles to truck miles and the aggregate impacts have been adjusted to reflect the difference.

**19.08 (11)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-090 | 5 | Linda Ewald | |
| C-131 | 5 | Don Hancock | Southwest Research and Information Center |
| CA1 | 107 | Cliff Stroud | |
| E-077 | 2 | Rebecca A. Nebelsick | |

**Comment:**
A number of commenters said DOE should use rail instead of trucks to transport TRU waste. One of the commenters, remarking on the safety of transporting TRU waste, said rail is safer than trucking, yet DOE is planning to use trucks to haul these shipments in casks whose design is awaiting approval. Another commenter said truck transportation should be used, citing the safety features of the proposed vehicles and canisters. A third commenter said DOE has already decided to use trucks, stating that DOE has signed contracts worth millions of dollars with trucking companies but no contracts with railroad companies.

**Response:**
DOE has not eliminated consideration of rail transportation during the disposal phase, and the Preferred Alternative provides that DOE would continue to explore rail transportation. DOE has entered into a contract with a truck carrier. This carrier is performing services other than TRU waste transportation to WIPP. The carrier would not transport waste to WIPP unless DOE decided to open WIPP for TRU waste disposal. In addition, two DOE sites with TRU waste do not have rail access and, should DOE decide to open WIPP and to pursue maximum rail use, DOE would still need a trucking contractor.

NRC certified the TRUPACT-II reusable packaging as Type B on August 30, 1989, to comply with all of the applicable regulations (10 CFR Part 71) for transportation of CH-TRU waste. The design of the cask proposed for RH-TRU waste (the RH-72B) was submitted to the NRC in December 1996 (Docket No. 71-9212). DOE would ship no RH-TRU waste to WIPP until the RH-72B was approved.

**19.08 (12)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 150 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 5-59. Rail Accident Methodology. The conclusion that the number of rail accidents using dedicated trains will be 23 times that expected for regular rail service is unrealistic. The methodology used could be used to calculate a wide range of numbers, including zero additional accidents (with the assumption that no new locomotives would ever be used). Some of the potential benefits from dedicated trains (e.g., lower potential accident rate per mile, more control over waste package, and shorter shipment times) should be discussed. It is noted that both regular train and dedicated train shipments have less impacts than truck shipments (Table 5-29 versus Tables 5-25, 5-26, 5-28)."

**Response:**
DOE compared the impacts of using dedicated or commercial rail for the transportation of TRU waste. Commercial rail is defined as adding rail cars containing TRU waste to an existing train hauling materials other than TRU waste. For its analysis, DOE assumed that three rail cars would be added. Those cars would be transferred as necessary for the waste to reach Carlsbad, New Mexico, and the WIPP site. DOE assumed that there would be an average of 70 rail cars on a commercial train. Dedicated rail is defined as adding a train to the system consisting of three rail cars containing TRU waste, one engine, and one caboose.

The difficulty in trying to compare the impacts of shipping TRU waste by dedicated rail or commercial rail is comparing accident and fatality rates. For the SEIS-II analysis, the factor of interest to DOE is the effect of adding rail cars to the system, whether by dedicated or commercial rail. However, accidents and fatalities are not apportioned by rail car; rather, they are assigned to the train involved in an accident. Therefore, when differences between dedicated and commercial rail are compared, dedicated rail could present more risk because adding a train to the system, as opposed to adding three rail cars to an already existing train, would likely result in more accidents and fatalities.

However, many factors could affect train accident rates, including human factors, mechanical failure, and track failures. To estimate impacts, DOE used the accident and fatality rate data for rail shipments found in a report titled: *Longitudinal Review of State-Level Accidents Statistics for Carriers of Interstate Freight*, by Chris Saricks and T. Kvitek. This document cites the use of Federal Rail Administration data for accidents and fatalities.

A concern about this data is that the rate numbers were obtained by dividing the train accident rate by the rail car kilometers. That approach is equivalent to stating that for each train accident, only one rail car is affected. However, some studies have found that a typical accident involves 7 to 10 rail cars. Since an average train in regular service contains about 70 rail cars, a more realistic and conservative accident rate would be obtained by multiplying the values in the referenced report by a factor of 10.

This report also presents data on the number of fatalities and injuries per rail car kilometer. The question then arises: because trains, not individual rail cars, affect such rates, how does one apportion fatalities to a rail car? After numerous discussions, DOE decided to divide the commercial train rates for fatalities and injuries by the average train length, about 70 cars. The rationale for this decision was as follows: as traffic on a railroad increased as a result of waste shipments, railroads would expedite service by adding one train for each 70 rail cars added to the route. The alternative would be to assume that there were "n" TRU waste cars in each train and assign the fatality to the cars whenever the train was involved in a fatal accident. The latter approach seems overly conservative, while the former approach is the best assumption that could be made with the available data.

When including dedicated trains, DOE addressed this question by assuming "n" cars in a train (5 in this case), then using train accident, injury, and fatality rates. If "n" is 5, the number of fatalities for dedicated train service would be higher than commercial train transportation (70 rail cars) by a factor of 13.

**19.08 (13)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-012 | 14 | Kathleen E. Trever | State of Idaho Oversight Program |

**Comment:**
"Page E-58 to E-68 (Section E.7) Three assumptions that are probably conservative were made in the assessment of rail transportation impacts that make it difficult to meaningfully compare them with truck transportation impacts. First (page E-60), the same per-train accident rate is assumed for 3-car dedicated trains as for 70-car trains, resulting in relatively large estimated numbers of accidents and accident-related fatalities for shipment by dedicated train. The difficulty of coming up with a better estimate is acknowledged by the INEEL OP, and, as noted, the estimates should perhaps be emphasized. Second (page E-62), 'the aggregate radiological impacts for rail transportation were assumed to be the same as those reported for truck...' This assumption may be overly conservative, because the probability of rail accidents (per shipment-kilometer) is likely less than that of truck accidents, and because average population density near rail lines may be lower than near highways. Third, the breach of two containers is modeled for the worst-case train accidents, while the breach of one container is modeled for the worst-case truck accidents."

**Response:**
DOE compared the impacts of using dedicated or commercial rail for the transportation of TRU waste. Commercial rail is defined as adding rail cars containing TRU waste to an existing train hauling materials other than TRU waste. For its analysis, DOE assumed that three rail cars would be added. Those cars would be transferred as necessary for the waste to reach Carlsbad, New Mexico, and the WIPP site. DOE assumed that there would be an average of 70 rail cars on a commercial train. Dedicated rail is defined as adding a train to the system consisting of three rail cars containing TRU waste, one engine, and one caboose.

The difficulty in trying to compare the impacts of shipping TRU waste by dedicated rail or commercial rail is comparing accident and fatality rates. For the SEIS-II analysis, the factor of interest to DOE is the effect of adding rail cars to the system, whether by dedicated or commercial rail. However, accidents and fatalities are not apportioned by rail car; rather, they are assigned to the train involved in an accident. Therefore, when differences between dedicated and commercial rail are compared, dedicated rail could present more risk because adding a train to the system, as opposed to adding three rail cars to an already existing train, would likely result in more accidents and fatalities.

However, many factors could affect train accident rates, including human factors, mechanical failure, and track failures. To estimate impacts, DOE used the accident and fatality rate data for rail shipments found in a report titled: *Longitudinal Review of State-Level Accidents Statistics for Carriers of Interstate Freight*, by Chris Saricks and T. Kvitek. This document cites the use of Federal Rail Administration data for accidents and fatalities.

A concern about this data is that the rate numbers were obtained by dividing the train accident rate by the rail car kilometers. That approach is equivalent to stating that for each train accident, only one rail car is affected. However, some studies have found that a typical accident involves 7 to 10 rail cars. Since an average train in regular service contains about 70 rail cars, a more realistic and conservative accident rate would be obtained by multiplying the values in the referenced report by a factor of 10.

This report also presents data on the number of fatalities and injuries per rail car kilometer. The question then arises: because trains, not individual rail cars, affect such rates, how does one apportion fatalities to a rail car? After numerous discussions, DOE decided to divide the commercial train rates for fatalities and injuries by the average train length, about 70 cars. The rationale for this decision was as follows: as traffic on a railroad increased as a result of waste shipments, railroads would expedite service by adding one train for each 70 rail cars added to the route. The alternative would be to assume that there were “n” TRU waste cars in each train and assign the fatality to the cars whenever the train was involved in a fatal accident. The latter approach seems overly conservative, while the former approach is the best assumption that could be made with the available data.

When including dedicated trains, DOE addressed this question by assuming “n” cars in a train (5 in this case), then using train accident, injury, and fatality rates. If “n” is 5, the number of fatalities for dedicated train service would be higher than commercial train transportation (70 rail cars) by a factor of 13.

## 19.09 Routes to be Used

### 19.09 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-004 | 3 | George Voinovich | State of Ohio Office of the Governor |
| A-007 | 1 | Richard Allen | State of Illinois Department of Nuclear Safety |
| ALB2 | 80 | Don Kidd | |
| ALB3 | 13 | Bruce Trigg | New Mexico Public Health Association |
| ALB3 | 67 | Linda Sperling | |
| ALB4 | 83 | Wendy Cory | |
| ALB5 | 48 | Lilly Rendt | |
| C-022 | 3 | Pam Lytle | |
| C-111 | 5 | Scott W. Estep | |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-131 | 28a | Don Hancock | Southwest Research and Information Center |
| C-132 | 2 | Keith Tinno | Shoshone-Bannock Tribes |
| C-132 | 4 | Keith Tinno | Shoshone-Bannock Tribes |
| C-151 | 4 | Don Moniak | Serious Texans Against Nuclear Dumping |
| C-159 | 13 | Susan Maret | Sierra Club National Nuclear Waste Task Force |
| CA1 | 119 | Dan Funchess | |
| DE1 | 4 | Debra Ortega | |
| DE1 | 5 | Debra Ortega | |
| E-032 | 4 | Robert S. Light | New Mexico Representative (District 55) |
| SF2 | 29 | Shawn Sigsredt | |
| SF3 | 113 | Anhara Lovato | |
| SF4 | 87 | Bonita McCune | |

**Comment:**
Several commenters said they were concerned that WIPP trucks would deviate from designated shipping routes or would travel in highly populated areas, on poor roads, and in congested traffic. One commenter said that trucks should use bypass routes where they exist. Some questioned the adequacy of the proposed shipping routes, while others stated that all applicable local and state laws and regulations should be followed to minimize the impacts from a shipping campaign. Several commenters proposed alternatives to the current shipping routes. One commenter stated that the first leg of the route from ANL-E toward Chicago covers 32 kilometers (20 miles) of congested urban highways; he suggested that DOE Chicago Operations Office staff might be able to determine a more acceptable route. The commenter also said that SEIS-II incorrectly states a distance of 35 miles for the fourth leg of the route from ANL-E.

**Response:**
The routes presented and analyzed in SEIS-II are proposed routes based upon DOT regulations (49 CFR Part 397 Subpart D). These regulations require carriers to use the interstate highway system, to the extent possible and reasonable, as the preferred route for shipping hazardous material. Where no interstate highway exists, the shortest reasonable route must be used. States or other recognized routing authorities may also designate alternate routes in accordance with procedures stated in 49 CFR Part 397 Subpart D. DOE believes the use of the interstate highway system, where reasonable and practical, would result in lower transportation risks than the use of other highway routing options.

The incorrect mileage given for the fourth leg of the route from ANL-E was the result of a typographical error. The correct distance is 8 kilometers (5 miles). Section E.2.3 of SEIS-II has been modified to correct this error.

**19.09 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF4 | 139 | J. Gilbert Sanchez | |

**Comment:**
"There are DOE directives that tell you that you're supposed to inform your neighbors of the routes of your people, where you're transporting some of these materials, so that we will be prepared. We have never gotten those things."

**Response:**
DOE recognizes that a successful transportation program for TRU waste depends in large part on cooperation and coordination with state and local jurisdictions. DOE would cooperate with states and communities to ensure that waste is transported safely. The TRANSCOM system would provide information to states and tribes on the movement of TRU waste shipments along the transportation routes. In addition, TRANSCOM would provide advance shipment information, current bills of lading, shipment location, and emergency response information.

**19.09 (03)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-009 | 6 | Sally Rakow | California Energy Commission |
| ALB5 | 44 | Lilly Rendt | |
| CA1 | 47 | Jack White, Jr. | |
| DE1 | 118 | Walter Magill | |
| E-012 | 9 | Charles Hyder | |
| E-032 | 4 | Robert S. Light | New Mexico Representative (District 55) |
| E-056 | 40 | Linda Hibbs | |
| SF1 | 54 | Lois Goodman | |
| SF3 | 57 | Bill Gould | |

**Comment:**
Some commenters stated that DOE needs to improve the existing roadways and that the bypasses and improvements on roadways involving TRU waste shipments to WIPP will not be completed by November 1997.

**Response:**
DOE has made and continues to make a good faith effort to assist the State of New Mexico in obtaining special appropriation monies from Congress for New Mexico highway improvements. However, DOE has no authority over roads or highways, either intrastate or interstate. These responsibilities reside with the DOT, the Federal Highway Administration, and the states.

**19.09 (04)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-151 | 7 | Don Moniak | Serious Texans Against Nuclear Dumping |

**Comment:**
"A controversial issue associated with plutonium processing is the subsequent transport of transuranic waste. A critical issue of whether to site plutonium processing at Pantex is the addition of transuranic waste shipments, as well as treatment and storage, to existing Pantex operations. The omission of a Pantex to WIPP route in the current DSEIS provokes several questions. Does this route contain safety problems not found elsewhere? The weather in the Panhandle region is notorious for its extreme wind, ice storms, tornadoes, and major thunderstorms."

**Response:**
The potential future TRU waste generation from plutonium activities at Pantex is considered in the cumulative impacts section in Chapter 5 of SEIS-II. The waste included in SEIS-II for Pantex would be consolidated at LANL before being transported to WIPP. The TRU waste previously stored at Pantex has already been consolidated at LANL without incident.

**19.09 (05)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 97 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Page 3-9. Shipping Routes. It would be helpful to specify the DOT regulations to change routes including public hearing procedures."

**Response:**
SEIS-II has been modified to include a reference to DOT regulations for changing transportation routes. Specifically, 49 CFR Section 397.103 provides the requirements for state routing designation. 49 CFR Subpart E prescribes procedures by which highway routing can be modified.

**19.09 (06)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-010 | 7 | Elgan H. Usrey | State of Tennessee |
| C-156 | 1 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |
| C-156 | 2 | Ralph Hutchison | Oak Ridge Environmental Peace Alliance |

**Comment:**
A few commenters stated that the maps in the Draft SEIS-II contained incorrect routing information or lacked information concerning the routes going to and coming from ORNL, including the route for RH-TRU waste shipment from Battelle Columbus to ORNL.

**Response:**
The map shown in Figure E-1 was intended to provide an overview of the proposed routes. This map is supported by information provided in Section E.2.3, "Proposed Routes." In that section, the proposed route from ORNL is presented and indicates tying into Interstate 59 approximately 180 kilometers (110 miles) from ORNL.

Section 3.1 of SEIS-II describes the consolidation and treatment of RH-TRU waste from Battelle Columbus. Specifically, Figure 3-1 illustrates the consolidation of RH-TRU waste from Battelle at ORNL. Also, as stated in Sections 5.1.8.2 and 5.1.8.3, the impacts from consolidating TRU waste from the sites with smaller quantities were included in the impacts presented for the 10 major generator sites. Considering that under the Proposed Action the number of shipments from Battelle Columbus would be less than 5 percent of the total number of RH-TRU waste shipments, the impacts would be minor.

Consistent with the WM PEIS preferred alternative, the Final SEIS-II also analyzes the impacts of transporting RH-TRU waste at Battelle Columbus directly to WIPP, without consolidation at ORNL.

**19.09 (07)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| DE1 | 38 | Tim Holeman | |

**Comment:**
"The transportation program is adequate and complete, and this waste can move down these corridors. We would rather have it come through our community for 20 minutes than to sit at Rocky Flats for the next 100 years. We urge no further delay in the transportation program."

**Response:**
Thank you for your comment.

**19.09 (08)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-152 | 193 | Robert H. Neill | Environmental Evaluation Group |

**Comment:**
"Routes and Mileage. The proposed waste shipment routes to WIPP agrees with our understanding. The distance reported in Table E-5 for LANL to the WIPP site (549 km, with 512 km being rural, 34 suburban and 3 urban) agrees favorably with that used in EEG-46

(548 km, with 509 km rural and 39 km suburban). Distances from the other sites were not checked, but appear reasonable."

**Response:**
DOE thanks the commenter for his review.

**19.09 (09)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-138 | 3 | Jeff Moyers | RPM2 Building Services Ltd. |

**Comment:**
"One of the other glaring problems not addressed in the 'Draft Supplement' is the problem of outlawing the transportation of wastes by states. What is DOE's solution to waste disposal if all the states around WIPP and other similar facilities outlaw transportation of these wastes into their states?"

**Response:**
Although there would be legal issues with any attempt by a state to ban shipments of DOE's TRU waste, DOE recognizes that a successful transportation program for TRU waste would depend in large part on cooperation with state and local jurisdictions. DOE would cooperate with states and communities to ensure that waste was transported safely.

## 19.10 Santa Fe Bypass

**19.10 (01)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 92 | Karen Navarro | |
| C-018 | 1 | Mark Cummings | |
| C-027 | 1 | Jill Young | |
| C-034 | 1 | Linda Seese | |
| C-040 | 1 | Christine Ortiz | |
| C-139 | 2 | Judy Herzl | |
| C-141 | 28 | Margret Carde | Concerned Citizens for Nuclear Safety |
| C-141 | 29 | Margret Carde | Concerned Citizens for Nuclear Safety |
| C-141 | 30 | Margret Carde | Concerned Citizens for Nuclear Safety |
| DE1 | 65 | Margret Carde | Concerned Citizens for Nuclear Safety |
| SF1 | 49 | Margret Carde | Concerned Citizens for Nuclear Safety |
| SF1 | 53 | Lois Goodman | |
| SF1 | 56 | Lois Goodman | |
| SF1 | 90 | Chris Moore | |
| SF2 | 4 | John Dendahl | |
| SF2 | 24 | Jimmy Joe Gonzalez | |
| SF2 | 38 | Marion Seymour | |
| SF2 | 48 | Elliott Skinner | |
| SF3 | 83 | Sasha Pyle | Religious Society of Friends |

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF4 | 33 | Bonita McCune | |
| SF4 | 112 | Jennifer Salisbury | New Mexico Radioactive Waste Consultation Task Force |
| SF5 | 55 | Amy Mohr | |
| SF5 | 74 | Michael Collins | |
| SF6 | 10 | Erica Elliott | |
| SF6 | 21 | Susannah Harrison | |
| SF6 | 28 | Amy Stix | |
| SF6 | 42 | Ian Duncan | |
| SF7 | 5 | Carole Tashel | |
| SF7 | 57 | Peli Lee | |

**Comment:**
A number of commenters said they were concerned about the impacts of accidents and incident-free exposures as they pertain to human health and environmental safety if TRU waste shipments traveled through Santa Fe down St. Francis Drive or along the Pojoaque corridor. Several of the commenters cited the amount of traffic and frequent accidents along St. Francis Drive, especially during rush hour. A few stated that shipments must not proceed from LANL to WIPP until the Santa Fe bypass is completed. Another said that the bypass should be operational by now but that lack of funding and delays in implementation have held construction up. One commenter stated that, in terms of risk, he would rather have a convoy of WIPP trucks travel past his house 24 hours a day as opposed to a gasoline tanker once a month.

**Response:**
In SEIS-II, transportation accidents were evaluated by population density (rural, suburban, and urban routes) and by state. The accident estimates were derived from accident statistics involving heavy combination trucks representative of the type of trucks that would be used to transport TRU waste to WIPP. Traffic dangers perceived by the public are taken into account, including accidents along the Pojoaque corridor or risks posed by New Mexico roads, drivers, and weather.

The only TRU waste shipments that would travel through Santa Fe, New Mexico, would be those to or from LANL. The Santa Fe bypass is not yet complete; if TRU waste were shipped prior to completion of the bypass, St. Francis Drive would be used to reach Interstate 25, as required by DOT regulations (see Appendix E for additional details). The route through Santa Fe and the other routes presented and analyzed in SEIS-II are proposed routes based upon DOT regulations (49 CFR Section 177.825). The regulations require carriers to use the interstate highway system, to the extent possible and reasonable, as the preferred route for shipping hazardous material. Where no interstate highway exists, the shortest reasonable route must be used. States or other recognized routing authorities also may designate alternate routes in accordance with procedures stated in 49 CFR Section 177.825. During routine or incident-free transportation, workers and the public would be exposed to very low doses of radiation.

Finally, DOE has made and continues to make a good faith effort to assist the State of New Mexico in obtaining special appropriation monies from the U.S. Congress for New Mexico highway improvements. However, DOE has no authority over roads or highways. These responsibilities reside with the DOT, the Federal Highway Administration, and the concerned states.

**19.10 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| C-125 | 15 | Barbara H. Johnson | The Rio Grande Chapter of the Sierra Club |
| DE1 | 66 | Margret Carde | Concerned Citizens for Nuclear Safety |
| E-046 | 1 | Debbie Jaramillo | Mayor, City of Santa Fe |
| SF1 | 91 | Chris Moore | |
| SF3 | 35 | Jai Lakshman | SEVA Foundation |

**Comment:**
A few commenters stated that the transportation analysis in SEIS-II did not specifically analyze the impacts of TRU waste shipments along St. Francis Drive in Santa Fe. One of the commenters stated that SEIS-II should analyze the use of the bypass for shipments from LANL to WIPP.

**Response:**
The Final SEIS-II did analyze the impacts of TRU waste transportation along St. Francis Drive and the impacts along the proposed Santa Fe bypass. The results of these analyses are presented in a text box in Chapter 5.

## 19.11 Security

**19.11 (01)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-009 | 12 | Sally Rakow | California Energy Commission |
| C-131 | 48 | Don Hancock | Southwest Research and Information Center |
| CA1 | 79 | John Heaton | |
| CA1 | 94 | Bob Murray | |
| CA1 | 115 | Carroll Leavell | |
| CA1 | 121 | Dan Funchess | |
| SF6 | 55 | Anna Hansen | |

**Comment:**
Commenters stated that a satellite tracking system for security purposes would monitor the TRU waste shipments. Other commenters asked what arrangement has DOE made, or intends to make, to deal with a failure in the tracking system, whether it ceases to function due to technical, satellite, or other problems.

**Response:**
The TRANSCOM satellite tracking system would continuously monitor the position and status of shipments en route to WIPP. Currently, the states of Colorado, Georgia, Idaho, New Mexico, South Carolina, Utah, and Wyoming, as well as DOE Operations Offices, DOE

Emergency Operations Centers, DOE Headquarters, WIPP, NRC, and DOT have authorized access to TRANSCOM. If WIPP shipments began, all transportation corridor states would have access to TRANSCOM. The TRANSCOM software package would provide the user with nationwide, state, and local maps on which the TRU waste shipments can be tracked.

TRANSCOM would provide the states with up to seven days' advance notification of a shipment. In the unlikely event that the system is not operational for an extended time, a state official would be contacted by telephone and advised of the planned shipment. Additionally, each truck would be equipped with a mobile phone as a backup communication system. Should there be operational problems with the TRANSCOM system, drivers would call into the Central Coordination Center every two hours and at state line crossings.

**19.11 (02)**

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| A-008 | 7 | Tom Udall | Attorney General of New Mexico |
| ALB3 | 113 | Peter Kalberer | |
| ALB4 | 114 | Janet Greenwald | |
| ALB4 | 115 | Janet Greenwald | |
| ALB4 | 116 | Janet Greenwald | |
| ALB4 | 117 | Janet Greenwald | |
| ALB6 | 44 | Joan Robins | |
| ALB6 | 95 | Debra Tenney | |
| ALB6 | 126 | Alan Moskowitz | |
| C-060 | 3 | Jeff Moyers | RPM2 Building Services Ltd. |
| C-131 | 31 | Don Hancock | Southwest Research and Information Center |
| C-167 | 7 | Robert H. Neill | Environmental Evaluation Group |
| DE1 | 43 | Kay Mack | |
| DE1 | 119 | Walter Magill | |
| SF2 | 47 | Elliott Skinner | |
| SF2 | 58 | Mary Barr | |
| SF3 | 6 | Cathy Swedlund | |
| SF5 | 28 | Susan Curtis | |
| SF5 | 81 | Michael Collins | |
| SF7 | 111 | Jill Cliburn | |
| SF7 | 122 | Lee Lysne | |
| SF8 | 29 | Ruth Sougstad | |

**Comment:**
Many commenters stated that TRU waste shipments could be targets for terrorist activities.

**Response:**
The mass and integrity of the TRUPACT-II and proposed RH-72B packages, combined with the relatively small quantities of radioactive material per TRU waste shipment, would make these shipments poor targets for terrorism. An analysis in the 1980 FEIS pointed out the difficulty of scattering enough waste material to create a major health hazard. The analysis concluded that more damage would result from any explosives used to breach the waste packaging than from any radioactive materials released.

However, several measures would be employed to minimize the threat of terrorism during shipping campaigns. The TRANSCOM satellite tracking system would continuously monitor the position and status of shipments to WIPP. Each vehicle would be equipped with mobile phone communications; the drivers would be required to maintain visual contact with the shipment at all times, even during rest stops. The drivers would also be required to frequently stop and inspect the vehicle.

DOE does not believe a new analysis to address this issue is necessary; however, Section E.4.2 of SEIS-II has been revised to include a text box on protecting TRU waste shipments from sabotage or terrorist activities.

## 19.12 Uncertainties

### 19.12 (01)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| ALB3 | 125 | David Mitchell | |

**Comment:**
“You have a very artificially contrived sort of probabilities in the transportation section that assume everything is going to go perfectly all right or assume that there isn't going to be a barrel that overheats or blows up in the TRUPACT, or gas generation is going to exceed the limits, or whatever.”

**Response:**
The transportation accident probabilities are based on an NRC report on the response of shipping containers to severe highway and railway accidents (Fischer, L.E., et al., 1987, *Shipping Container Response to Severe Highway and Railway Accident Conditions: Volumes 1 and 2*, NUREG/CR-4829, Lawrence Livermore National Laboratory, Livermore, California). The report is based on data from real accident histories and uses representative truck and rail shipping cask models that meet 10 CFR Part 71. The report indicates that most accidents would fall within the 10 CFR Part 71 hypothetical accident conditions.

### 19.12 (02)

| *Document Number* | *Comment Number* | *Name* | *Organization* |
|---|---|---|---|
| SF2 | 28 | Shawn Sigsredt | |

**Comment:**
“In the best laid plans, so many times where we go wrong is not in our extremely accurate and scientific calculations and plans; where we go wrong is in the uncertainties. It's where we think we know what's going to happen, and then the uncertain happens. So I'm very concerned about these materials coming from all over the country, into the United States, in through New Mexico, and down south, because we greatly increase the risk of contamination and danger to the local population.”

**Response:**
DOE believes that the analysis of transportation impacts in SEIS-II is conservative and therefore considers the effect that uncertainties in the analysis would have on the results. It was DOE's intent to demonstrate to the reader the potential range of impacts. In Section 5.1.8 of the Draft SEIS-II, the uncertainties in the transportation impact analyses were discussed. These uncertainties are presented to provide an understanding of a need for conservatism in the analyses. Further discussion has been added to SEIS-II to explain the conservatism.

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# INDEX TO COMMENTS

# H

| Name | Document Number | Group Number |
|---|---|---|
| Marshall, Tom | BO1 | 01.03 (02), 01.05 (02), 02.04 (02), 02.05 (01), 03.01 (01), 05.03 (01), 09.03 (01), 10.05 (01), 11.01 (01), 13.01 (02), 13.07 (01), 13.08 (02), 14.01 (06), 15.01 (12), 19.03 (01), 19.04 (13), 19.06 (01), 19.06 (02), 19.08 (01) |
| | C-154 | 01.05 (01), 05.03 (01), 09.03 (01), 11.03 (02), 13.01 (02), 13.07 (01), 13.08 (01), 13.08 (03), 14.01 (01), 14.01 (06), 17.01 (10), 18.02 (03), 19.03 (03), 19.06 (02), 19.07 (13), 19.08 (01) |
| | DE1 | 01.05 (02), 02.05 (01), 03.01 (01), 05.03 (01), 11.01 (01), 11.03 (02), 14.01 (01), 19.03 (01), 19.04 (01), 19.04 (13), 19.06 (02), 19.07 (13), 19.08 (01) |
| Martin, Craig | C-016 | 05.02 (01) |
| Martin, Fay M. | C-084 | 05.02 (01) |
| Massey, Steve | E-038 | 05.02 (01) |
| | SF4 | 05.02 (01) |
| Matthews, James | C-010 | 05.02 (01) |
| Mattis, Marvin | SF7 | 13.01 (01), 03.01 (05), 13.08 (01) |
| Mattis, Naomi | SF7 | 05.03 (01), 18.01 (03) |
| Maughan, Ralph W. | C-066 | 05.02 (01) |
| Mazeaud, Dominique | SF7 | 01.03 (01), 01.03 (04), 05.03 (01), 13.01 (01), 14.01 (02), 19.04 (01) |
| McCall, John | ALB5 | 01.05 (01), 05.03 (01), 10.01 (05), 11.03 (05), 11.04 (05), 18.01 (02), 19.04 (01) |
| McCausland, Claude | CA1 | 05.02 (01 |
| McCorkle, Wally | V1 | 05.02 (01), 11.01 (18), 11.03 (30), 11.04 (01), 18.01 (17) |
| McCune, Bonita | SF4 | 02.02 (01), 02.05 (01), 02.06 (10), 02.07 (01), 08.01 (10), 09.03 (01), 11.02 (01), 11.03 (02), 12.01 (07), 13.01 (01), 13.01 (02), 13.01 (22), 13.06 (02), 13.07 (01), 13.08 (02), 13.08 (03), 13.10 (03), 16.05 (01), 16.05 (02), 16.05 (04), 17.01 (02), 18.02 (03), 19.03 (01), 19.04 (01), 19.04 (11), 19.06 (14), 19.07 (16), 19.08 (01), 19.09 (01), 19.10 (01) |
| McDonald, Melissa | SF7 | 03.01 (01), 05.03 (01), 06.01 (02), 19.03 (01) |
| McEnaney, Robert | BO1 | 13.01 (10), 13.07 (01) |
| | C-121 | 05.03 (01), 13.01 (01), 14.01 (01), 19.04 (01), 19.04 (21) |
| McGrath, Jamal | ALB2 | 13.07 (01), 13.07 (02), 17.01 (09), 18.01 (02), 19.04 (01) |
| McMullen, Penelope | SF7 | 01.03 (04), 03.01 (01), 05.03 (01), 13.04 (01), 13.11 (02), 14.01 (02), 14.01 (11), 19.03 (01), 19.04 (01) |
| Means, Dick | CA1 | 05.02 (01), 08.01 (03), 19.04 (03) |
| Measom, David | DE1 | 01.03 (01), 01.03 (04), 01.05 (01), 13.01 (02), 13.08 (02), 14.01 (02) |
| Mento, Jack | DE1 | 05.03 (01), 14.01 (02) |
| Merrill, Carol | C-123 | 01.05 (01), 05.03 (01), 13.01 (02), 13.10 (02) |
| Mesite, James F. | C-025 | 05.02 (01), 10.05 (01) |
| Messick, Jerry | ALB4 | 03.01 (01), 18.01 (03), 19.03 (01) |
| | E-015 | 03.01 (11), 10.02 (01), 19.03 (01), 19.03 (06) |
| Metcalf, Tom | ALB6 | 02.02 (01), 03.01 (01), 03.01 (02), 10.02 (01), 13.04 (01), 13.07 (01), 14.01 (02), 19.03 (01), 19.03 (04), 19.06 (02) |
| Michelle, Victoria | ALB6 | 05.03 (01), 11.03 (03), 17.01 (09), 19.04 (01), 19.04 (09), 19.06 (02) |
| Middleton, Dana | C-109 | 05.03 (01) |
| Miller, Basia | SF1 | 05.03 (01) |

# O



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# U



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