Department of Energy

Idaho Operations Office
850 Energy Drive
Idaho Falls, Idaho 83401-1563

November 2002

SUBJECT: Conclusions of the Supplement Analysis of the DOE Programmatic Spent Nuclear Fuel Management and INEL Environmental Restoration and Waste Management Programs EIS (1995 EIS)

Dear Citizen:

The Record of Decision (ROD) for the DOE Programmatic Spent Nuclear Fuel Management and INEL Environmental Restoration and Waste Management Programs EIS (1995 EIS) left several decisions concerning INEEL proposed actions outstanding. That is, decisions were deferred "pending further project definition, funding priorities, or appropriate review under NEPA." In May 2000 a team of DOE-ID program representatives and subject area technical specialists (interdisciplinary team) as well as ANL-W and NR/IBO representatives was appointed to review whether decisions not made in the ROD were still planned, and whether these decisions could be made based on the analysis in the 1995 EIS.

To determine if these actions could be implemented based on the 1995 EIS, the team conducted a review in the form of a supplement analysis as provided by 10 CFR 1021.314(c). Also, in conjunction with conducting the supplement analysis of the 1995 EIS, the interdisciplinary team reviewed all DOE NEPA documentation complex wide to assess what INEEL actions and operations had been reviewed and what decisions had been made.

Based on the analysis that was performed, the interdisciplinary team's primary findings are as follows:

1. The 1995 EIS adequately informs DOE decision makers and the public of the environmental impacts and risks of actions within its scope. Actions and issues within its scope include those related to INEEL environmental restoration, waste management and spent nuclear fuel management. Subsequent environmental monitoring, such as that reported in INEEL Site Environmental Reports, provides supporting documentation for this finding.

2. The conclusion of the 1995 EIS regarding groundwater impacts is that no contamination will leave the INEEL in excess of federal standards. This conclusion was determined to still be valid based on the additional analysis performed. In addition to the analysis, ground water monitoring data continues to show a downward trend in measurable contamination.

The 1995 EIS stated that additional ground water analysis was needed. Since then, three major pieces of analysis have been completed (RWMC Composite Analysis, the Updated RWMC Performance Assessment, and the Waste Area Group 3 Remedial Investigation/Feasibility Study). Currently, a Performance Assessment and Composite Analysis for the High Level Waste Tanks at the INTEC and the Idaho High Level Waste and Facility Disposition Environmental Impact Statement ground water analysis are being completed. These analyses will address most of the outstanding source term for the INEEL.

The 1995 EIS may not provide sufficient information on residual groundwater contamination to support D&D decisions that would leave significant amounts of radioactive contamination in the ground. This finding does not bring the adequacy of the 1995 EIS into question for decisions made in the ROD but means the impacts of onsite disposal or entombment of radioactively contaminated facilities (such as ETR and MTR) would at present be uncertain. That is, the alternative used to D&D these facilities may affect the allowable accumulated risk to groundwater at other sites and thereby limit ultimate cleanup options and increase cleanup costs at those sites. The D&D of these facilities may require additional NEPA analysis that addresses cumulative impacts of site-wide groundwater contamination from these decisions.

3. An EA or an EIS for any future action on the INEEL, that has the potential to contaminate groundwater, should include cumulative impacts on site-wide groundwater contamination from these decisions. This will ensure that these future projects will continue to protect groundwater resources consistent with federal, state, and local requirements.

4. An EA or an EIS for any future action on the INEEL that may be located in a floodplain should include the findings of a floodplain determination.

5. There is nothing lacking within the scope of the 1995 EIS that would compel preparation of a supplemental EIS.

The program and technical subject area reviews supporting these findings are compiled in the "Supplement Analysis of the 1995 EIS" (see attachment) that reviews the actions identified above.

If you have any questions concerning this document, please contact Jeff Perry at (208) 526-4570 or our NEPA Compliance Officer, Roger Twitchell at (208) 526-0776.

Warren E. Bergholz, Jr.
Acting Manager

Attachment

DOE/ID-11022

SUPPLEMENT ANALYSIS

of the

INEEL Portion of the April 1995 Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement

September 2002

United States Department of Energy
Idaho Operations Office

Table Of Contents

APPENDICEES

Acronym List

1995 EIS	Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement
AMWTP	Advanced Mixed Waste Treatment Project
AMWTP EIS	Advanced Mixed Waste Treatment Project EIS
ANL-W	Argonne National Laboratory – West
ATR	Advanced Test Reactor
CA	Composite Analysis
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFA	Central Facilities Area
CFR	Code of Federal Regulations
CH-TRU	Contact-handled transuranic waste
CPP	Chemical Processing Plant (ICPP)
CX	Categorical exclusion
D&D	Decontamination and Decommissioning
DOE	Department of Energy
DOE-CH	Department of Energy, Chicago Operations Office
DOE-HQ	Department of Energy, Headquarters
DOE-ID	Department of Energy, Idaho Operations Office
EA	Environmental Assessment
EBR-II	Experimental Breeder Reactor II
EC	Environmental Checklist
EH	Environmental Safety and Health (DOE-HQ Program)
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ER	Environmental Restoration
FEIS	Final Environmental Impact Statement
FFA/CO	Federal Facility Agreement/Consent Order
FFCA	Federal Facilities Compliance Act
FONSI	Finding of no significant impact (DOE environmental assessment)
HLW	High Level Waste
HLW & FD EIS	High-Level Waste and Facilities Disposition EIS
ICDF	INEEL CERCLA Disposal Facility
ICPP	Idaho Chemical Processing Plant (name changed to INTEC)
INEL	Idaho National Engineering Laboratory (name changed to INEEL)
INEEL	Idaho National Engineering and Environmental Laboratory
INFRA	Infrastructure
INTEC	Idaho Nuclear Technology and Engineering Center
IRC	INEEL Research Center
ISFSI	Independent Spent Fuel Storage Installation
LCF	Latent Cancer Fatality
LDR	Land disposal restriction
LLW	Low-level waste
LOFT	Loss Of Fluid Test
MLLW	Mixed low-level waste
MTHM	Metric Tons of Heavy Metal
NEPA	National Environmental Policy Act
NI PEIS	(Nuclear Infrastructure PEIS) Final Programmatic Environmental Impact Statement for Accomplishing Expanded Civilian Nuclear Energy Research and

	Development and Isotope Production Missions in the United States including the Role of the Fast Flux Test Facility
NRC	Nuclear Regulatory Commission
NRF	Naval Reactors Facility
PA	Performance Assessment
PCB	Polychlorinated biphenyl
PEIS	Programmatic Environmental Impact Statement
RCRA	Resource Conservation and Recovery Act
RESL	Radiological and Environmental Sciences Laboratory
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RWMC	Radioactive Waste Management Complex
SA	Supplement Analysis
S-B SNF EIS	Treatment and Management of Sodium-Bonded Spend Nuclear Fuel EIS
SBW	Sodium bearing waste
SNF	Spent Nuclear Fuel
TAN	Test Area North
TMI	Three Mile Island
TRA	Test Reactor Area
TRU	Transuranic
TSCA	Toxic Substances Control Act
USGS	United States Geological Survey
WERF	Waste Experimental Reduction Facility
WIPP	Waste Isolation Pilot Plant (DOE facility in New Mexico)
WM	Waste Management
WROC	Waste Reduction Operations Center

1.0 EXECUTIVE SUMMARY

In April 1995, the Department of Energy (DOE) and the Department of the Navy, as a cooperating agency, issued the Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement. Volume 1 of this document analyzed alternatives for the management of existing and reasonably foreseeable inventories of the Department's spent nuclear fuel through the year 2035. Volume 2 included a detailed analysis of environmental restoration and waste management activities at the Idaho National Engineering and Environmental Laboratory (INEEL). It also looked at long term impacts of spent fuel management on the INEEL. This analysis supported facility-specific decisions regarding new, continued, or discontinued environmental restoration and waste management operations through the year 2005. The term "1995 EIS" throughout this analysis will refer to only Volume 2 of this document.

DOE NEPA implementing procedures (10 CFR Part 1021.330(d)) require that a Supplement Analysis of a site-wide EIS be completed every five years to determine whether the site-wide EIS remains adequate. While the 1995 EIS was not a true site-wide EIS in that several programs were not included, most notably reactor operations, this method was used to evaluate the adequacy of the 1995 EIS. The decision to perform a Supplement Analysis was supported by the multi-program aspect of the 1995 EIS in conjunction with the spirit of the requirement for periodic review.

This Supplement Analysis used four primary methods for determining whether the 1995 EIS remains adequate. 1) Review of all NEPA documentation prepared in the last five years to determine what operations have already received NEPA analysis and where previously existing analysis had been supplemented. 2) Examination of INEEL operations program by program to determine what changes had taken place and whether they were within the analyzed scope of the 1995 EIS. 3) Review of changes, if any, in each environmental discipline that was analyzed in the 1995 EIS

The results of this analysis are as follows:

Program Change Analysis

The majority of the programs and projects addressed in the 1995 EIS have NEPA documentation. A number of facilities and operations rely on NEPA documentation in addition to the 1995 EIS to provide an adequate representation of the environmental impacts of these actions. The only area for further analysis identified for projects in the 1995 EIS is in the D&D program. As stated in the Record of Decision (ROD) for the 1995 EIS, additional analysis will be required before making decisions for the D&D of these facilities.

The Supplement Analysis did not evaluate the adequacy of NEPA documentation for any of the national programs that are managed through DOE-ID or for the Grand Junction Field Office.

Alternatives Analysis

While the 1995 EIS used a cutoff date of 2005 for the analysis, this review has determined that the 1995 EIS provides a bounding analysis for projects beyond 2005. This issue should be reexamined when the next Supplement Analysis is conducted to ensure the continued validity of this determination. Any changes in programmatic actions will require additional analysis to determine whether the proposed changes are within or outside of the scope of the 1995 EIS.

Environmental Discipline Change Analysis

The change analysis evaluates DOE decisions announced in the ROD. The results of the environmental discipline change analysis indicate that the following additional analyses needs to be completed: Air Resources analysis impact zone should be extended from 50 km in the 1995 EIS to 200 km for some sectors to address stakeholder concerns, the Big Lost River flood plain determination for the INEEL must be finalized, and the Wildfire Environmental Assessment must be completed. From a regulatory perspective a site-wide composite analysis in accordance with DOE O 435.1 is required to be completed. While additional analysis is being recommended, the 1995 EIS was determined to be adequate to support all decisions made in the ROD.

The following summarizes the findings from the Environmental Discipline Change Analysis.

Adverse Environmental Effects Which Cannot Be Avoided

In general, adverse environmental effects that cannot be avoided are less than projected in the1995 EIS. However, additional analysis is still required for both cultural resources and ecology to understand these impacts through completion of the Wildland Fire EA.

Aesthetic and Scenic Resources

Existing analysis is adequate because there are no air quality or visibility issues that are changing the character of the landscape.

Air Resources

Summary of Table 8-1.3.2 and Table 8-1.10.2 Onsite Emissions Impacts of Toxic Air Pollutants

	Amount Analyzed[a] (kg per year)	Total INEEL Emissions (kg per year)	Revised Concentrations ($\mu g/m^3$)	Percentage of Standard	Standard[b] ($\mu g/m^3$)
Beryllium	0.18	0.59	9.2E-04	< 1	$2x10^0$ $\mu g/m^3$
Carbon tetrachloride	268	2,468	2.3E+03	18	$1.3x10^4$ $\mu g/m^3$
Chloroform	11.5	51.68	4.9E+01	< 1	$9.8x10^3$ $\mu g/m^3$
Hydrochloric acid	17500	21,950	1.8E+02	3	$7x10^3$ $\mu g/m^3$

a. This is the amount analyzed in the 1995 EIS for alternative B.
b. Limits are 8-hour time-weighted averages established by either the American Conference of Government Industrial Hygienists or the Occupational Safety and Health Adminstration; the lower of the two is used.

While actual emissions of these pollutants were shown to have exceeded the analyzed amount in the 1995 EIS, health and safety impacts of this level of emissions were shown to be negligible. None of these emissions exceeded occupational exposure limits. Total INEEL emissions are within regulatory requirements. However, no analysis of air impacts has been completed beyond 50 km, it is recommended that analysis be completed for some sectors to 200 km based on stakeholder requests and National Park Service requirements.

Cultural Resources

Existing analysis is adequate as long as the INEEL Cultural Resources Management Plan is implemented and assuming completion of the Wildland Fire EA.

Cumulative Impacts and Impacts from Connected or Similar Actions

Cumulative Impact analysis is adequate except for flooding which may need to be updated using data based on a final flood plain determination.

Ecology

Existing analysis is adequate assuming completion of the Wildland Fire EA and no additional impacts to ecological resources from habitat loss.

Environmental Justice

Existing analysis is adequate because there has been no significant spatial redistribution of minority and low-income population within the region of influence.

Facility Accidents

The existing analysis is technically adequate. However, using available documents it is difficult to compare results of different analyses. There is a new bounding accident for the INEEL that is presented in the HLW & FD EIS.

Impacts to the maximally exposed individual of bounding accidents on the INEEL.

	1995 EIS	HLW & FD EIS	LCF
Hot Fuel Examination Facility fuel handling accident	5.0 rem		1
Seismically induced failure of degraded bin sets after 2095		83 rem	270
Failure of ammonia tank connections		Greater than ERPG-2 at 3,600 m	

Geology

Existing analysis is adequate to support facility design and safety. The general geology supports DOE flood hazard requirements.

Health and Safety

Health effects of increased air pollutants were shown to be negligible. Health effects from ground water analysis are shown to still be negligible.

Summary of Table 8-1.10.5 "Offsite Emissions Impacts of Toxic Air Pollutants" for constituents that exceeded previously analyzed emission levels.

Air Pollutant[a]	**1995 EIS Concentrations (ng/m^3)**		**Revised Concentrations (ng/m^3)**		**Standard (ng/m^3)**[b]	**Impact as percent of standard**	
	Site Boundary	**Public Roads**	**Site Boundary**	**Public Roads**		**Site Boundary**	**Public Roads**
Beryllium	4.0E-04	1.0E-03	1.3E-03	3.3E-03	4.2E+00	<1	<1
Carbon tetrachloride	2.4E+00	2.2E+00	2.2E+01	2.0E+01	6.7E+01	33	30
Chloroform	8.9E-02	8.3E-02	2.6E-01	2.4E-01	4.3E+01	<1	<1
Hydrochloric acid[c]				1.7E-02 mg/m^3	3.8E-01[d] mg/m^3		4.5

a The four air pollutants shown were the only pollutants that exceeded the estimated air emissions in the 1995 EIS. The other pollutant emissions were within the previously anlayzed impacts. A complete list of pollutants and emissions is given in App. 8-1 section 10.

b As in the 1995 EIS, these are the Acceptable ambient concentration increments (AAC) listed in State of Idaho Rules for the Control of Air Pollution in Idaho. These standards apply to incremental (not cumulative) impacts of facilities constructed or modified after May 1, 1994.

c. The ratio was not used for this pollutant. The revised concentrations were obtained from "Operable Unit 7-08 Air Dispersion Modeling and Health Effects from Thermal and Catalytic Oxidation Unit Emissions at the Radioactive Waste Management Complex", EDF-1901, June 25, 2001. Only the portion of the HCl emissions that is greater than in the 1995 EIS are reflected here. Since the locations of the two sources are different, there is not a concern with cumulative effects between the two sources.

d. Acceptable Ambient Concentration (AAC) for hydrochloric acid (24-hour average) (IDAPA 58.01.01)

Summary of Table 8-1.10.4 Radioactive Dose to the Public

Years	Actual Dose to Maximally Exposed Individual (mrem)	1995 EIS Estimated Dose to Maximally Exposed Individual (mrem)[e]	Actual Maximum Potential Population Dose (person-rem)	1995 EIS Estimated Maximum Potential Population Dose (person-rem)[f]
1995[a]	0.018	0.63	0.08	2.9
1996[b]	0.03	0.63	0.2	2.9
1997[c]	0.03	0.63	0.2	2.9
1998[d]	0.007	0.63	0.08	2.9

INEEL Services

Existing analysis is adequate based on the reported resource usage summary.

Summary of Table 8-1.11.1 Usage of Resources

1995 EIS Annual Usage	**Most Recent Data**
Water usage – - INEEL site: 1.78 billion gal - I.F. Facilities: 79 million gal	Water Usage 2000 - INEEL site: 1.2 billion gallons I.F. Facilities: 71 million gallons

Electricity usage - INEEL site: 303,521 megawatt hrs I.F. Facilities: 31,500 megawatt hrs	Electricity usage 2000 - INEEL site: 156,639 megawatt hrs I.F. Facilities: 27,683 megawatt hrs
Fuel consumption - Heating Oil usage 4.25M gal; Diesel Fuel usage 1.8M gal; Propane gas use 863,000 gal; Gasoline usage 557,000 gal; Jet Fuel usage 73,100 gal; Kerosene usage 33,800 gal; Coal usage - 9000 tons (Natural gas and LNG/CNG was not addressed in the 1995 EIS)	Calendar Year 2000 Actuals Heating Oil use 2.3 M gal Diesel Fuel use 652,800 gal Propane usage 63,121 gal Gasoline usage 381,347 gal Jet Fuel usage 0 gal * Kerosene usage 45,006 gal Coal usage 0 tons LNG/CNG usage 4.6Mbtu Natural Gas usage 16,816 Mcf
Wastewater treatment and discharge systems. Average annual wastewater disposal INEEL site: 144 million gal I.F. facilities: 79 million gal	Wastewater disposal 2000 - INEEL site: 1.16 billion gal** I.F. facilities: 70 million gal

* This change is a result of discontinuing helicopter service on the INEEL.
** The table used in the 1995 EIS for the actual waste water disposal data for the INEEL site for 1995 (142 million gallons) appears to be in error. Based on 1996 data, (1.18 billion gallon disposed), an overall decrease in wastewater disposal is evident over the period of analysis. This water disposal is in accordance with regulatory requirements and no adverse environmental impacts have been observed as a result of this disposal.

Irreversible and Irretrievable Commitments of Resources

Existing analysis is adequate because irreversible and irretrievable commitments of resources have in general been less than projected in the1995 EIS.

Land Use

Existing analysis is adequate because the changes in land use have received appropriate analysis.

Acres of undisturbed land projected to be disturbed: 537 acres (217 hectares)
Approximate acres of undisturbed land actually disturbed including acreage to be disturbed that was identified in a decision document but not yet implemented:

INTEC Percolation Ponds	= 20
ICDF	= 40
SSST	= 20
Expanded Landfill	= 225
CFA Medical and Fire Station	= 7
Gravel Pits Total	= 85
*Silt/Clay Sources	= 290
TRA Sewage Lagoons	= 18
Total	= 705

*An Environmental Assessment for New Silt/Clay Source Development and Use at the INEEL was completed and identified 290 additional acres needed for Silt/Clay extraction.

Mitigation

Existing analysis is adequate. None of the proposed mitigation measures described in the 1995 EIS were required to be implemented.

Noise

Existing analysis is adequate because the number of primary noise sources (cars/buses) has decreased.

Regulatory Requirements

Existing analysis is adequate. Regulatory changes are more restrictive than in 1995

Relationship Between Short Term Use of the Environment and the Maintenance and Enhancement of Long Term Productivity

Existing analysis is adequate because projects implement from the 1995 EIS have had short term environmpental impacts that have been offset by long term enhancement of environmental productivity.

Socioeconomics

Existing analysis is adequate because site service and employment levels are at or below the analysis conducted in the 1995 EIS.

Table 8-1.18.2 Projected Employment

	1995 Actuals	2000 (projected in 1995 EIS)	2000 (Actuals based on "INEEL Impacts 2000")
Direct Employment	8,620	8,316	8,155

Traffic and Transportation

Existing analysis is adequate because the total number of shipments to the INEEL is over 5 times less than was analyzed in the 1995 EIS.

Total radioactive shipments estimated in the 1995 EIS (10 years)	17, 145
Total actual radioactive shipments through FY 2000 (5 years)	1,255

Water Resources

Ground Water

The 1995 EIS ground water analyses was adequate to support all decisions made in the ROD. As new information becomes available from completion of the site-wide Composite Analysis in accordance with DOE O 435.1 on impacts to groundwater, DOE-ID will incorporate the ground water analysis into future decisions.

The ground water monitoring results comparing data from the 1995 EIS and maximum ground water monitoring results from 1995 - 1999 is shown in Table 8-1.20.1. The table shows decreased contaminant levels for most contaminants. The contaminants that show increases are for inorganic salts around the Mud Lake area (not attributable to INEEL actions) and for carbon tetrachloride. Carbon tetrachloride is being addressed through the CERCLA program which is the procedural equivalent of NEPA.

The 1995 EIS showed a dose of 0.60 mrem/yr attributable to the LLW disposal facility through the year 2060. It also stated that results of the preliminary risk assessment indicate that contaminants would not reach the INEEL site boundary exceeding Federal primary drinking water standards through 2005. Additional analysis completed since the 1995 EIS (the HLW & FD EIS, WAG 3 RI/FS, and RWMC PA/CA) confirms the adequacy of the 1995 EIS.

Surface Water

DOE-ID will refine the Flood Plain documentation per 10 CFR 1022. The review determined that the flood plain analysis in 1995 was adequate for safe operation of INEEL facilities.

2.0 INTRODUCTION

In April 1995, the Department of Energy (DOE) and the Department of the Navy, as a cooperating agency, issued the Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement (1995 EIS). This document analyzed alternatives for the management of existing and reasonably foreseeable inventories of the Department's spent nuclear fuel through the year 2035. It also included a detailed analysis of environmental restoration and waste management activities at the Idaho National Engineering and Environmental Laboratory (INEEL). This analysis supported facility-specific decisions regarding new, continued, or discontinued environmental restoration and waste management operations through the year 2005.

The Record of Decision (ROD) was signed in June 1995 and documented a number of decisions regarding INEEL operations. In addition to the decisions that were made, decisions on a number of projects were deferred.

DOE National Environmental Policy Act (NEPA) implementing procedures require that an evaluation of site-wide EISs be performed by means of a Supplement Analysis (SA) every five years. The SA is required to contain sufficient information for DOE to determine whether 1) an existing EIS should be supplemented, 2) a new EIS should be prepared, or 3) no further NEPA documentation is required. While the 1995 EIS was not a true site-wide EIS in that a number of programs were not included, most notably reactor operations, this method was used to evaluate the adequacy of the 1995 EIS.

The need for a supplement analysis is triggered by 10 CFR Part 1021, which requires a review of a site-wide EIS every five years. The purpose of the SA is to determine if there have been changes in the basis upon which an EIS was prepared. This provides input for an evaluation of the continued adequacy of the EIS in light of those changes (i.e., whether there are substantial

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The need for a supplement analysis is triggered by 10 CFR Part 1021, which requires a review of a site-wide EIS every five years. The purpose of the SA is to determine if there have been changes in the basis upon which an EIS was prepared. This provides input for an evaluation of the continued adequacy of the EIS in light of those changes (i.e., whether there are substantial changes in the proposed action, significant new circumstances, or new information relevant to environmental concerns.) This is not to question the previous analysis or decisions based on that analysis, but whether the environmental impact analyses are still adequate in light of programmatic changes. In addition, the information for each of the projects for which decisions were deferred in the ROD needs to be reviewed to determine if decisions can be made or if any additional NEPA analysis needs to be completed.

The product of the SA is a recommendation to the DOE-ID Manager concerning the adequacy of the INEEL portion of the 1995 EIS. The Programmatic Spent Nuclear Fuel portion of the 1995 EIS is not addressed in the SA because there is no requirement to evaluate a Programmatic EIS. However, the INEEL Spent Nuclear Fuel program and projects identified in the 1995 EIS were evaluated.

This SA addresses the following in identifying whether the 1995 EIS is adequate for describing the potential bounding environmental impacts of INEEL operations.

1) Provides basis for decisions on outstanding issues from the 1995 EIS ROD.

2) Describes the scope of EISs, EAs, and other NEPA analyses completed in the last five years for Environmental Restoration, Waste Management, Spent Nuclear Fuel, and Infrastructure projects undertaken to support these programs.

3) Describes a Change Analysis of the 1995 EIS. Document significant changes to each of the major programs and each of the major environmental disciplines. The change analysis includes:
   - Scope of the previous analysis
   - Methodology
   - Changes in assumptions
   - Whether the analytical tools used in the 1995 EIS are still valid
   - Whether the accident scenarios and probabilities are still accurate and bounding
   - How the current environmental monitoring data compares with what was previously used
   - Cumulative Impacts
   - Changes in regulatory requirements
   - A comparison between actions proposed in the 1995 EIS with the actions that were implemented, deferred, or dropped from consideration
   - Changes in public perception and values.

4) Describes an analysis of the alternatives considered and a determination of whether those alternatives still envelope the potential scope of DOE actions and resulting environmental impacts.

The change analysis uses Alternative B in the 1995 EIS as the baseline for the analysis. The option chosen in the ROD was a modified alternative B. From the standpoint of determining whether the existing analysis is bounding, alternative B is sufficiently defined in the 1995 EIS to allow a comparison. Comparing the impacts of programmatic changes against all of the projects analyzed in the 1995 EIS would not result in impacts beyond those previously analyzed. This is because the maximum treatment option (alternative D) analyzed the maximum foreseeable projects and impacts. Any analysis needs that are beyond the scope of alternative B will be compared against alternative D to determine if these impacts would be beyond those previously analyzed or simply beyond the scope of the 1995 EIS.

The Supplement Analysis uses a date of October 1, 2000 as a cut-off date for programmatic and environmental discipline changes as the best available information.

The approval authority for the project deliverables is the DOE-ID Manager. The action for the Manager is to determine from this analysis one of three options:

1) A new EIS is needed
2) A supplemental EIS is needed
3) No additional EIS is needed

As with the 1995 EIS, the Naval Reactors Idaho Branch Office and DOE-CH, Argonne Group – West are both participating in the project.

3.0 1995 ENVIRONMENTAL IMPACT STATEMENT SCOPE

This section discusses the scope of the 1995 EIS as it relates to INEEL's ER&WM and Spent Nuclear Fuel activities and the timeframe for decisions supported by the 1995 EIS. Activities addressed in the 1995 EIS primarily include those that deal with managing INEEL radioactive (high-level, transuranic, low-level, and mixed) wastes, hazardous waste, industrial waste, and spent nuclear fuel handling and storage activities. Specific activities are also identified as being out of scope of the 1995 EIS. The 1995 EIS provided the analysis required under the NEPA for certain projects required to implement these Programs at the INEEL. The following is a summary of the scope that was evaluated. More detailed information is available in Vol. 2 of the 1995 EIS sections 2.1.2 and 2.2.5 – 2.2.11.

3.1 Environmental Restoration and Waste Management Activities

Waste management activities discussed in the 1995 EIS were evaluated at both the site-wide (by waste stream management) and project-specific levels. The evaluation of the INEEL's waste management program addressed site-wide impacts associated with the treatment, storage, and disposal of wastes generated by ongoing remediation, nuclear energy, energy research, and defense programs. Examples of project-specific analysis related to waste management activities at the INEEL include constructing replacement capacity for high-level waste tanks and evaluating the potential environmental consequences of incineration (for example, the Waste Experimental Reduction Facility).

For environmental restoration, potential impacts at the INEEL were addressed only at the site-wide level. For example, the 1995 EIS evaluated the potential site-wide impacts associated with deactivation, decontamination, and decommissioning facilities scheduled for closure or reuse. Project-specific impacts of activities were not specifically quantified at that time, so they were only generally evaluated. Project-specific impacts of these activities at the INEEL were planned to be quantified and evaluated in the future, as appropriate, as part of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) actions, in accordance with the Federal Facility Agreement and Consent Order. In the 1995 EIS, deactivation, decontamination, and decommissioning were organizationally reflected under the Environmental Restoration program.

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As with the 1995 EIS, the Naval Reactors Idaho Branch Office and DOE-CH, Argonne Group – West are both participating in the project.

3.0 1995 ENVIRONMENTAL IMPACT STATEMENT SCOPE

This section discusses the scope of the 1995 EIS as it relates to INEEL's ER&WM and Spent Nuclear Fuel activities and the timeframe for decisions supported by the 1995 EIS. Activities addressed in the 1995 EIS primarily include those that deal with managing INEEL radioactive (high-level, transuranic, low-level, and mixed) wastes, hazardous waste, industrial waste, and spent nuclear fuel handling and storage activities. Specific activities are also identified as being out of scope of the 1995 EIS. The 1995 EIS provided the analysis required under the NEPA for certain projects required to implement these Programs at the INEEL. The following is a summary of the scope that was evaluated. More detailed information is available in Vol. 2 of the 1995 EIS sections 2.1.2 and 2.2.5 – 2.2.11.

3.1 Environmental Restoration and Waste Management Activities

Waste management activities discussed in the 1995 EIS were evaluated at both the site-wide (by waste stream management) and project-specific levels. The evaluation of the INEEL's waste management program addressed site-wide impacts associated with the treatment, storage, and disposal of wastes generated by ongoing remediation, nuclear energy, energy research, and defense programs. Examples of project-specific analysis related to waste management activities at the INEEL include constructing replacement capacity for high-level waste tanks and evaluating the potential environmental consequences of incineration (for example, the Waste Experimental Reduction Facility).

For environmental restoration, potential impacts at the INEEL were addressed only at the site-wide level. For example, the 1995 EIS evaluated the potential site-wide impacts associated with deactivation, decontamination, and decommissioning facilities scheduled for closure or reuse. Project-specific impacts of activities were not specifically quantified at that time, so they were only generally evaluated. Project-specific impacts of these activities at the INEEL were planned to be quantified and evaluated in the future, as appropriate, as part of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) actions, in accordance with the Federal Facility Agreement and Consent Order. In the 1995 EIS, deactivation, decontamination, and decommissioning were organizationally reflected under the Environmental Restoration program.

Environmental restoration and waste management activities could not be separated entirely because environmental restoration is a major waste generator. Waste produced during environmental restoration activities will in part dictate future waste management planning and actions.

Specific Infrastructure activities at the site that support Waste Management and Environmental Restoration activities were included in the 1995 EIS. In addition, there were a small number of projects included that do not directly support the WM or ER programs but were deemed important to include for the purposes of presenting a complete analysis.

3.2 Spent Nuclear Fuel Activities

The 1995 EIS addressed all INEEL activities related to spent nuclear fuel (SNF) handling. The SNF portion was a programmatic analysis (volume 1 of the 1995 EIS) that addressed facilities across the DOE Complex including: Hanford, INEEL, Savannah River Site, Naval Nuclear Propulsion Program, Other Generator/Storage Locations, and the Nevada Test Site and Oak Ridge Reservation capabilities. The 1995 EIS evaluated (a) interim storage and management for SNF at specified locations until ultimate disposition, (b) fuel stabilization as required for environmentally safe storage and protection of human health (for both workers and the public), (c) increased safe storage capacity, replacing facilities that did not meet prevailing standards and provided additional capacity for newly generated SNF, (d) research and development initiatives to support safe storage and safe disposal, and (e) SNF generated by the Naval Nuclear Propulsion Program. The possible need to convert SNF into a form that meets the acceptance criteria of a geologic repository was beyond the scope of the 1995 EIS.

3.3 Timeframe

The Record of Decision (supported by Volume 2 of the 1995 EIS) decided how DOE would manage its spent nuclear fuel and Environmental Restoration and Waste Management activities at the INEEL for the ten-year period from 1995 to 2005.

Volume 2 evaluated impacts for a ten-year timeframe because it was believed too much uncertainty existed to analyze project-specific impacts at the INEEL beyond the year 2005. However, there were some projects evaluated that went beyond 2005 (for example, the Waste Immobilization Facility). This is because actions taken in the ten-year timeframe could determine whether these other projects would be needed. In addition, it was assumed any facility constructed or used during the ten-year timeframe might require deactivation, decontamination, and decommissioning in the future.

The spent nuclear fuel program was analyzed from 1995 – 2035 since that is the date all spent nuclear fuel is to be “road ready” to leave Idaho for the national geologic repository for spent nuclear fuel.

3.4 Activities Outside the 1995 EIS Scope

Various activities at the INEEL fell outside the scope of the 1995 EIS and thus were not addressed. In general, Volume 2 evaluated impacts of operations associated with the ER&WM and Spent Nuclear Fuel Programs (by incorporation of Vol. 1 Appendix D) at the INEEL. It did not evaluate any long-term stewardship activities that may be necessary following completion of projects or closure of facilities. However, some non-ER&WM and non-spent nuclear fuel activities were addressed in appropriate sections when they were relevant to understanding either the affected environment or activities expected to occur at the INEEL over the following ten years. Such activities include, for example, the generation of waste to be handled by the ER&WM Program and those activities related to road maintenance, utilities, fire protection, emergency preparedness, and security. Potential effects of particular non-ER&WM and non-spent nuclear fuel activities were included, when appropriate, in the analysis of cumulative impacts.

3.5 Projects included in the 1995 EIS

A total of 49 projects were specifically evaluated as a part of the scope of the 1995 EIS. Decisions to proceed or to continue were made for the following 22 projects in the 1995 EIS ROD. Twenty-seven other projects specifically identified in the EIS did not have decisions to proceed specified in the ROD. As of May 1995, they still required additional NEPA analysis or a decision was yet to be made pending further project definition or funding priority. A listing of these 27 projects can be found in section 4.

3.5.1 Actions that could have been implemented as a result of the EIS/ROD. These activities are actions or operations specifically identified to be implemented as a result of the EIS ROD for which no previous NEPA documentation existed. The Environmental Checklist (EC) document number or NEPA document number that was completed for each project is given.

Increased Rack Capacity for Building 666 at the Idaho Chemical Processing Plant	CPP-95-009
Dry Fuel Storage Facility; Fuel receiving, Canning/Characterization and Shipping	CPP-96-009 CPP-97-033 CPP-98-010
Fort St. Vrain Spent Nuclear Fuel Receipt and Storage	DOE/EIS-0203F
Expended Core Facility Dry Cell Project	DOE/EIS-0203F
Tank Farm Heel Removal Project	Not completed
Calcine Transfer Project	Not completed
Waste Experimental Reduction Facility Incineration	INEL-96-014R2
Non-incinerable Mixed Waste Treatment Project	PBF-99-006
Sodium Processing Project	DOE/EIS-0203F
INEL Gravel Pit Expansion	INEL-96-016R1

3.5.2 Continuing Actions Identified in the ROD. This included actions and operations that were ongoing, resumption of previous operations, and actions that had been formerly reviewed or were currently being reviewed by a separate NEPA analysis for which an environmental assessment and finding of no significant impact was issued. Each of these projects was specifically included in the ROD. The document number for each project is given.

Transuranic Storage Area Enclosure and Storage Project	DOE/EA-0692
Waste Characterization Facility	DOE/EA-0906
Auxiliary Reactor Area Decontamination and Decommissioning	DOE/EA-0858
Boiling Waste Reactor Experiment Decontamination and Decommissioning	INEL-91-029ADM
Pit 9 Retrieval	DOE/EA-0854
Organic Contamination in Vadose Zone at the Radioactive Waste Management Complex	See Note 1
Remediation of Organic Ground Water Plume at Test Area North	See Note 2

Note 1 This document can be found at the following URL address: http://ar.inel.gov/ar/owa/getimage_2?F_PAGE=1&F_DOC=5620&F_REV=00

Note 2 This document can be found at the following URL address: http://ar.inel.gov/ar/owa/getimage_2?F_PAGE=1&F_DOC=6353&F_REV=00

3.5.3 Continuing Actions Not Identified in the ROD. These actions and operations were identified as ongoing, resumption of previous operations, or actions that had been formerly reviewed or were currently being reviewed by a separate NEPA analysis for which an environmental assessment and finding of no significant impact was issued. These projects were not specifically included in the ROD. The document number for each project is given where additional analysis was completed.

Waste Handling Facility	Cancelled
Health Physics Instrumentation Laboratory	DOE/EA-1034
Radiological and Environmental Sciences Laboratory Replacement	Not Completed
Test Area North Pool Fuel Transfer (included in the scope of the EAs completed for this task are the Test Area North Pool Stabilization Project and the New Dry Storage Project)	DOE/EA-1050 DOE/EA-1217
High-Level Tank Farm Replacement (Upgrade Phase)	Cancelled

4.0 OUTSTANDING DECISIONS FROM THE 1995 EIS ROD

Following issuance of the ROD in May 1995, two categories of activities remained that may require additional analysis. The projects are listed according to the analysis completed along with a reference number for the specific NEPA document. The status of this activity is given using the following definitions.

Cancelled	Project was no longer necessary.

Transuranic Storage Area Enclosure and Storage Project	DOE/EA-0692
Waste Characterization Facility	DOE/EA-0906
Auxiliary Reactor Area Decontamination and Decommissioning	DOE/EA-0858
Boiling Waste Reactor Experiment Decontamination and Decommissioning	INEL-91-029ADM
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Cancelled	Project was no longer necessary.

Not Initiated	Project has not been initiated due to funding or other considerations.
Not Selected	This was a part of one of the alternatives in the 1995 EIS that was not included in the Record of Decision.

4.1 Actions identified in the EIS ROD that required further review

These projects are actions identified to be addressed in accordance with the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) process. DOE O 451.1B states that NEPA principles will be incorporated into CERCLA actions to the extent practicable. At the INEEL, Environmental Restoration projects complete CERCLA analysis for specific projects. The NEPA process is then used to ensure that NEPA principles are fully incorporated into the analysis. Decontamination and Decommissioning projects no longer fall under the CERCLA process.

Engineering Test Reactor Decontamination and Decommissioning	Not Initiated
Materials Test Reactor Decontamination and Decommissioning	Not Initiated
Fuels Processing Complex (CPP-601) Decontamination and Decommissioning	Not Initiated
Fuel Receipt and Storage Facility (CPP-603) Decontamination and Decommissioning	EA in preparation
Headend Processing Plant (CPP-640) Decontamination and Decommissioning	Not Initiated
Waste Calcine Facility (CPP-633) Decontamination and Decommissioning	DOE/EA-1149
Central Liquid Waste Processing Facility Decontamination and Decommissioning	DOE-CH CX April 1997

4.2 Actions identified in the EIS ROD for which decisions were deferred

These projects are actions that may have needed separate additional NEPA review, actions needing additional description or refinement of definition or scope, actions for which funding and timing were unresolved, or for which the next course of action was uncertain or made unclear by language in the ROD. Projects identified as part of one of the alternatives not selected in the ROD are included in this list for the purpose of completeness. As above, the document numbers indicate where additional analysis has been completed for these projects.

Electrometallurgical Process Demonstration	DOE/EA-1148
Experimental Breeder Reactor-II Blanket Treatment Project	DOE/EIS-0306
Additional Increased Rack Capacity for Building 666	Cancelled
Waste Immobilization Facility	DOE/EIS-0287D

Radioactive Scrap/Waste Facility (ANL-W)	DOE/EA-1148 DOE/EIS-0306
Private sector Alpha-Contaminated Mixed Low-Level Waste Treatment	DOE/EIS-0290
Radioactive Waste Management Complex Modifications to Support Private Sector Treatment of Alpha-Contaminated Mixed Low-Level Waste	Cancelled
Idaho Waste Processing Facility	Cancelled
Mixed/Low-Level Waste Disposal facility	Cancelled
Plasma Hearth Process Project	Cancelled
Remote Mixed Waste Treatment Facility	Not Initiated
INEL Industrial/Commercial Landfill Expansion	INEL-98-019
Central Facilities Area Clean Laundry and Respirator Facility	CFA-93-006 CFA-93-017
Greater-than-class C dedicated storage	PBF-95-007
Spent Fuel Processing	Not selected
High-Level Tank Farm New Tanks	Not selected DOE/EIS-0287
New Calcine Storage	Not selected
Shipping/Transfer Station	Not selected
Mixed/Low-Level Waste Treatment Facility (this project was included in the AMWTP)	Not selected DOE/EIS-0290
Hazardous Waste Treatment, Storage, and Disposal Facilities	Not selected

4.3 Outstanding Actions

As a result of the above discussion, the following projects have been identified as those that still require either a decision or additional NEPA analysis. These are projects considered to still be viable from a programmatic standpoint and planning documentation identifies these as being necessary for long-term operations.

Engineering Test Reactor Decontamination and Decommissioning

Materials Test Reactor Decontamination and Decommissioning

Fuels Processing Complex (CPP-601) Decontamination and Decommissioning

Fuel Receipt and Storage Facility (CPP-603) Decontamination and Decommissioning

Headend Processing Plant (CPP-640) Decontamination and Decommissioning

Remote Mixed Waste Treatment Facility

Radiological and Environmental Sciences Laboratory Replacement

5.0 NEPA REVIEWS AFFECTING THE INEEL

In order to understand the scope of operations that have been analyzed in NEPA documentation, the SA team reviewed a total of 61 EISs and EAs from the INEEL and from around the DOE Complex. A list of the INEEL related documents reviewed is given in Appendix 5-1. A summary was prepared for every document referencing INEEL operations. The summaries show the scope of each analysis, the portions of the INEEL operations analyzed, and the decisions made concerning that analysis. These are provided in Appendix 5-2. Appendix 5-3 shows the NEPA documents reviewed but were found to not address INEEL operations.

The primary source for documents on these lists (Appendix 5-1 and Appendix 5-3) was the EH web site (http://tis.eh.doe.gov/nepa). (note: this web site has been reduced since 9/11/01 for security reasons.) Documents are included that were completed from 1994 to the present. This was to ensure all documents that may have not been included in the 1995 EIS were addressed. The EH web site search engine was used to find all documents that reference INEEL operations. In addition, other NEPA analyses, which in-turn were referenced in these EISs, were reviewed to determine whether they analyzed or considered INEEL operations or INEEL as a location for proposed or alternative actions.

The summary statements are given for reference purposes to facilitate ongoing NEPA review. Any evaluation of the adequacy of existing NEPA analysis for specific projects should rely on the specific documents themselves and not on this summary information.

The results of this analysis of all INEEL related NEPA documents are reflected in Appendix 5-4 where the status of existing NEPA documentation is organized by INEEL program.

6.0 PROGRAM CHANGE ANALYSIS

6.1 Introduction to the Program Change Analysis

One of the major sections of the Supplement Analysis is the change analysis for the different programs addressed by the 1995 EIS. The change analysis is a disciplined approach to determining what has changed significantly over the last five years in each of the programs. These changes were then evaluated to determine whether they have resulted in, or are expected to result in, potential environmental impacts different from those reported in the 1995 EIS.

6.2 Methodology

The change analysis process considered four important pieces of information. First was a review of what portion of the program was covered by the 1995 EIS. Second was a review of

Headend Processing Plant (CPP-640) Decontamination and Decommissioning

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6.2 Methodology

The change analysis process considered four important pieces of information. First was a review of what portion of the program was covered by the 1995 EIS. Second was a review of

the current status of the program. Third was a description of the major changes in the program. And fourth was an evaluation of whether the environmental impacts of those changes have been or are expected to be significant. Environmental impacts were evaluated on a qualitative basis for each discipline (i.e. air, water, land use, etc.) because the need to look at context and intensity varies significantly with the setting of the implemented and proposed actions.

The change analysis was organized in a way to show the entire scope of each program and whether it was included in the 1995 EIS. First, each project that was analyzed in the 1995 EIS was addressed. Second, the balance of the program included in the 1995 EIS was analyzed. Third, current projects or program elements that were not previously addressed, if any, were analyzed. Fourth, any major projects that are forecast for the next five years were identified.

This approach was used to ensure the overall program description was robust enough to identify all the potential environmental impacts from any project within the program. The specific program change analysis documents are located in Appendix 6-1. Appendix 6-2 provides the methodology used to perform this evaluation.

6.3 Programs Analyzed

All programs analyzed in the 1995 EIS were included in this supplement analysis, with the exception of the High Level Waste program. Subsequent to the publication of the 1995 EIS, numerous substantive changes have been proposed in the HLW program, and those changes are analyzed in the HLW & FD EIS. However, each HLW project was addressed and the HLW program was considered in this SA from a cumulative impacts standpoint in conjunction with the balance of the INEEL in the Environmental Disciplines section.

Of the programs/projects evaluated in the 1995 EIS, the Infrastructure program included everything not included in ER, HLW, SNF, and WM programs. For consistency in analysis, this same approach was used in this SA.

6.4 Interaction Between the Program Change Analysis and the Environmental Discipline Change Analysis

While reviewing the program change analysis, it became apparent that a tool would need to be developed to allow a cross comparison between the programmatic changes that were identified and the environmental disciplines. Without this cross comparison, it may have been possible to miss cumulative impacts between programs and environmental disciplines. In addition, this allowed the different subject matter experts to compare their analysis with that of the program representatives to ensure that a complete picture is given of the state of the program and of each environmental discipline. The results are given in Appendix 6-3. It must be emphasized that this represents impacts of changes from what was previously analyzed and not a summary of the environmental impacts of each project or action.

The potential environmental impacts of the program changes were developed as part of three group sessions with the program representatives, the NEPA Compliance Officer, and legal counsel. The table represents the combined professional judgment of the individuals. The assessments are qualitative rather than quantitative.

6.5 Results of the Program Change Analysis

The results of the program change analysis were compared against the information in Appendix 5-4. Appendix 5-4 is a summary of the NEPA analysis that has been completed and organized by INEEL program to allow for a comparison of what has been analyzed vs. the scope of the current program.

The program change analysis documents are provided in Appendix 6-1. This shows each major activity of the respective program and the change in environmental impacts for each. A summary of these results is given below for the current state of each INEEL program. For consistency between documents, the project numbers that are used here and in Appendix 6-1 are the same project numbers that were used in the 1995 EIS.

6.5.1 Decontamination and Decommissioning (D&D)

6.5.1.1 Projects Analyzed in the 1995 EIS

There were nine Decontamination and Decommissioning (D&D) projects analyzed in the 1995 EIS: two ongoing projects and seven new projects. (The new projects were shown in the 1995 EIS as being Environmental Restoration projects. They are reported here for programmatic consistency.)

Ongoing Projects: The scope of the ARA-II project was to decontaminate and decommission the radiologically contaminated buildings, structures, utilities, and other miscellaneous items at ARA-II. This project had been previously evaluated in an EA and approved with a finding of No Significant Impact (Sept. 1993).

The scope of the BORAX-V project was to decontaminate and decommission the remaining BORAX-V facility by one of two alternatives: dismantlement or entombment. While fieldwork on this facility had not yet commenced when the 1995 EIS was prepared, it was scheduled to be initiated in June 1995 subject to the decisions of the 1995 EIS ROD.

Both of these projects have been completed.

C-2.5 Auxiliary Reactor Experiment (ARA-II) D&D	Completed
C-2.6 Boiling Water Reactor Experiment (BORAX-V) D&D	Completed

Planned Projects: Of the seven planned projects analyzed under the 1995 EIS, all were actions identified to be addressed in accordance with the CERCLA process (note: these projects no longer fall under the CERCLA process). Of these, additional analysis was completed on five of the seven projects using the normal NEPA process.

Two of the projects have been completed, three are currently planned, and two are unscheduled due to funding issues.

C-4.2.1 Central Liquid Waste Processing Facility D&D	Completed
C-4.2.2 Engineering Test Reactor (TRA-642) D&D	Unscheduled
C-4.2.3 Materials Test Reactor (TRA-603) D&D	Unscheduled
C-4.2.4 Fuel Processing Complex (CPP-601) D&D	Not initiated
C-4.2.5 Fuel Receipt and Storage Facility (CPP-603) D&D	Not initiated
C-4.2.6 Headend Processing Plant (CPP-640) D&D	Not initiated

C-4.2.7 Waste Calcine Facility (CPP-633) D&D Completed

6.5.1.2 Balance of the Program in the 1995 EIS

The 1995 EIS contains a general description of the D&D program. While there have been administrative changes, the program has not changed appreciably.

6.5.1.3 Other parts of the program not analyzed in the 1995 EIS

The D&D program was organizationally moved from the Environmental Restoration program and merged with the Infrastructure Deactivation program. This allows for a more integrated approach toward cleaning up and disposing of older facilities that no longer have a useful life.

The 1995 EIS did not address ground water impacts of D & D decisions because precise information was not available. The important aspects of these decisions are the cumulative impacts from the decision when combined with other current or planned actions that involve ground water impacts. Additional analysis may be required for future EIS level D & D decisions. D & D decisions made since the 1995 EIS and which left radioactive source term in the ground received additional NEPA analysis.

6.5.1.4 Planned major projects

The D&D program has a schedule for disposition of facilities through 2045. Each of these projects will be prioritized and undertaken based on risk and funding availability.

6.5.2 Environmental Restoration (ER)

6.5.2.1 Projects Analyzed in the 1995 EIS

There were three ongoing projects evaluated under the Environmental Restoration program. Of these, two were implemented as planned and are still ongoing. The third is ongoing but project definition is being combined with other cleanup activities. (The 1995 EIS showed seven new D & D projects assigned to Environmental Restoration. These are reported in this document under the D & D program.)

Remediation of Groundwater Contamination. The objective of the "Remediation of Groundwater Contamination Project" was to reduce contamination in the vicinity of an injection well that is located in the Test Area North Technical Support Facility. This project was planned to reduce the concentrations of trichloroethylene, tetrachloroethylene, dichloroethylene, lead, strontium-90, and other contaminants in the groundwater surrounding the TSF-05 injection well at the Technical Support Facility. A variation of the project described above has been implemented via an amendment to the CERCLA ROD.

Pit 9 Retrieval. This Pit 9 Interim Action was to have excavated and treated wastes contaminated with radioactive and hazardous substances disposed of at Pit 9 of the Subsurface Disposal Area of the RWMC. This project was expected to be operable as of August 1996. The impacts of implementing and managing the work from this project were analyzed based on the known scope in 1995.

The current scope of this activity has changed from the scope discussed in the 1995 EIS. The project described in the previous EIS is more accurately referred to today as CERCLA Operable

Unit 7-10. At this time it is not possible to forecast which wastes will be retrieved and which wastes will remain. Additional NEPA documentation could be required depending upon the results of discussions with the regulators and any new agreements on scope of work. The schedule for specific actions required by the Pit 9 CERCLA ROD is also under discussion.

Vadose Zone Remediation. The proposed general objective of the "Remediation of Organic Contamination of the Vadose Zone Project" is to prevent migration of volatile organic compounds (from the vadose zone beneath the subsurface disposal area of the RWMC) to the Snake River Plain Aquifer in concentrations exceeding established risk levels and/or Federal and State maximum contaminant levels.

The proposed general objective of the remediation has not changed from its description in the previous EIS, but it is now more accurately referred to as CERCLA OU 7-08.

C-2.2 Remediation of Groundwater Contamination	Ongoing
C-2.3 Pit 9 Retrieval	Ongoing
C-2.4 Vadose Zone Remediation	Ongoing

6.5.2.2 Balance of the Program in the 1995 EIS

CERCLA is a well-defined process for addressing environmental cleanup. Section 2.2.6.1 of 1995 EIS lays out the basic process for performing remedial actions under CERCLA. Four hundred and fifty nine (459) individual release sites were identified in Table A.2 of the Federal Facility Agreement/Consent Order. To provide for more efficient management of the remediation of these release sites, they were organized into 10 "Waste Area Groups" (WAGs), based on similarities in contaminant and/or media, and by geographic proximity.

DOE, in partnership with the State of Idaho and the EPA Region X, has identified remedial actions and is currently implementing them on areas at the INEEL site where hazardous substances have been or are suspected of having been released to the environment.

As of the cut-off date (Oct. 1, 2000) of this Supplement Analysis, a total of 593 suspected release sites have been identified at the INEEL site for investigation. Four hundred and twenty two (422) of the suspected release sites have either been remediated in accordance with a CERCLA ROD, designated as requiring no action, or as requiring no further action but with institutional controls established for the sites.

A complete description of the ER program is available in Appendix 6-1, Section 2.2, "Environmental Restoration Program Description."

6.5.2.3 Other Parts Of The Program Not Analyzed In The 1995 EIS

These program elements have evolved since the 1995 EIS and were not visualized. Similar projects such as the Low Level Mixed Waste Disposal Facility were analyzed in the 1995 EIS. Required analysis has been completed for each of these projects.

The INEEL CERCLA Disposal Facility (ICDF) is a low-level, hazardous, TSCA, and mixed waste disposal facility (landfill cell[s] and evaporation pond) with an authorized capacity of approximately 390,000 m^3 (510,000 yd^3). CERCLA-generated wastes within the INTEC facility will be removed and disposed in the ICDF. The evaporation pond will provide treatment/disposal capability for CERCLA-generated aqueous wastes.

6.5.2.4 Planned Major Projects

There are no planned major projects in the ER program that are not analyzed.

6.5.3 High-Level Waste

6.5.3.1 Projects Analyzed in the 1995 EIS

A total of seven HLW projects were analyzed in the 1995 EIS. Of these, three projects have been completed as analyzed. The remaining four projects were not completed and are being reevaluated as a part of the HLW & FD EIS.

C-2.7 High-Level Tank Farm Replacement - Upgrade Phase	Completed
C-4.3.1 Tank Farm Heel Removal Project	Not initiated
C-4.3.2 Waste Immobilization Facility	Not initiated
C-4.3.3 High-Level Tank Farm New Tanks	Not initiated
C-4.3.4 New Calcine Storage	Not initiated
C-4.3.5 Radioactive Scrap/Waste Facility	Completed
C-4.10.1 Calcine Transfer Project (Bin Set #1)	Not initiated

6.5.3.2 Balance of the Program in the 1995 EIS

Because significant changes to the HLW program are being analyzed in the INEEL HLW & FD EIS, this SA does not address this program element.

6.5.3.3 Other parts of the program not analyzed in the 1995 EIS

Significant changes to the HLW program are being analyzed in the INEEL HLW & FD EIS. This SA has determined that the analysis of the HLW program in 1995 was satisfactory to support the ROD.

6.5.3.4 Planned major projects

Because significant changes to the HLW program are being analyzed in the INEEL HLW & FD EIS, this SA does not address this program element.

6.5.3.5 Waste Treatment

Since 1995, the HLW program has calcined 272,500 gallons of high-level waste and 313,500 gallons of sodium-bearing waste. This took place under three treatment campaigns: one in 1997, one in 1999, and one in 2000.

6.5.4 Infrastructure

6.5.4.1 Projects Analyzed in the 1995 EIS

There were five projects analyzed as a part of the Infrastructure Program. Two of the five are ongoing. The other three projects were considered to be new.

Ongoing Projects - The HPIL project will provide a technologically up-to-date facility that safely accommodates the programmatic and operational needs of the health physics program at the INEEL. The Radiological and Environmental Sciences Laboratory (RESL) replacement project will provide updated analytical and support capabilities for the environmental, oversight, and standardization programs of DOE, the United States Geological Survey, and the INEEL.

Planned Projects – The remaining three projects analyzed in the 1995 EIS were listed in the ROD as planned. These projects are the Industrial/Commercial Landfill Expansion, the Gravel Pit Expansions, and the Central Facilities Area Clean Laundry and Respirator Facility.

C-2.11 Health Physics Instrument Laboratory	Ongoing
C-2.12 Radiological and Environmental Sciences Laboratory Replacement	Not initiated
C-4.9.1 Industrial/Commercial Landfill Expansion	Ongoing
C-4.9.2 Gravel Pit Expansions	Ongoing
C-4.9.3 Central Facilities Area Clean Laundry and Respirator Facility	Not Initiated

6.5.4.2 Balance of the Program in the 1995 EIS

There were three areas analyzed under the Infrastructure Program in the 1995 EIS balance-of-the-program category. Each of these areas is ongoing and consists of General Purpose Capital Equipment, environmental and Q.A. programs, and buildings and facilities.

The combined effects of these three areas show little or no change overall as compared to the effects analyzed under the scope of the 1995 EIS.

6.5.4.3 Other parts of the program not analyzed in the 1995 EIS

The parts of the program not analyzed in the 1995 EIS are outside the scope of the original EIS and are not addressed in this document.

6.5.4.4 Newly Planned Major Projects

There are a number of planned infrastructure upgrades that enhance existing capabilities including a proposed Subsurface Geoscience Laboratory.

6.5.5 Spent Nuclear Fuel (SNF)

6.5.5.1 Projects Analyzed in the 1995 EIS

There were nine projects analyzed under the Spent Nuclear Fuel (SNF) Program in this 1995 EIS project-specific *Projects Analyzed* category: one ongoing project, and eight new projects.

Ongoing Project: The scope of this project (C-2.1 Test Area North Pool Fuel Transfer) concerns the removal of all SNF within the TAN pool in TAN-607. These fuels are divided into two subprojects for: 1) TMI debris, and 2) LOFT and commercial SNF. Each of these fuels was subjected to selective destructive analysis and mounted with epoxy as a fixative agent. In one case, epoxy was used as a securing agent within its storage canister. All epoxied materials have been transferred to the LOFT and commercial SNF subproject.

Project-specific NEPA analysis was performed separately and prior to the development of the scope of this EIS. Thus far, all activities planned and carried out within the scope of this project have been within the bounds of existing NEPA analyses. (DOE/EA-1050 and DOE/EA-1217)

Planned Projects: Of the eight planned projects analyzed under the 1995 EIS: 1) four projects were implemented as a result of the ROD as described in the EIS or under reduced scope; 2) one project was not selected under the ROD, and 3) three were deferred. Of the three deferred projects, one was later implemented under the terms of separate NEPA analysis. The combined effects of these projects are reduced compared to the effects analyzed under the terms of the 1995 EIS.

C-4.1.1 Expended Core Facility Dry Cell Project	Ongoing
C-4.1.2 Increased Rack Capacity for CPP-666	Ongoing
C-4.1.3 Additional Increased Rack Capacity (CPP-666)	Deferred
C-4.1.4 Dry Fuel Storage Facility, Fuel Receiving, Canning/Characterization, and Shipping	Ongoing
C-4.1.5 Fort St. Vrain Spent Nuclear Fuel Receipt and Storage	Ongoing
C-4.1.6 Spent Fuel Processing	Not selected
C-4.1.7 Experimental Breeder Reactor-II Blanket Treatment	Initially Deferred, Ongoing
C-4.1.8 Electrometallurgical Process Demonstration	Deferred

6.5.5.2 Balance of the Program in the 1995 EIS

There were five programmatic elements analyzed under the SNF Program in the 1995 EIS *Balance of the Program* category. Of these five programmatic elements, one has been completed within the scope of the 1995 EIS, and the remaining four are planned to be or are being executed within the scope or reduced scope of the 1995 EIS. The combined effects of these projects are reduced compared to the effects analyzed under the terms of the 1995 EIS.

These programmatic elements are:

- Consolidation of Non aluminum-clad SNF at the INEEL
- Transfer of aluminum-clad SNF located at the INEEL to SRS
- Continued interim storage of naval SNF at the INEEL
- CPP-603 Basins Emptied of SNF
- Consolidation of INEEL SNF storage at the INTEC

6.5.5.3 Other parts of the program not analyzed in the 1995 EIS

There were no projects under the SNF Program in the 1995 EIS in this category.

6.5.5.4 Planned major projects

There were no projects under the SNF Program in the 1995 EIS in this category.

6.5.6 Waste Management (WM)

6.5.6.1 Projects Analyzed in the 1995 EIS

There were 16 projects analyzed under the Waste Management (WM) Program in this 1995 EIS project-specific projects-analyzed category, consisting of three ongoing projects and 13 new projects.

Ongoing Projects: The scope of project C-2.8 Transuranic Storage Area Enclosure and Storage Project, concerns the construction and operation of four elements: 1) a building over the top of transuranic waste in storage with an earthen covered berm, 2) multiple storage buildings, 3) support facilities, and 4) associated utility upgrades. The project completed construction of all elements as originally planned. All elements of the project are operational with the exception of the building over the berm covered transuranic waste. Operations will take place under a separate contract with the Advanced Mixed Waste Treatment Facility (AMWTF) project. A separate EIS provides the analysis of the impacts of the operation of this facility.

Neither the Waste Characterization Facility nor the Waste Handling Facility was completed. The Waste Characterization Facility was included as a part of the work scope of the AMWTF project and the new AMWTF facility was addressed under the project specific NEPA analysis. The Waste Handling Facility was not built and other buildings at ANL-W were modified to accommodate the work scope originally planned for this facility.

Planned Projects: Of the 13 planned projects analyzed under the 1995 EIS, four were implemented as a result of the ROD as described in the EIS or under reduced scope – one of which has been completed and one which has not been initiated; three were not selected under the ROD; and six were deferred. Of the six deferred projects, one has been implemented under the terms of separate NEPA analysis and another is still scheduled for completion under separate NEPA analysis currently being performed.

C-4.4.1 Private Sector Alpha-Contaminated Mixed Low-Level Waste Treatment	Initially Deferred/ Ongoing
C-4.4.2 Radioactive Waste Management Complex Modifications to Support Private Sector Treatment of Alpha-Contaminated Mixed Low-Level Waste	Deferred
C-4.4.3 Idaho Waste Processing Facility	Deferred
C-4.4.4 Shipping/Transfer Station	Not Selected
C-4.5.1 Waste Experimental Reduction Facility Incineration	Completed
C-4.5.3 Mixed Low-Level Waste Treatment Facility	Not Selected
C-4.5.4 Mixed/Low-Level Waste Disposal Facility	Deferred
C-4.6.4 Non-incinerable Mixed Waste Treatment	Ongoing
C-4.6.6 Remote Mixed Waste Treatment Facility	Initially Deferred/ EA being prepared
C-4.6.7 Sodium Processing Project	Ongoing
C-4.7.1 Greater-Than-Class-C Dedicated Storage	Not Initiated
C-4.8.1 Hazardous Waste Treatment, Storage, and Disposal Facilities	Not Selected
C-4.10.2 Plasma Hearth Project	Deferred

6.5.6.2 Balance of the Program in the 1995 EIS

Each of the major waste streams (transuranic, low-level waste, mixed low-level waste, greater-than-class-C low-level waste, special case waste, hazardous waste, and industrial waste) is addressed in this section. Each shows the state of the program for the particular waste stream as described in the 1995 EIS and its current state.

6.5.6.3 Other parts of the program not analyzed in the 1995 EIS

All portions of the WM program were addressed in the 1995 EIS.

6.5.6.4. Planned major projects

There are no planned major projects in the WM program that are not previously analyzed.

6.5.6.5 Waste Disposal

A review of the Waste Disposal Volumes table in Appendix 6-1, shows that the 1995 EIS was conservative regarding waste disposal volumes. The only item of note is that the LLW volumes have been over the projected annual volumes for the last three years. However, even if this trend continues, the result will be disposal of LLW offsite at an earlier time rather than disposal on the INEEL. The rate at which LLW is disposed will not affect the total amount of waste disposed at the RWMC. Environmental impacts of shipment and disposal of LLW offsite were analyzed in the WM Programmatic EIS.

DOE O 435.1, Radioactive Waste Management, was approved in July 1999. One of the significant changes in requirements by this new order is that long-term storage of radioactive waste now requires specific approval. As a result, additional efforts have been made to dispose of wastes that had been in storage facilities. This is reflected by the increased disposal volumes in the last three years.

6.6 Conclusions

6.6.1 Projects Summary

A total of 49 projects were analyzed in the 1995 EIS. Some of these projects received additional NEPA analysis. Of these projects:

- 8 have been completed,
- 17 are ongoing,
- 12 have not yet been initiated or are unscheduled,
- 6 have been deferred,
- 4 were not selected in the ROD for implementation, and
- 2 have been cancelled due to changing program needs.

For those projects that either have not been initiated or have been deferred, the D&D projects are still required, the HLW projects are being addressed under the HLW & FD EIS, the Infrastructure projects are still required, the SNF projects are no longer required, and the WM projects are no longer required. This leaves a list of the following projects that are still viable from a programmatic perspective.

C-4.2.2 Engineering Test Reactor (TRA-642) D&D

C-4.2.3 Materials Test Reactor (TRA-603) D&D
C-4.2.4 Fuel Processing Complex (CPP-601) D&D
C-4.2.5 Fuel Receipt and Storage Facility (CPP-603) D&D
C-4.2.6 Headend Processing Plant (CPP-640) D&D
C-2.12 Radiological and Environmental Sciences Laboratory Replacement
C-4.9.3 Central Facilities Area Clean Laundry and Respirator Facility

This review also indicated that decisions regarding the replacement of the RESL facility and disposition of the CFA Clean Laundry facility could be made pending funding priorities and project definition.

6.6.2 Balance of the Programs

For each of the programs analyzed in the 1995 EIS, the analysis shows no major changes in programmatic direction except for the HLW program. The programmatic changes that are being considered in the HLW program are analyzed in the HLW & FD EIS. Other than this change, all of the programs that were analyzed in the 1995 EIS are being implemented within the scope of the analysis.

6.6.3 Other Parts of the Program Not Analyzed in the 1995 EIS

The 1995 EIS did not address ground water impacts of D & D decisions. The important aspects of these decisions are the cumulative impacts from the decision when combined with other current or planned ground water impacts. Additional analysis will be required for future D & D decisions. D & D decisions made since the 1995 EIS and which left radioactive source term in the ground received additional NEPA analysis.

6.6.4 Planned Major Projects

The D&D program has a schedule for disposition of facilities through 2045. Each of these projects will be prioritized and undertaken based on risk and funding availability. There are a number of planned infrastructure upgrades that enhance existing capabilities including a proposed Subsurface Geoscience Laboratory. These projects will require specific NEPA analysis as each project reaches a decision point. No additional analysis is required at this time.

6.6.5 Program Change Analysis Summary

The majority of the programs and projects addressed in the 1995 EIS have NEPA documentation that addresses current and planned actions. A number of facilities and operations rely on NEPA documentation in addition to the 1995 EIS to provide complete representation of the environmental impacts of these actions. The only area for further analysis identified for projects in the 1995 EIS is in the D&D program. As stated in the ROD for the 1995 EIS, additional analysis will be required before making decisions for the D&D of these facilities.

The Supplement Analysis did not evaluate the adequacy of NEPA documentation for any of the national programs that are managed through DOE-ID or for the Grand Junction Field Office.

In making the determination that additional analysis is required, the baseline (Alternative B) against which this analysis was completed must be considered. Since Alternative D was the maximum impact case, it is important to understand whether the additional analysis was unanalyzed (not in the 1995 EIS) or not a part of the ROD (a part of one of the other alternatives but not a part of Alternative B.) In this case, the additional analysis required is not included in any of the other alternatives in the 1995 EIS. Hence additional analysis is required.

7.0 ALTERNATIVE SELECTION

7.1 Scope of the 1995 EIS

The 1995 EIS identified four alternatives with respect to the INEEL:
1) Alternative A - No Action
2) Alternative B - Ten-Year Plan
3) Alternative C - Minimum Treatment, Storage, and Disposal
4) Alternative D - Maximum Treatment, Storage, and Disposal.

Under the No Action alternative existing environmental restoration and waste management operations, facilities, and projects would continue to be managed. This included continuing existing environmental restoration, waste management, decontamination and decommissioning, research and development, and infrastructure facilities and projects that support the Environmental Restoration and Waste Management Program at the INEEL. Naval spent nuclear fuel shipments were only allowed during a three-year transition period. No new major upgrades would be undertaken.

Under Alternative B, existing environmental restoration and waste management facilities and projects would continue to be managed. Besides existing facilities and projects, projects proposed to be built from 1995 – 2005 would be implemented. Environmental restoration, waste management, and spent nuclear fuel projects required to meet regulatory requirements would be performed. Also, increased decontamination and decommissioning activities would take place. Some spent nuclear fuel and waste management projects from other sites would be directed to the INEEL. Specific projects were analyzed through the life cycle of the project and the SNF program was analyzed through 2035.

Under Alternative C, ongoing INEEL spent nuclear fuel, waste management activities, and materials and waste would be transferred to other locations. Environmental restoration activities would be minimized by emphasizing institutional controls over treatment options.

Under Alternative D, to the extent possible, spent nuclear fuel and waste would be transferred from other DOE facilities to the INEEL site for management. Environmental restoration activities would include the maximum planned decontamination and decommissioning projects and would emphasize residential use as the preferred end land use, which potentially would result in maximum waste generation.

7.2 Changes to Alternatives Analyzed

The period of analysis used for INEEL programs (not including SNF) was from 1995 to 2005. The beginning position for the SA was that the validity of the 1995 EIS for possible impacts beyond the year 2005 cannot be verified without additional analysis for those projects that did not perform a longer term analysis.

As the analysis progressed, it became apparent that the analysis was not time frame sensitive for most projects. The following shows how each program analysis is not tied directly to the unanalyzed (not in the 1995 EIS) or not a part of the ROD (a part of one of the other alternatives but not a part of Alternative B.) In this case, the additional analysis required is not included in any of the other alternatives in the 1995 EIS. Hence additional analysis is required.

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Decontamination and Decommissioning – These projects are completed on a case-by-case basis. Impacts from each project are not subject to a time dependency. There are no impacts for extending the time frame for the programmatic analysis beyond 2005.

Environmental Restoration – These projects are aimed at remediating and monitoring past environmental impacts. As a result, environmental impacts are going to be positive in the long-term. Hence, the existing analysis is bounding from a time perspective.

High-Level Waste – This program is currently considering changes to the programmatic activities through the HLW & FD EIS. The time frame for this analysis is through 2095.

Infrastructure – The impacts from existing Infrastructure are fairly constant over time. Any major changes in the program will require additional analysis. Current proposed actions are consistent with those already analyzed.

Spent Nuclear Fuel – The Spent Nuclear Fuel program has been analyzed through 2035.

Waste Management – The current foreseeable future for the waste management program does not include any major changes from current analyzed projects. Any changes would require additional analysis.

While the 1995 EIS used a cutoff date of 2005 for the analysis, this review has determined that the 1995 EIS provides a bounding analysis for most projects beyond 2005. This issue should be reexamined when the next Supplement Analysis is conducted to ensure the continued validity of this determination. Any changes in programmatic actions will require additional analysis to determine whether the proposed changes are within or outside of the scope of the 1995 EIS.

8.0 ENVIRONMENTAL DISCIPLINE CHANGE ANALYSIS

8.1 Introduction to the Environmental Discipline Change Analysis

A major focus of the Supplement Analysis is the change analysis for the different environmental disciplines addressed by the 1995 EIS. The change analysis is a disciplined approach to determining what has changed over the last five years in each of the disciplines. These changes were then evaluated to determine whether the environmental discipline changes have resulted in environmental impacts different than previously reported or whether those changes are expected to produce impacts different than previously reported.

As opposed to the program change analysis where individual projects were found not to be covered by the 1995 EIS, the 1995 EIS covered each environmental discipline by evaluating potential environmental impacts of activities on the INEEL. The exception is the new field of long-term stewardship which is included in this analysis. This change analysis was done to determine whether the specific disciplines had experienced changes in models, assumptions, or data that would warrant additional analysis.

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8.2 Methodology

The first step in this analysis is a review of the scope of each environmental discipline as covered by the 1995 EIS. The second is a review of the specific changes that have taken place in that environmental discipline. Areas of change may have included review methodology, assumptions, analytical methods, data adequacy, accident scenarios, accident probabilities, monitoring data, measurements, cumulative impacts, changes in the regulatory environment, and other NEPA analyses that have been completed. The third step is a summary of the major changes and an evaluation of whether additional analysis is required.

Existing analytical data was used where it was available. No new data collection activities were undertaken as a part of this project. The recommendations for additional analysis are based on the professional judgement of the subject matter expert. Each environmental discipline evaluation was subjected to review by the team of subject matter experts, program representatives, NEPA analysts, and project personnel to ensure that each evaluation is thorough and consistent not only between environmental disciplines but also with the program change analysis.

Appendix 8-2 contains the procedure for conducting the environmental discipline evaluations.

8.3 Interaction Between the Program Change Analysis and the Environmental Discipline Change Analysis

As described in Section 6, a tool was developed to compare the programmatic changes with the environmental discipline changes. The first draft of the environmental change evaluations were done independent of this tool. This allowed an independent first draft to be formulated based on the subject matter experts' knowledge of their respective disciplines. Appendix 6-3 was then used as a validation tool for the details of the analysis.

8.4 Results of the Environmental Discipline Change Analysis

A summary of the results of the individual environmental discipline change analysis is given below. The specific environmental discipline change analysis documents are given in Appendix 8-1.

8.4.1 Adverse Environmental Effects Which Cannot Be Avoided. Of the projects analyzed in the 1995 EIS, some are no longer operating and of the planned projects some have not occurred. In general, adverse environmental effects that cannot be avoided are less than projected in the1995 EIS. However, additional analysis is still required for both cultural resources and ecology to understand these impacts through completion of the Wildland Fire EA.

The analysis in the 1995 EIS was adequate for DOE decisions announced in the ROD. Future DOE decisions on major federal actions on the INEEL, or decisions deferred in the ROD, will require additional analysis for this discipline.

8.4.2 Aesthetic and Scenic Resources. A qualitative analysis was performed to determine if there were any changes affecting aesthetic and scenic resources. Changes in the land status around the INEEL and construction and demolition activities since 1995 were reviewed to determine changes to the visual quality of the INEEL. There are no air quality or visibility issues that are changing the charcater of the landscape.

The analysis in the 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

8.4.3 Air Resources. The maximum emissions from radiological sources are bounded by the analysis in the 1995 EIS. For air pollutants, the maximum emission scenario for cumulative emissions from baseline and preferred alternative sources remains bounding for most pollutants, as there are fewer sources operating today. There are four pollutants that exceeded the baseline established in the 1995 EIS. A review of the health effects of these pollutants show that they are well below established emissions standards. Because it can be readily shown that there are no adverse health effects associated with these pollutants, additional analysis is not required for these pollutants.

The existing analysis does not show any adverse impacts from air emissions at 50 km. It is not anticipated that there will be any adverse impacts from air emissions at 200 km. However, due to stakeholder concerns, analysis in the HLW & FD EIS has been completed out to 200 km for some sectors. The methodology has changed such that now regional impacts can be considered using new models. Limited use of new models (CALPUFF in a screening mode) in the HLW & FD EIS and the CPP-606 Prevention of Significant Deterioration permit provide some mitigative influence on the changes in the discipline. Additional analyses using the latest emissions data and a full compliment of meteorological data are warranted to address stakeholder concerns and to assist DOE in identifying the need for and location of additional regional monitors.

The analysis in the 1995 EIS was adequate for DOE decisions announced in the ROD. Future DOE decisions on major federal actions on the INEEL, or decisions deferred in the ROD, will require additional analysis for this discipline. Additional analysis is recommended to address stakeholder concerns regarding air quality beyond 50 km.

8.4.4 Cultural Resources. Impacts to cultural resources resulting from actions analyzed in the 1995 EIS have been less than expected because there have been fewer acres of land disturbed. However, the 1995 EIS did not anticipate or address the effects of wildfires on cultural resources. Impacts related to wildfires are addressed in the Idaho HLW & FD EIS and are being addressed in more detail in the Wildland Fire Environmental Assessment.

The analysis in the 1995 EIS was adequate for DOE decisions announced in the ROD. Future DOE decisions on major federal actions on the INEEL, or decisions deferred in the ROD, will require additional analysis for this discipline. The Wildland Fire EA being prepared will address the outstanding cultural impacts. No analysis beyond that being performed by the Wildland Fire EA is required.

8.4.5 Cumulative Impacts and Impacts from Connected or Similar Actions. There has been a net reduction in risk potential and contributing additive sources and therefore a reduction in cumulative environmental impact risks from INEEL operations since the 1995 EIS was issued. The 1995 EIS adequately discloses and bounds operational cumulative impacts from all sources except for cumulative risk from flooding which may need to be updated based on a final flood plain determination. Long-term groundwater cumulative impacts from all sources are still under development.

The analysis in the 1995 EIS was adequate for DOE decisions announced in the ROD. Future DOE decisions on major federal actions on the INEEL, or decisions deferred in the ROD, will require additional analysis for this discipline.

8.4.6 Ecology. The actions and alternatives analyzed in the 1995 EIS that have been implemented have had little or no impact on ecological resources. Also, it is expected that those actions and alternatives analyzed in the EIS, that are yet to be implemented, would have minimal impact on site ecology. The impacts of fire, fire suppression, and threat of permanent habitat conversion caused by non-native invasive plant species are the main sources of ecological impacts on the INEEL. No additional analysis with regard to planned DOE actions is required. The Wildland Fire EA under preparation is required to understand impacts on the Sagebrush Steppe ecosystem on the INEEL of fire, pre-fire suppression, vegetation management, and restoration actions.

The analysis in the 1995 EIS was adequate for DOE decisions announced in the ROD. Future DOE decisions on major federal actions on the INEEL, or decisions deferred in the ROD, will require additional analysis for this discipline. The Wildland Fire EA being prepared will address the outstanding ecological impacts. No analysis beyond that being performed by the Wildland Fire EA is required.

8.4.7 Environmental Justice. A qualitative analysis was performed to determine if there were any changes in the environmental justice discipline. The analysis reviewed the current INEEL activities and compared those to activities analyzed in the 1995 EIS. The methodology used in the 1995 EIS analysis is consistent with the Council on Environmental Quality guidance issued in 1997. That guidance is still in effect and DOE-HQ has not issued any final guidance that has changed requirements or imposes additional requirements. The major assumption of having Argonne National Laboratory-West as the epicenter for the region of impact is reasonable and still valid for a site-wide analysis. The conditions, data, and methodology used for analysis in the 1995 EIS are still valid and consistent with the requirements to evaluate and mitigate, if necessary, disproportional high and adverse impacts to minority and low-income populations.

The analysis in the 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

8.4.8 Facility Accidents. The existing analysis is technically adequate. However, each of the five major NEPA analyses (1995 EIS, HLW & FD EIS, AMWTP EIS, Nuclear Infrastructure PEIS, S-B SNF EIS) of this discipline used slightly different input assumptions, models, and codes and as a result arrives at what could appear to be contradictory results. It is difficult to compare impacts across the site because the analysis results are reported in different formats, different receptor locations, and different units. Standardized facility accident analyses utilizing a common set of assumptions, input parameters, codes, and formats would greatly assist the public and DOE management to compare the bounding impacts for facility accidents across the entire site. The existing analysis has not been shown to be inadequate but the results are reported in ways that are inconsistent.

The 1995 EIS showed bounding accident impacts from a Hot Fuel Examination Facility fuel handling accident of 5.0 rem to the maximally exposed offsite individual (MEI) and an ANL-W chlorine release with a MEI exposure of 35% of the Emergency Response Planning Guidelines (ERPG)-3 guidelines. This compares to the HLW & FD EIS bounding accidents of a seismically induced failure of degraded bin sets up to 9500 years into the future resulting in 83 rem to the

MEI and a spill of 15,000 pounds per minute of liquid ammonia which would result in greater than ERPG-2 concentrations at 3600 meters. These new impacts (HLW & FD EIS) now present the bounding impacts for INEEL operations. These changes do not warrant additional accident analysis.

Because of revised accident analysis, the environmental impacts described in the 1995 EIS are not bounding for the INEEL, but the bounding impacts are described in the HLW & FD EIS. Additional analysis for this discipline is not required.

8.4.9 Geology. There are no major environmental impacts related to the 1995 EIS geology characterization. Subsequent revisions, finalizations and challenges to volcanic and seismic hazards characterization documents and their conclusions indicate that the initial assessments of these hazards in the 1995 EIS are robust and bounding analyses.

The analysis in the 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

8.4.10 Health And Safety. The INEEL conditions, data, and methodology used in the 1995 EIS remain valid with the exception of the four air pollutants discussed below. The type and scope of work performed at the INEEL has not changed significantly during the period 1995 – 2000. Changes in the safety programs at the INEEL have improved operational safety in many respects. Adoption of the Radiation Protection, Quality Assurance, and Nuclear Safety Regulations has improved the overall conduct of operations and safety at the INEEL. Implementation of the Integrated Safety Management System (ISMS) at the INEEL ensures that operations performed at the INEEL have safety and health requirements integrated with all INEEL work activities.

While emissions of hazardous air pollutants were greater than estimated for four pollutants, the resulting maximum concentrations for those pollutants are still below any regulatory threshold requiring additional controls. As a result there are no adverse health impacts to the public from these pollutants.

The analysis for the RWMC shows no adverse health impacts to the public from buried wastes. However, a cumulative analysis of all of the sources of radioactive wastes left in the ground at the INEEL over the long term needs to be performed (in accordance with DOE O 435.1) in order to fully understand the potential ground water related health impacts to the public.

The analysis in the 1995 EIS was adequate for DOE decisions announced in the ROD. Future DOE decisions on major federal actions on the INEEL, or decisions deferred in the ROD, will require additional analysis for this discipline.

8.4.11 INEEL Services. In almost every category, the usage rate for these resources has gone down. Where they have not, the increase has been more than offset by the identified decreases in resource usage.

The analysis in the 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

8.4.12 Irreversible And Irretrievable Commitments Of Resources. Of the projects analyzed in the1995 EIS some are no longer operating and, of the planned projects, some have not been implemented. As a result irreversible and irretrievable commitments of resources have in general been less than projected in the1995 EIS.

The analysis in the 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

8.4.13 Land Use. A number of changes in activities at the INEEL were noted, however they do not differ substantially from planned uses. There have been changes in land management policies and practices but this has not changed the overall land use.

The 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

8.4.14 Mitigation. The Mitigation analysis is adequate for the scope of activities identified in the 1995 EIS. The addition of other actions to this scope will require additional review to ensure Mitigation actions are not required.

The 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

8.4.15 Noise. The primary source of noise from INEEL operations is from transportation. There have been a number of decreases in transportation activities in the last five years including total number of INEEL workers, decrease in the number of bus routes, elimination of helicopters, and use of a four day work week. The net result has been a reduction in noise levels.

The 1995 EIS provides a bounding analysis for the environmental impacts of noise. Additional analysis for this discipline is not required.

8.4.16 Regulatory Framework for Environmental Restoration and Waste Management. The regulatory analysis performed for the 1995 EIS was acceptable for the time in which it was performed. However, the approach taken was simply a recitation of the most applicable regulations and a general statement of the intent of the regulation. The analysis that needs to be completed is to provide a complete list of all applicable regulations with analysis of how those regulations impact human health and the environment. In every case reviewed, changes in regulations between 1995 and 2000 were to make the regulations more restrictive, thus reducing environmental impacts. The HLW & FD EIS provides a good analysis of most regulations applicable to the INEEL and provides the appropriate level of analysis. The 1995 EIS does not provide a bounding analysis for the regulatory environment, however, the HLW & FD EIS provides the majority of the required analysis. Because the regulatory changes have resulted in reduced environmental impacts, no further analysis is required.

The analysis in the 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

8.4.17 Relationship Between Short-Term Use of the Environment and the Maintenance and Enhancement of Long Term Productivity. Of the projects analyzed in the 1995 EIS some are no longer operating and of the planned projects some have not occurred. The section on cumulative impacts and Impacts from Connected or Similar Actions provides a summary of the operational changes that have occurred since 1995. As a result short-term impacts have in general been less than projected in the 1995 EIS. In addition, the long-term impacts associated with land disturbances have also been less. The potential long-term risk to workers, the public and the environment remains extremely low even though this risk may be long-term. The impacts resulting from wildfires on the INEEL since 1995 were not anticipated in the 1995 EIS. However, again no long-term loss of productivity within the ecological environment on the INEEL is anticipated. Wildfires often times result in a long-term increase in productivity within ecological environments. The wildfire impacts to facility operations on the INEEL resulted in no long-term changes.

This SA acknowledges that several flood studies have been conducted on the INEEL but that there is a degree of uncertainty associated with flooding and overland flow. There is also a difference of opinion between the United States Geological Survey and the Bureau of Reclamation that is fully described in the HLW & FD EIS. Again, although the potential exists for short-term impacts, the existing studies show minimal potential impact on long-term productivity.

The analysis in the 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

8.4.18 Socioeconomics. The 1995 EIS Alternative B projected minimal socioeconomic impacts beyond 1995 since employment levels would be nearly the same as they were in 1995 (8,620 in 1995 and 8,316 Alternative B projected for the year 2000).

The document titled "INEEL Impacts 2000" published by the Department of Energy, Idaho Operations Office, shows total INEEL employment in 2000 was 8,155 people. A comparative analysis between the 3 sets of employment numbers to the current socioeconomic conditions and the continued growth seen in the region of influence and lack of any known direct adverse socioeconomic impacts, supports the 1995 EIS conclusions that minimal socioeconomic impacts have resulted from implementation of the Alternative B decision.

The analysis in the 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

8.4.19 Traffic and Transportation. For purpose of comparison, the number of shipments (1,255) and vehicles miles traveled (9,813,196) related to the INEEL, during the past five years are well within the bounded number of shipments (17,145) and miles (16,157,200) analyzed in the 1995 EIS.

The analysis in the 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

8.4.20 Water Resources.

<u>Ground Water</u>: The 1995 EIS addressed existing groundwater plumes from the TRA, INTEC, TAN, and RWMC. It also provided estimates of ground water doses from the ongoing low-level waste disposal activities at the RWMC. The 1995 EIS showed a dose of 0.60 mrem/yr attributable to the LLW disposal facility through the year 2060. It also stated that results of the preliminary risk assessment for buried wastes indicate that contaminants would not reach the INEEL site boundary exceeding Federal primary drinking water standards through 2005. Additional analysis completed since the 1995 EIS confirms that these statements are still valid. The projected groundwater dose from all buried waste at the RWMC is 0.07 mrem/yr through 2120.

The 1995 EIS stated that additional work was required in order to understand ground water impacts from INEEL operations. Since that time, additional analysis has been completed that addresses some of the unknowns but additional work is still required. The RWMC Composite Analysis (CA) has been completed since the 1995 EIS was published along with updates to the RWMC Performance Assessment. These have addressed one of the major groundwater analysis needs: further definition on the balance of the buried waste at the RWMC. The WAG 3 RI/FS has also been completed since the 1995 EIS and provides another major piece of the groundwater analysis such as impacts from spills at the INTEC. (It should be noted during the discussion of groundwater impacts, that there is a great deal of uncertainty in groundwater modeling and impacts. Most models calculate results conservatively because they cannot duplicate actual transport mechanisms through the vadose zone. These transport processes are highly complex especially in an environment like the INEEL where fractured basalt, rift zones, geothermal activity, and sedimentary interbeds all play a part in fate and transport of contaminants. Analysis done to date has consistently used conservative assumptions in performing this analysis.)

Decontamination and decommissioning (D & D) decisions on ultimate disposition of radiologically contaminated facilities have the potential to add significant source term that may increase the long-term dose reflected in the Composite Analysis. From a site-wide cumulative impacts standpoint, the D & D impacts on the long-term ground water dose are uncertain. D & D decisions must take into account cumulative impacts on groundwater dose estimates. The additional analysis that is needed is a site-wide Composite Analysis in accordance with DOE O 435.1. This information will be used to address some of these uncertainties.

While additional work is required beyond 2005 and for D&D decisions, the conclusions of the 1995 EIS (see page 5.8-4 in the 1995 EIS) are adequate to support the ROD. Actual ground water monitoring data shows decreasing contaminants across the INEEL with the exception of inorganic salts (from agricultural sources in the Mud Lake area) and carbon tetrachloride, which is being addressed through CERCLA remediation actions.

The analysis in the 1995 EIS was adequate for DOE decisions announced in the ROD. Future DOE decisions on major federal actions on the INEEL, or decisions deferred in the ROD, will require additional analysis for this discipline.

<u>Surface Water</u>: Flood hazard characterization in the 1995 EIS was limited to the Mackay dam failure scenario, which is considered to be a bounding accident. Structural failures were assumed to be insignificant due to the shallow depth and low flow velocity at the INEEL approximately 45 miles downstream of Mackay reservoir. Because the effects of the Mackay dam failure scenario were assumed to be small, the effects of the 100 and 500-year floods were not significant on projects analyzed in the 1995 EIS.

Additional flood risk analysis will be required. The flood risk must be assessed consistent with flood hazard analysis prescribed in DOE standards. Specifically the 100-year and 500-year flood plains must be refined for the INEEL. DOE-ID will refine the Flood Plain documentation per 10 CFR 1022. The review determined that the flood plain analysis in 1995 was adequate for safe operation of INEEL facilities.

The analysis in the 1995 EIS was adequate for DOE decisions announced in the ROD. Future DOE decisions on major federal actions on the INEEL, or decisions deferred in the ROD, will require additional analysis for this discipline.

8.5 Conclusions

In making the determination that additional analysis is required, the baseline (Alternative B) against which this analysis was completed must be considered. Since Alternative D was the maximum impact case, it is important to understand whether the additional analysis was unanalyzed (not in the 1995 EIS) or not a part of the ROD (a part of one of the other alternatives but not a part of Alternative B.) In this case, the additional analysis that is required is not included in any of the other alternatives in the 1995 EIS. Hence the additional analysis identified above is required.

9.0 SUMMARY

9.1 Program Change Analysis Summary

This section summarizes the results of the Program Change Analysis.

Decontamination and Decommissioning (D&D)

The D&D program has not accomplished all of the D&D activities previously projected because of reduced funding availability. The buildings that have undergone the D&D process have not had environmental impacts greater than those analyzed. The only impact not completely analyzed is the affect on site groundwater of future D&D decisions to leave radiological contamination in place vs. disposal in a LLW disposal facility. D & D decisions made since the 1995 EIS and which left radioactive source term in the ground received additional NEPA analysis. Further analysis may be required to ensure future D&D decisions are integrated with a sitewide groundwater analysis to understand the impacts of project specific decisions.

Environmental Restoration (ER)

With CERCLA actions, the environmental impacts are analyzed during the CERCLA process, including a public involvement process. The NEPA values that are not routinely addressed through CERCLA are addressed in the 1995 EIS. The changes that have taken place in the ER program over the last five years have resulted in reduced environmental impacts.

All impacts described in the 1995 EIS are bounding from a NEPA perspective. The purpose of this supplement analysis was not to analyze the adequacy of the CERCLA decisions but to ensure that a multidisciplinary review of proposed sitewide actions was conducted.

High-Level Waste

The high-level waste program is considering significant changes. As a result, an EIS has been prepared to analyze these proposed changes. The EIS describes environmental impacts that are beyond those impacts described in the 1995 EIS. No further NEPA analysis is required for this program because those HLW related impacts beyond those described in the 1995 EIS are addressed in the HLW & FD EIS.

Infrastructure

Projects in the 1995 EIS not specifically included in the ER, WM, HLW, or SNF sections are addressed in this analysis. The 1995 EIS covers the infrastructure projects listed and describes

8.5 Conclusions

In making the determination that additional analysis is required, the baseline (Alternative B) against which this analysis was completed must be considered. Since Alternative D was the maximum impact case, it is important to understand whether the additional analysis was unanalyzed (not in the 1995 EIS) or not a part of the ROD (a part of one of the other alternatives but not a part of Alternative B.) In this case, the additional analysis that is required is not included in any of the other alternatives in the 1995 EIS. Hence the additional analysis identified above is required.

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Infrastructure

Projects in the 1995 EIS not specifically included in the ER, WM, HLW, or SNF sections are addressed in this analysis. The 1995 EIS covers the infrastructure projects listed and describes the balance of the infrastructure program. A number of Line Item Construction Projects have taken place in the last five years but these are like-for-like replacements and are still bounded by the impacts described in the 1995 EIS. No further NEPA analysis is required for the portions of the Infrastructure program covered by the 1995 EIS.

Spent Nuclear Fuel (SNF)

All INEEL projects related to the SNF program have been analyzed. Changes to the program in the last five years have resulted in reduced environmental impacts due to fewer SNF shipments. Privatization activities with the Independent Spent Fuel Storage Installation represent changes in the program but not in environmental impacts.

Waste Management (WM)

All aspects of the WM program have been analyzed. Changes to the program in the last five years have resulted in reduced environmental impacts (specific examples include the shutdown of WERF and the decision to not build a greater than class-C storage facility). Some of the environmental impacts for the WM program are analyzed in the AMWTP EIS. No impacts were analyzed in the AMWTP EIS that would exceed the impacts described in the 1995 EIS.

9.2 Summary of Alternatives Analysis

While the 1995 EIS used a cutoff date of 2005 for the analysis, this review has determined that the 1995 EIS provides a bounding analysis for most projects beyond 2005. This issue could be reexamined when the next Supplement Analysis is conducted to ensure the continued validity of this determination. Any changes in programmatic actions will require additional analysis to determine whether the proposed changes are within or outside of the scope of the 1995 EIS.

9.3 Environmental Discipline Change Analysis Summary

This section summarizes the results of the Environmental Discipline Change Analysis. In the following areas where additional analysis is being recommended, it has been determined that the analysis in the 1995 EIS was adequate for DOE decisions announced in the ROD. Future DOE decisions on major federal actions on the INEEL, or decisions deferred in the ROD, will require additional analysis for projects affecting these disciplines.

Environmental Disciplines

The results of the environmental discipline change analysis indicate that the following additional analyses needs to be completed: Air Resources analysis impact zone needs to be extended from the 50 km in the 1995 EIS to 200 km to address stakeholder concerns, the Big Lost River flood plain determination on the INEEL should be refined, and the Wildfire Environmental Assessment should be completed. From a regulatory perspective a site-wide composite analysis in accordance with DOE O 435.1 should be completed. While additional analysis is being recommended, the analysis in the 1995 EIS was adequate for DOE decisions announced in the ROD. Future DOE decisions on major federal actions on the INEEL, or decisions deferred in the ROD, will require additional analysis for these disciplines.

The following summarizes the findings from the Environmental Discipline Change Analysis.

Adverse Environmental Effects Which Cannot Be Avoided

In general, adverse environmental effects that cannot be avoided are less than projected in the1995 EIS. However, additional analysis is still required for both cultural resources and ecology to understand these impacts through completion of the Wildland Fire EA.

Aesthetic and Scenic Resources

Existing analysis is adequate because there are no air quality or visibility issues that are changing the character of the landscape.

Air Resources

Summary of Table 8-1.3.2 and Table 8-1.10.2 Onsite Emissions Impacts of Toxic Air Pollutants

	Amount Analyzed[a] (kg per year)	Total INEEL Emissions (kg per year)	Revised Concentrations (μg/m^3)	Percentage of Standard	Standard[b] (μg/m^3)
Beryllium	0.18	0.59	9.2E-04	< 1	$2x10^0$ μg/m^3
Carbon tetrachloride	268	2,468	2.3E+03	18	$1.3x10^4$ μg/m^3
Chloroform	11.5	51.68	4.9E+01	< 1	$9.8x10^3$ μg/m^3
Hydrochloric acid	17500	21,950	1.8E+02	3	$7x10^3$ μg/m^3

a. This is the amount analyzed in the 1995 EIS for alternative B.
b. Limits are 8-hour time-weighted averages established by either the American Conference of Government Industrial Hygienists or the Occupational Safety and Health Adminstration; the lower of the two is used.

While actual emissions of these pollutants were shown to have exceeded the analyzed amount in the 1995 EIS, health and safety impacts of this level of emissions were shown to be negligible. None of these emissions exceeded occupational exposure limits. Total INEEL emissions are within regulatory requirements. However, no analysis of air impacts has been completed beyond 50 km, it is recommended that analysis be completed for some sectors to 200 km based on stakeholder requests and National Park Service requirements.

Cultural Resources

Existing analysis is adequate as long as the INEEL Cultural Resources Management Plan is implemented and assuming completion of the Wildland Fire EA.

Cumulative Impacts and Impacts from Connected or Similar Actions

Cumulative Impact analysis is adequate except for flooding which may need to be updated using data based on a final flood plain determination.

Ecology

Existing analysis is adequate assuming completion of the Wildland Fire EA and no additional impacts to ecological resources from habitat loss.

Environmental Justice

Existing analysis is adequate because there has been no significant spatial redistribution of minority and low income population within the region of influence.

Facility Accidents

Technically adequate, cannot compare results of different analysis, there is a new bounding accident for the INEEL in HLW & FD EIS.

Impacts to the maximally exposed individual of bounding accidents on the INEEL.

	1995 EIS	HLW & FD EIS	LCF
Hot Fuel Examination Facility fuel handling accident	5.0 rem		1
Seismically induced failure of degraded bin sets after 2095		83 rem	270
Failure of ammonia tank connections		Greater than ERPG-2 at 3,600 m	

Geology

Existing analysis is adequate to support facility design and safety. The general geology supports DOE flood hazard requirements.

Health and Safety

Health effects of increased air pollutants were shown to be negligible. Health effects from ground water analysis are shown to still be negligible.

Summary of Table 8-1.10.5 “Offsite Emissions Impacts of Toxic Air Pollutants” for constituents that exceeded previously analyzed emission levels.

Air Pollutant[a]	1995 EIS Concentrations (ng/m^3)		Revised Concentrations (ng/m^3)		Standard (ng/m^3)[b]	Impact as percent of standard	
	Site Boundary	Public Roads	Site Boundary	Public Roads		Site Boundary	Public Roads
Beryllium	4.0E-04	1.0E-03	1.3E-03	3.3E-03	4.2E+00	<1	<1
Carbon tetrachloride	2.4E+00	2.2E+00	2.2E+01	2.0E+01	6.7E+01	33	30
Chloroform	8.9E-02	8.3E-02	2.6E-01	2.4E-01	4.3E+01	<1	<1
Hydrochloric acid[c]				1.7E-02 mg/m^3	3.8E-01[d] mg/m^3		4.5

a The four air pollutants shown were the only pollutants that exceeded the estimated air emissions in the 1995 EIS. The other pollutant emissions were within the previously anlayzed impacts. A complete list of pollutants and emissions is given in App. 8-1 section 10.

b As in the 1995 EIS, these are the Acceptable ambient concentration increments (AAC) listed in State of Idaho Rules for the Control of Air Pollution in Idaho. These standards apply to incremental (not cumulative) impacts of facilities constructed or modified after May 1, 1994.

c. The ratio was not used for this pollutant. The revised concentrations were obtained from "Operable Unit 7-08 Air Dispersion Modeling and Health Effects from Thermal and Catalytic Oxidation Unit Emissions at the Radioactive Waste Management Complex", EDF-1901, June 25, 2001. Only the portion of the HCl emissions that is greater than in the 1995 EIS are reflected here. Since the locations of the two sources are different, there is not a concern with cumulative effects between the two sources.

d. Acceptable Ambient Concentration (AAC) for hydrochloric acid (24-hour average) (IDAPA 58.01.01)

Summary of Table 8-1.10.4 Radioactive Dose to the Public

Years	Actual Dose to Maximally Exposed Individual (mrem)	1995 EIS Estimated Dose to Maximally Exposed Individual (mrem)[e]	Actual Maximum Potential Population Dose (person-rem)	1995 EIS Estimated Maximum Potential Population Dose (person-rem)[f]
1995[a]	0.018	0.63	0.08	2.9
1996[b]	0.03	0.63	0.2	2.9
1997[c]	0.03	0.63	0.2	2.9
1998[d]	0.007	0.63	0.08	2.9

INEEL Services

Existing analysis is adequate based on the reported resource usage summary.

Summary of Table 8-1.11.1 Usage of Resources

1995 EIS Annual Usage	**Most Recent Data**
Water usage – - INEEL site: 1.78 billion gal - I.F. Facilities: 79 million gal	Water Usage 2000 - INEEL site: 1.2 billion gallons I.F. Facilities: 71 million gallons
Electricity usage - INEEL site: 303,521 megawatt hrs I.F. Facilities: 31,500 megawatt hrs	Electricity usage 2000 - INEEL site: 156,639 megawatt hrs I.F. Facilities: 27,683 megawatt hrs
Fuel consumption - Heating Oil usage 4.25M gal; Diesel Fuel usage 1.8M gal; Propane gas use 863,000 gal; Gasoline usage 557,000 gal; Jet Fuel usage 73,100 gal; Kerosene usage 33,800 gal; Coal usage - 9000 tons (Natural gas and LNG/CNG was not addressed in the 1995 EIS)	Calendar Year 2000 Actuals Heating Oil use 2.3 M gal Diesel Fuel use 652,800 gal Propane usage 63,121 gal Gasoline usage 381,347 gal Jet Fuel usage 0 gal * Kerosene usage 45,006 gal Coal usage 0 tons LNG/CNG usage 4.6Mbtu Natural Gas usage 16,816 Mcf
Wastewater treatment and discharge systems. Average annual wastewater disposal INEEL site: 144 million gal I.F. facilities: 79 million gal	Wastewater disposal 2000 - INEEL site: 1.16 billion gal** I.F. facilities: 70 million gal

* This change is a result of discontinuing helicopter service on the INEEL.
** The table used in the 1995 EIS for the actual waste water disposal data for the INEEL site for 1995 (142 million gallons) appears to be in error. Based on 1996 data, (1.18 billion gallon disposed), an overall decrease in wastewater disposal is evident over the period of analysis. This water disposal is in accordance with regulatory requirements and no adverse environmental impacts have been observed as a result of this disposal.

Irreversible and Irretrievable Commitments of Resources

Existing analysis is adequate because irreversible and irretrievable commitments of resources have in general been less than projected in the1995 EIS.

Land Use

Existing analysis is adequate because the changes in land use have received appropriate analysis.

Acres of undisturbed land projected to be disturbed: 537 acres (217 hectares)
Approximate acres of undisturbed land actually disturbed including acreage to be disturbed that was identified in a decision document but not yet implemented:

INTEC Percolation Ponds	= 20
ICDF	= 40
SSST	= 20
Expanded Landfill	= 225
CFA Medical and Fire Station	= 7
Gravel Pits Total	= 85
*Silt/Clay Sources	= 290
TRA Sewage Lagoons	= 18
Total	= 705

*An Environmental Assessment for New Silt/Clay Source Development and Use at the INEEL was completed and identified 290 additional acres needed for Silt/Clay extraction.

Mitigation

Existing analysis is adequate. None of the proposed mitigation measures described in the 1995 EIS were required to be implemented.

Noise

Existing analysis is adequate because the number of primary noise sources (cars/buses) has decreased.

Regulatory Requirements

Existing analysis is adequate. Regulatory changes are more restrictive than in 1995

Relationship Between Short Term Use of the Environment and the Maintenance and Enhancement of Long Term Productivity

Existing analysis is adequate because projects implement from the 1995 EIS have had short term environmpental impacts that have been offset by long term enhancement of environmental productivity.

Socioeconomics

Existing analysis is adequate because site service and employment levels are at or below the analysis conducted in the 1995 EIS.
Table 8-1.18.2 Projected Employment

	1995 Actuals	2000 (projected in 1995 EIS)	2000 (Actuals based on "INEEL Impacts 2000")
Direct Employment	8,620	8,316	8,155

Traffic and Transportation

Existing analysis is adequate because the total number of shipments to the INEEL is over 5 times less than was analyzed in the 1995 EIS.

Total radioactive shipments estimated in the 1995 EIS (10 years)	17, 145
Total actual radioactive shipments through FY 2000 (5 years)	1,255

Water Resources

Ground Water

The 1995 EIS ground water analyses was adequate to support all decisions made in the ROD. As new information becomes available from completion of the site-wide Composite Analysis in accordance with DOE O 435.1 on impacts to groundwater, DOE-ID will incorporate the ground water analysis into future decisions.

The ground water monitoring results comparing data from the 1995 EIS and maximum ground water monitoring results from 1995 - 1999 is shown in Table 8-1.20.1. The table shows decreased contaminant levels for most contaminants. The contaminants that show increases are for inorganic salts around the Mud Lake area (not attributable to INEEL actions) and for carbon tetrachloride. Carbon tetrachloride is being addressed through the CERCLA program which is the procedural equivalent of NEPA.

The 1995 EIS showed a dose of 0.60 mrem/yr attributable to the LLW disposal facility through the year 2060. It also stated that results of the preliminary risk assessment indicate that contaminants would not reach the INEEL site boundary exceeding Federal primary drinking water standards through 2005. Additional analysis completed since the 1995 EIS (the HLW & FD EIS, WAG 3 RI/FS, and RWMC PA/CA) confirms the adequacy of the 1995 EIS.

Surface Water

DOE-ID will refine the Flood Plain documentation per 10 CFR 1022. The review determined that the flood plain analysis in 1995 was adequate for safe operation of INEEL facilities.

9.4 Change Analysis Conclusions

The programs and projects addressed in the 1995 EIS have NEPA documentation that addresses current and planned actions. A number of facilities and operations rely on NEPA documentation in addition to the 1995 EIS to provide an adequate representation of the environmental impacts of these actions. The only area for further analysis identified for projects in the 1995 EIS is in the D&D program. As stated in the ROD for the 1995 EIS, additional analysis will be required before making decisions for the D&D of these facilities. The Supplement Analysis did not evaluate the adequacy of NEPA documentation for any of the national programs that are managed through DOE-ID or for the Grand Junction Field Office.

While the 1995 EIS used a cutoff date of 2005 for the analysis, this review determined that the 1995 EIS provides a bounding analysis for most projects beyond 2005. Any changes in programmatic actions will require additional analysis.

The results of the environmental discipline change analysis indicate that the following additional analyses needs to be completed: Air Resources analysis impact zone needs should be extended from the 50 km in the 1995 EIS to 200 km to address stakeholder concerns, the Big Lost River flood plain on the INEEL needs to be refined, and the Wildfire Environmental Assessment must be completed. While additional analysis is being recommended, the analysis in the 1995 EIS was adequate for DOE decisions announced in the ROD. Future DOE decisions on major federal actions on the INEEL, or decisions deferred in the ROD, will require additional analysis for these disciplines.

10.0 LIST OF PREPARERS

This list presents the individuals who contributed to the technical content of this Supplement Analysis. Some of the individuals listed below prepared specific sections in accordance with their technical qualifications. Other technical experts provided input to those sections through in-depth review and data verification. Still others provided overall technical or management reviews for their respective organizations.

Name:	**William G. Bass**
Affiliation:	U. S. Department of Energy – Chicago Operations Office
Education:	B. S., Civil Engineering, 1983
Technical Experience:	18 years, including 8 years of public works design and construction, and ten years of environmental regulatory compliance oversight.
SA Responsibility:	ANL-W project descriptions

DOE-ID will refine the Flood Plain documentation per 10 CFR 1022. The review determined that the flood plain analysis in 1995 was adequate for safe operation of INEEL facilities.

9.4 Change Analysis Conclusions

The programs and projects addressed in the 1995 EIS have NEPA documentation that addresses current and planned actions. A number of facilities and operations rely on NEPA documentation in addition to the 1995 EIS to provide an adequate representation of the environmental impacts of these actions. The only area for further analysis identified for projects in the 1995 EIS is in the D&D program. As stated in the ROD for the 1995 EIS, additional analysis will be required before making decisions for the D&D of these facilities. The Supplement Analysis did not evaluate the adequacy of NEPA documentation for any of the national programs that are managed through DOE-ID or for the Grand Junction Field Office.

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Education:	B. S., Civil Engineering, 1983
Technical Experience:	18 years, including 8 years of public works design and construction, and ten years of environmental regulatory compliance oversight.
SA Responsibility:	ANL-W project descriptions

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Affiliation:	U. S. Department of Energy – Idaho Operations Office
Education:	B. S., Civil Engineering B. S., Petroleum Engineering M. S., Petroleum Engineering
Technical Experience:	Professional Engineer, Certified Quality Manager, Program manager for National Spent Nuclear Fuel and DOE-ID QA Programs.
SA Responsibility:	Quality Control

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SA Responsibility:	Public Affairs

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Education:	M. S., Geology, 1998 B. S., Earth Sciences, 1983
Technical Experience:	12 years of experience in DOE research and project management in contaminant transport, earthquake engineering, and flood hydrology.
SA Responsibility:	Geology, Ground Water, Surface Water

Name:	**Jack D. Depperschmidt**
Affiliation:	U. S. Department of Energy – Idaho Operations Office
Education:	B. S., Wildlife Biology, 1985

Technical Experience: 15 years; 2 years experience with NESHAP approvals and State Air Permitting; 11 years experience with Toxic Substances Control Act and Resource Conservation and Recovery Act Permitting and Compliance; 6 years experience with the National Environmental Policy Act making NEPA determinations.

SA Responsibility: Aesthetic and Scenic Resources, Environmental Justice, Land Use, Noise

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Affiliation: U. S. Department of Energy – Idaho Operations Office

Education: J. D., 1985
M. S., Biology, 1980
B. A., Geography and Anthropology, 1978

Technical Experience: 19 years, including 13 years as environmental attorney; 6 years in photogrammetry, NEPA data collection, and statistical analysis.

SA Responsibility: Consultations, Regulatory Compliance

Name: **William S. Harker**

Affiliation: U. S. Department of Energy – Idaho Operations Office

Education: B. S., Industrial Technology, 1979

Technical Experience: 21 years, including 7 years in INEEL Infrastructure Program management. Work involves site-wide programs including General Purpose Capital Equipment, INEEL Welding Program, Vessel Inspection Program, and Project Manager for Infrastructure Line Item and General Plant Construction projects.

SA Responsibility: Infrastructure Program, INEEL Services

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Affiliation: U. S. Department of Energy – Idaho Operations Office

Education: M. B. A., 1993
B. A., Accounting, 1991
B. A., Management and Organization, 1991

Technical Experience: 10 years including 2 years experience in compiling and developing socioeconomic data for INEEL, 5 years as a program/budget analyst, 1 year as labor/employee benefit analyst for INEEL

SA Responsibility:	Socioeconomics
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Affiliation:	U. S. Department of Energy – Naval Reactors/Idaho Branch Office
Education:	Master of Engineering Administration (MEA) 1997
Technical Experience:	15 years experience in the Naval Nuclear Propulsion Program
SA Responsibility:	Naval Reactors Facility operations, Naval spent nuclear fuel management
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Affiliation:	U. S. Department of Energy – Idaho Operations Office
Education:	B. S., Mechanical Engineering, 1972
Technical Experience:	29 years in the construction project field; 10 years of Federal service supporting Waste Management or Defense Programs and 18 years in private industry; in design, construction management and project management
SA Responsibility:	Waste Management Program
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Affiliation:	U. S. Department of Energy – Idaho Operations Office
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Technical Experience:	20 years, 11 years in commercial nuclear power (environmental monitoring and emergency planning), 9 years DOE (project management, environmental compliance, and NEPA analyses)
SA Responsibility:	Adverse Effects, Irreversible Commitments, Short Term Use/Long Term Productivity
Name:	**Patricia M. Natoni**
Affiliation:	U. S. Department of Energy – Idaho Operations Office
Education:	M. S., Agronomy, 1993 B. S., Biology, 1991

Technical Experience:	7 years; 4 years as Cultural Resources Program Coordinator, 3 years in public involvement, 2 years Long Term Stewardship Program Manager
SA Responsibility:	Long Term Stewardship
Name:	**Glenn E. Nelson**
Affiliation:	U. S. Department of Energy – Idaho Operations Office
Education:	B. S., Chemical Engineering 1971 M. S., Chemistry 1973
Technical Experience:	24 years experience, contractor and federal, working with nuclear construction projects, fuel reprocessing plant operations, and environmental restoration activities. 6 years research and development experience, contractor and federal, working with solid propellants and explosives for strategic and tactical missiles.
SA Responsibility:	Environmental Restoration Program
Name:	**Jeffrey N. Perry**
Affiliation:	U. S. Department of Energy – Idaho Operations Office
Education:	B. S., Mechanical Engineering, 1986
Technical Experience:	10 years experience in waste management, reactor operations, and environmental management
SA Responsibility:	Project Manager, Air Resources, Ground Water, Health and Safety
Name:	**Ronald O. Ramsey**
Affiliation:	U. S. Department of Energy – Idaho Operations Office
Education:	B. S., Chemistry 1983
Technical Experience:	17 years experience as a contractor and federal employee in program management involving: hazardous wastes (risk assessment, environmental fate, test methods, regulatory support); environmental design and NEPA support for government programs; waste management oversight; and the INEEL spent nuclear fuel program.
SA Responsibility:	Spent Nuclear Fuel Program

Name:	**Ralph W. Russell**
Affiliation:	U. S. Department of Energy – Idaho Operations Office
Education:	B. S., Chemical Engineering, 1970
Technical Experience:	22 years air quality; 6 years public involvement
SA Responsibility:	Air Resources
Name:	**Robert A. Starck**
Affiliation:	U. S. Department of Energy – Idaho Operations Office
Education:	B. S., Zoology, 1975
Technical Experience:	15 years environmental science
SA Responsibility:	Cultural Resources
Name:	**Miriam R. Taylor**
Affiliation:	U. S. Department of Energy – Idaho Operations Office
Education:	B. S., Corporate Training 1997
Technical Experience:	3 years Traffic and Transportation Program Manager
SA Responsibility:	Traffic and Transportation
Name:	**Roger L. Twitchell**
Affiliation:	U. S. Department of Energy – Idaho Operations Office
Education:	B. S., Botany, 1977
Technical Experience:	24 years natural resources management experience including 7 years NEPA specialist with BLM; 6 years natural resources officer with the Marine Corps; 8 years with DOE on NEPA, CERCLA, RCRA, and NRDA projects; 7 years as DOE-ID NCO.
SA Responsibility:	INEEL NEPA Compliance Officer, Ecological Resources, Cumulative Impacts

Name:	**Kenneth R. Whitham**
Affiliation:	U. S. Department of Energy – Idaho Operations Office
Education:	B. S., Physics, 1993
Technical Experience:	7 years with DOE. Radiological Controls program manager and alternate Price Anderson Amendments Act Coordinator.
SA Responsibility:	Health and Safety

11.0 LIST OF REFERENCES

Section 6.5.1 Decontamination and Decommissioning (D&D)

Richards, B., to Perry, J. N., E-mail dated 12/7/2000, Subject: D&D Program Change Analysis

Section 6.5.2 Environmental Restoration (ER)

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Section 6.5.3 High-Level Waste

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Coombs, R. S., to Harker, W. S., E-mail 12/14/2000, Subject: Upgrades to CPP-651 Since 1995

FY-2000 Idaho Falls Facilities Water Usage

FY-2000 Water Pumped in Gallons and FY-2000 Water Pumped in Gallons/Disposed, 11/28/2000

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INEEL Coal Summary 1971 – 1996

INEEL Industrial Usage Summary (Fuel Oil & Diesel, Coal, and Water Pumped), 1996, SCH. NO. INRPT 030A

Name:	**Kenneth R. Whitham**
Affiliation:	U. S. Department of Energy – Idaho Operations Office
Education:	B. S., Physics, 1993
Technical Experience:	7 years with DOE. Radiological Controls program manager and alternate Price Anderson Amendments Act Coordinator.
SA Responsibility:	Health and Safety

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Section 6.5.1 Decontamination and Decommissioning (D&D)

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LLW CY95, CY96 compiled from Radioactive Waste Management System (RWMIS) database.

LLW CY97 compiled from IWTS/RWMIS databases.

LLW CY98, CY99, CY00 compiled from IWTS database.

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Section 8.4.7 Environmental Justice

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Ogilvie, C. to Harker, W. S., E-mail, “EIS Supplemental Analysis – Administrative Record for Emergency Preparedness”, dated 5/28/2001

Section 8.4.13 Land Use

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INEEL Infrastructure Long-Range Plan, August 2000, INEEL/EXT-2000-01052 Draft C

Section 8.4.15 Noise

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INEEL Impacts 2000

Section 8.4.18 Socioeconomics

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Section 8.4.20 Water Resources

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Appendix 5-1 INEEL RELATED NEPA ANALYSIS

One task in preparing a comprehensive look at site-wide operations was to compile and document all of the NEPA analyses that have been completed for INEEL operations. The Supplement Analysis project undertook the task of compiling a summary of all NEPA documents from around the Complex that potentially analyze INEEL operations. This required documenting what INEEL operations have been analyzed, where they were analyzed, and what decisions were made concerning those operations.

The list of documents reviewed was compiled from two sources. The first source was EAs and EISs that were referenced in NEPA analyses that analyzed some portion of INEEL operations. The other source for documents on the list was the EH web site. The EH web site search engine was used to find all documents that reference INEEL operations. Documents were included that were signed from 1994 to the present. This was done to ensure that all documents were included that reference INEEL operations that were not (or may not have been) considered in the 1995 EIS.

Every document that references INEEL operations has a summary prepared that shows the scope of the analysis and what portion of the INEEL operations were analyzed along with the decisions that were made concerning that analysis. The document summaries are given in Appendix 5-2. The following table shows a summary of every NEPA document that affects INEEL operations and its potential mission impacts. The following acronyms are used for different sites.

INEEL	Idaho National Engineering and Environmental Laboratory
LANL	Los Alamos National Laboratory
LLNL	Lawrence Livermore National Laboratory
NTS	Nevada Test Site
ORNL	Oak Ridge National Laboratory
RFETP	Rocky Flats Environmental Treatment Park
SRS	Savannah River Site

Title and Document Number	Status	Sites and Purpose	Potential Mission Impacts on the INEEL
Demolition of the S5G Cooling Tower; Butler Building 7, 8, and 9; S1W No. 2 Spray Pond; and S1W Exterior Ventilation at INEEL, NRF Scoville, Idaho, DOE NR IBO EA	FONSI 8/1997	This EA and the FONSI identified and evaluated environmental impacts associated with the demolition of various structures on the Naval Reactors Facility site. Additionally, no impacts related to the implementation of the National Historic Preservation Act and Memoranda of Agreements with the State of Idaho Historic Preservation Officer were identified.	NRF – D&D of a number of facilities at the NRF site.
Environmental Assessment:	FONSI 6/2000	INEEL – The proposed action is to demolish	NRF – D&D of a number of facilities at the

Title and Document Number	Status	Sites and Purpose	Potential Mission Impacts on the INEEL
Demolition of Fourteen Buildings and One Structure Ancillary to the Naval Prototype Plants at the Naval Reactors Facility		and dispose of fourteen buildings and one structure at the INEEL Naval Reactors Facility.	NRF site.
Proposed Finding of No Significant Impact for Operation of the Glass Melter Thermal Treatment Unit at the U.S. Department of Energy's Mound Plant, Miamisburg, Ohio, DOE/EA-0821	FONSI 6/1995	Mound Site, Quadrex HPS, Diversified Scientific Services, INEEL, LANL, SRS, Oak Ridge National Laboratory (ORNL), NTS – This EA analyzes treatment of Mound radioactive mixed waste by means of the glass melter and offers a route toward correction of Mound's RCRA waste storage violation, and also a means to greatly minimize hazards associated with temporary storage of mixed waste by destruction of organic material and immobilization of many inorganic RCRA hazardous and radioactive constituents.	WM - WERF was analyzed as a treatment option for Mound mixed waste.
Idaho National Engineering Laboratory Low-Level and Mixed Waste Processing, DOE/EA-0843	FONSI 6/1994	INEEL - The DOE prepared this EA to reduce the need to store accumulated waste, which in turn would reduce the radiation exposure to INEEL workers and reduce the risk of additional exposure from storage container deterioration. The proposed action would also reduce the volume of waste being disposed of at the Radioactive Waste Management Complex, thereby conserving its disposal capacity.	WM - The program analyzed included WERF incineration, sizing, compaction, and stabilization; offsite incineration in operating commercial facilities; and continued storage of mixed low-level waste (MLLW) at the MLLW Storage Facility.
Expansion of the Idaho National Engineering Laboratory Research Center, DOE/EA-0845	FONSI 3/1994	INEEL - The DOE prepared an EA to expand and upgrade facilities at the Idaho National Engineering and Environmental Laboratory Research Center (IRC).	IRC – Upgraded and new construction for laboratory facilities.
Waste Characterization Facility at the Idaho National Engineering Laboratory, DOE/EA-0906	FONSI 2/1995	INEEL - The DOE prepared an EA, to construct and operate a Waste Characterization Facility (WCF) at the INEEL. This facility is needed to examine and characterize containers of transuranic (TRU) waste to certify compliance with transport and disposal criteria; to obtain information on waste constituents to support proper packaging, labeling, and storage; and to support development of treatment and disposal plans for waste that cannot be certified. DOE would construct the WCF at the RWMC.	WM - The decision was made to proceed with construction of the WCF.

Title and Document Number	Status	Sites and Purpose	Potential Mission Impacts on the INEEL
INEL Sewer System Upgrade, DOE/EA-0907	FONSI 4/1994	INEEL – The DOE prepared this EA to provide the INEEL with a reliable method for treating and disposing of sanitary sewage waste.	Infrastructure - INEEL sewer system upgrades.
Proposed Interim Storage of Enriched Uranium Above the Maximum Historical Storage Level of the Y-12 Plant and Finding of No Significant Impact, DOE/EA-0929	FONSI 5/1995	22 different DOE sites that store enriched uranium including the INEEL - The DOE has prepared an EA for the Proposed Interim Storage of Enriched Uranium Above the Maximum Historical Storage Level at the Y-12 Plant, Oak Ridge, Tennessee. The EA evaluates the environmental effects of transportation, pre-storage processing, and interim storage of bounding quantities of enriched uranium at the Y-12 Plant over a ten-year period.	Infrastructure - INEEL programs analyzed are shipment of INEEL and ANL-W highly enriched uranium and low enriched uranium to the Y-12 plant at Oak Ridge, TN. The impacts of leaving the material in place were evaluated in the No Action Alternative.
Relocation and Storage of Training, Research, Isotope, General Atomic (TRIGA) Reactor Fuel U. S. Department of Energy Richland, Washington, DOE/EA-0985	FONSI 8/1995	Hanford (Evaluates shipment of fuel to the INEL prior to the 1995 SNF EIS. This has been superseded by the 1995 SNF EIS ROD.)	SNF -
Replacement of the Idaho National Engineering Health Physics Instrumentation Laboratory, DOE/EA-1034	FONSI 5/1995	INEEL – This EA was completed to replace, upgrade, or move the Health Physics Instrumentation Laboratory (HPIL), or its functions, to provide a safe environment for maintaining, calibrating, and verifying radiation detection instruments used at the Idaho National Engineering and Environmental Laboratory (INEEL).	Infrastructure - HPIL replacement
Environmental Assessment for Stabilization of the Storage Pool at Test Area North, DOE/EA-1050	FONSI 5/1996	INEEL - DOE prepared an EA to remove the canisters of TMI core debris and commercial fuels from the TAN Pool and transfer them to the INTEC for interim dry storage until an alternate storage location other than at the INEEL, or a permanent federal SNF repository is available. The TAN Pool would be drained and placed in an industrially and radiological safe condition for refurbishment or eventual decommissioning.	SNF - This environmental assessment (EA) identified and evaluated environmental impacts associated with spent nuclear fuel for (a) constructing an Interim Storage System (ISS) at INTEC, (b) removing the TMI and commercial fuels from the pool and transporting them to INTEC for placement in an ISS, and (c) draining and stabilizing the TAN Pool. DOE also proposed to remove and decontaminate or dispose of miscellaneous hardware in the INEEL RWMC.
Environmental Assessment and FONSI - Radioactive Source Recovery Program, DOE/EA-1059	FONSI 12/1995	LANL; Public, Private, and Government holders of radioactive sources - Potential risks to the public health and safety from aging radioactive sources held by private companies,	TRA - The TRA was initially proposed as a potential location for the source recovery effort. This proposal was dismissed due to unworkable programmatic impacts. Shipment

Title and Document Number	Status	Sites and Purpose	Potential Mission Impacts on the INEEL
		universities, and government entities have been identified. The aging of these sources, coupled with the increasing complexity of the licensing of nuclear materials has made radioactive source ownership more burdensome and costly, but source owners who want to get rid of their excess or unwanted sources have no options for doing so. This situation, potentially leading to mishandling or mismanagement of radioactive sources, causes a risk to public health and safety.	of sources currently held by the INEEL was not included in the analysis.
New Silt/Clay Source Development and Use at Idaho National Engineering and Environmental Laboratory, DOE/EA-1083	FONSI 5/1997	INEEL - The DOE proposed an EA to close its current silt/clay source and open as many as three new sources with volumes sufficient to support potential INEEL projects through 2005. The current source, Spreading Area B southwest of the RWMC, is the sole INEEL silt/clay source. Of the estimated 717,700 cubic yards of silt/clay available in Spreading Area B, about 300,000 cubic yards remain and, at the present rate of mining and would be depleted in late 1997. A 1996 survey estimates that the INEEL needs 2,300,000 cubic yards of silt/clay material over the next ten years.	Infrastructure - DOE determined that opening one to three new borrow sources concurrently or individually to meet INEEL silt/clay needs through 2005 was required. The following on-site locations could provide this material: Ryegrass Flats, 5.5 miles east of the Central Facility Area (CFA); Spreading Area A, 9.0 miles southwest of CFA; and Waste Reactor Research Test Facility (WRRTF), 25 miles north of CFA. While any of the three sites could meet the entire silt/clay needs of the INEEL, DOE will likely use a combination of sites to meet INEEL's needs because of costs and transportation efficiencies.
Environmental Assessment and FONSI for Consolidation of Certain Materials and Machines for Nuclear Criticality Experiments and Training, DOE/EA-1104	FONSI 5/1996	LANL, INEEL, Hanford, ORNL, SNL - DOE has committed to continue its on-going experimentation program of general-purpose criticality experiments and to continue to provide an education program for criticality safety professionals. Los Alamos Critical Experiments Facility (LACEF) is the last remaining operating facility in the United States capable of general-purpose criticality experiments and criticality training. Criticality experiments at other DOE sites have been eliminated from their areas of responsibility in an effort to streamline the DOE complex and avoid expensive program duplication. The transfer of certain materials and machines now located at other DOE sites to LACEF will allow DOE to further its capability to provide a robust	ANL-W, INTEC – The surplus weapons grade plutonium in storage at INEEL would be inspected and packaged in Department of Transportation (DOT) authorized shipping containers. The INEEL materials would be shipped by DOE safe secure transport or safe/secure trailer or stainless steel or secondary surge tank (SSTs) to LANL as weapons grade material.

Title and Document Number	Status	Sites and Purpose	Potential Mission Impacts on the INEEL
		experimentation program in support of reducing nuclear criticality safety risks.	
Environmental Assessment for Offsite Thermal Treatment of Low-level Mixed Waste, DOE/EA-1135	FONSI 12/1996	Hanford, INEEL, ORNL - The DOE needs to treat contact-handled MLLW containing PCBs and other organics, to meet existing regulatory standards for eventual disposal. Radioactive and hazardous waste is stored at DOE's Hanford Site located near Richland, Washington. The waste inventory includes contact-handled MLLW, which is made up of both low-level radioactive and hazardous constituents.	WM - Treatment of Hanford mixed waste at the Waste Experimental Reduction Facility (WERF) was one option but was dismissed because of the greater risk of a transportation accident and the shipping costs. Therefore the actual treatment itself was not analyzed.
Environmental Assessment for the Electrometallurgical Treatment Research and Demonstration Project in the Fuel Conditioning Facility at Argonne National Laboratory-West, DOE/EA-1148	FONSI 5/1996, 61 FR 25647	INEEL - The EA analyzed the potential environmental consequences of demonstrating the use of electrometallurgical technology to treat sodium-bonded spent nuclear fuel from the Experimental Breeder Reactor II (EBR-II) Reactor. The technology was demonstrated on 1.6 metric tons of sodium-bonded uranium spent nuclear fuel from July of 1996 to August of 1999.	ANL-W - The EA and FONSI affected the Department of Energy, Nuclear Energy (DOE-NE) sponsored EBR-II Spent Fuel Treatment Project at ANL-W, which is administered by the DOE-CH. The demonstration had positive results that led to the identification of electrometallurgical treatment as an alternative for making the environmental management (EM) sodium-bonded Fermi-1 blanket fuel ready for shipment to the national spent fuel repository. The Fermi-1 blanket fuel is stored at the INTEC facility.
Closure of the Waste Calcining Facility (CPP-633), Idaho National Engineering Laboratory, DOE/EA-1149	FONSI 7/1996	INEEL - The DOE prepared this EA to analyze the environmental impacts of closing the WCF at the INEEL. DOE proposes reduce the risk of radioactive exposure and release of radioactive and hazardous constituents and eliminate the need for extensive long-term surveillance and maintenance. DOE determined that they should close the to reduce the risks to human health and the environment and to comply with RCRA requirements.	D&D - The program analyzed was closure of the Waste Calcine Facility.
Non-Thermal Treatment of Hanford Site Low Level Waste, DOE/EA-1189	FONSI 9/1998	Hanford, INEEL, Envirocare, Treatment at Nuclear Sources and Services Incorporated (NSSI) - The DOE- Richland Operations Office (RL) needs to demonstrate the feasibility of commercial treatment of contact-handled MLLW to meet existing Federal and State regulatory standards for eventual land	WM - Hanford mixed waste was analyzed for treatment at the Advanced Mixed Waste Processing Facility including transportation of the waste from Hanford to the INEEL and shipment of the treated material back to Hanford for disposal.

Title and Document Number	Status	Sites and Purpose	Potential Mission Impacts on the INEEL
		disposal. Treatment before disposal is required for some constituents of this Hanford Site MLLW under the RCRA. Under RCRA land disposal restrictions, some MLLW is suitable for land disposal only after stabilization.	
Pit Disassembly and Conversion Demonstration Environmental Assessment and Research and Development Activities, DOE/EA-1207	FONSI 8/1998	LANL, INEEL, SRS, Pantex, Rocky Flats, Lawrence Livermore National Laboratory (LLNL), Oak Ridge - This EA provides an assessment of the potential environmental impacts of various ways to disposition U.S. surplus weapons-usable fissile materials. Specifically, it evaluates the LANL Plutonium Facility-4's capability to disassemble and convert approximately 250 pits that are widely diverse in their characteristics.	Infrastructure - The EA discussed the shipment of plutonium metal from the INEEL to LANL.
Lead Test Assembly Irradiation and Analysis Watts Bar Nuclear Plant, Tennessee, and Hanford Site Richland, Washington, DOE/EA-1210	FONSI 1997	WATTS Bar Nuclear Plant, Hanford, INEEL - The DOE needed to confirm the viability of using a commercial light water reactor (CLWR) as a potential source for maintaining the nation's supply of tritium. The Proposed Action discussed in this environmental assessment is a limited scale confirmatory test that would provide DOE with information needed to assess that option.	ANL-W - The EA and FONSI affected the Hot Fuel Examination Facility (HFEF) at ANL-W, which is administered by the DOE Chicago Operations Office. DOE Defense Programs (DP) funded modifications to the HFEF cask transfer tunnel to accommodate CLWR-sized fuel assemblies. DP also funded neutron radiography of the TPBARS in HFEF following their irradiation in the Watts Bar Nuclear Power Plant. The examination of the TPBARS in HFEF is scheduled to conclude by the end of FY 2000.
Test Area North Pool Stabilization Project Update, DOE/EA-1217	FONSI 8/1997	INEEL - The DOE prepared this EA to update the "Test Area North Pool Stabilization Project" EA (DOE/EA-1050) and finding of no significant impact (FONSI) issued May 6, 1996. This update analyzes the environmental and health impacts of a "drying" process for the TMI nuclear reactor core debris canisters now stored underwater in a facility on the INEEL. The pre-decision EA analyzed the drying process, but that particular process was determined to be ineffective and dropped from the EA and FONSI issued May 6, 1996. A new drying process was subsequently developed.	SNF - This EA analyzed the following alternatives: (a) Refurbish the Test Area North (TAN) pool, (b) Construct a new wet (underwater) storage facility, (c) Store the TMI core debris canisters and commercial fuels in existing Idaho Nuclear Technology Engineering Center (INTEC) storage systems, (d) Construct an Independent Spent Fuel Storage Facility at a point removed from above the Snake River Plain Aquifer, and (e) Construct an independent spent fuel storage facility at TAN.
Decontamination and Dismantlement	FONSI 3/2000	INEEL - DOE prepared this EA to	D&D - The project analyzed the D&D of the

Title and Document Number	Status	Sites and Purpose	Potential Mission Impacts on the INEEL
of the Advanced Reactivity Measurement Facility and Coupled Fast Reactivity Measurements Facility at the Idaho National Engineering and Environmental Laboratory, DOE/EA-1310		decontaminate and dismantle radiological contaminated and hazardous components and equipment in TRA-660, to allow future use by other programs.	Advance Reactivity Measurement Facility/Coupled Fast Reactivity Measurement Facility reactors at the Test Reactor Area.
Waste Isolation Pilot Plan Disposal Phase Final Supplemental Environmental Impact Statement, DOE/EIS-0026-S-2	Final 9/1997 ROD 63 FR 3624, 1/23/98	WIPP, INEEL, ORNL, LANL, RFETP, Hanford, SRS - The U.S. Department of Energy needs to dispose of TRU waste generated by past, present, and future activities in a manner that protects public health and the environment. In previous NEPA documents, the Department examined alternatives to repository disposal at WIPP. In this document, the Department assesses whether and, if so how to dispose of TRU waste at WIPP.	WM - Long-term disposition of the INEEL TRU waste including characterization and transportation.
Tritium Supply and Recycling Programmatic Environmental Impact Statement, DOE/EIS-0161	Final 10/1995 ROD 60 FR 63878, 12/12/95; Consolidated ROD 64 FR 26369, 5/14/99	INEEL, NTS, ORNL, Pantex Plant, SRS, Hanford - DOE proposes to provide tritium supply and recycling facilities for the Nation's Nuclear Weapons Complex. This PEIS evaluates the siting, construction, and operation of tritium supply technology alternatives and recycling facilities at each of five candidate sites: the INEEL, NTS, ORR, the Pantex Plant, and the SRS.	TRA - The INEEL analysis included an overall site description and detailed descriptions and analysis of the nine major facility areas. The decisions that were made did not select any INEEL programs.
Final Waste Management Programmatic Environmental Impact Statement For Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste, DOE/EIS-0200-F	Final 5/1997 RODs: Hazardous Waste 63 FR 41810, 8/5/98; Transuranic waste, 63 FR 3629, 1/23/98; High Level Waste, 64 FR 46661, 8/26/99; Low Level Waste and Mixed Low Level Waste, 65 FR 10061, 2/25/00	54 DOE Sites for which DOE is responsible for management of the waste streams. Includes every major DOE facility. - This EIS provides complex-wide analysis of waste management treatment, storage, and disposal options for the following waste types: LLW, HW, TRU, MLLW, HLW. Included are preliminary estimates of the types and amounts of wastes that will be transferred to the WM program from the Environmental Restoration program. The EIS emphasizes that the analysis was completed for the selection of sites at which to locate WM TSD facilities and not to provide comprehensive NEPA coverage for any specific site. From that standpoint, the analysis that was completed for the WM PEIS may not eliminate the need for additional analysis at a site-wide or project specific level.	WM - HLW - Maintain HLW in storage. DOE-ID is preparing a HLW EIS, which will provide the basis for treatment and storage options. TRU - Prepare and store TRU waste on site prior to disposal at WIPP. It may be necessary to provide waste treatment for wastes from other sites. LLW - The DOE has decided to perform minimum treatment at all sites and continue, to the extent practicable, disposal of onsite LLW at the INEEL. In addition the Department has decided to make the Hanford Site in Washington and the Nevada Test Site available to all DOE sites for LLW disposal. HW - For HW the DOE decided to continue to use off-site commercial facilities for the treatment and disposal of major portions of the non-wastewater hazardous waste generated at

Title and Document Number	Status	Sites and Purpose	Potential Mission Impacts on the INEEL
			DOE sites.
Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Final Environmental Impact Statement (Vol.1), DOE/EIS-0203-F	Final 4/1995 ROD 5/1995 Amd. ROD 3/1996	Hanford, INEEL, SRS, and other locations – This volume analyzed the programmatic impacts of SNF transportation, storage, and characterization for the DOE complex including receipts from the nuclear naval propulsion program.	SNF – The INEEL was selected as one of two sites that are used to consolidate SNF from the complex.
Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Final Environmental Impact Statement (Vol.2), DOE/EIS-0203-F	Final 4/1995 ROD 5/1995 Amd. ROD 3/1996	INEEL – This volume analyzed the site-wide impacts of the core EM missions across the site.	WM, ER, HLW, SNF, Infrastructure – The ROD selected a number of projects to be initiated in conjunction with the ongoing programs analyzed.
Final Environmental Impact Statement on a Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel, DOE/EIS-0218-F	Final 2/1996 ROD 61 FR 25092, 5/17/96 Amd. ROD 61 FR 38720, 7/25/96 Amd. ROD 65 FR 48224, 8/7/00	SRS, INEEL, plus 10 seaports - The proposed action is for DOE and the Department of State to jointly adopt a policy to manage SNF from FRR. Only SNF containing uranium enriched in the US would be covered by the proposed action. The purpose of the proposed policy is to promote US nuclear weapons nonproliferation policy objectives, specifically by seeking to reduce, and eventually eliminate, highly enriched uranium (HEU) from civilian commerce. The proposed policy applies solely to aluminum-based and (TRIGA) FRR SNF and target material containing HEU and low enriched uranium (LEU) of US origin.	SNF - As a potential Phase 1 storage site under Management Alternative 1, the INEEL would receive and manage FRR SNF at existing dry and/or wet storage facilities. The existing facilities identified for this purpose would be the Fluorinel Dissolution and Fuel Storage Facility in CPP-666, the Irradiated Fuel Storage Facility in CPP-603, and the CPP-749 storage area. As a potential Phase 2 storage site, the INEEL could continue to receive and manage FRR SNF at a new dry storage or wet storage facility to be constructed at the site.
Storage and Disposition of Weapons-Usable Fissile Materials Final Programmatic Environmental Impact Statement, DOE/EIS-0229	Final 12/1996 ROD 62 FR 3014, 1/21/97 Amd. ROD 63 FR 43386, 8/13/98	Pantex, SRS, ORNL, RFETP, INEEL, LANL, Hanford - Disposition of surplus plutonium is needed to reduce reliance on institutional controls and to provide visible evidence of irreversible disarmament. DOE recognizes the need to strengthen national and international arms control efforts by providing a storage and disposition model for the international community.	Infrastructure - Concerning HEU storage, the INEEL is identified as a potential site for the "No Action Alternative" (i.e., Maintain Existing HEU Storage). Concerning plutonium disposition, the INEEL is identified as a potential site for the "Pit Disassembly/Conversion" and "MOX Fuel Fabrication" alternatives.
Medical Isotopes Production Project: Molybdenum 99 and Related Isotopes Environmental Impact Statement, DOE/EIS-0249F	Final 4/1996 ROD 9/1996	SNL, LANL, ORNL, INEEL - The DOE proposes to establish a domestic source for and to produce molybdenum-99 (Mo-99) and related medical isotopes, including iodine-131, xenon-133, and iodine-125. DOE proposed	TAN, PBF, TRA - Power Burst Facility/Test Area North. All process steps would be carried out onsite at INEEL. Targets would be fabricated at INEEL at the Test Area North in a building similar to the Experimental Test

Title and Document Number	Status	Sites and Purpose	Potential Mission Impacts on the INEEL
		this project to ensure a reliable supply to the U.S. medical community of the metastable isotope technetium-99, which is produced from Mo-99. This EIS analyzes the environmental impacts of alternatives to accomplish the proposed action.	Reactor Critical Facility annex or the lower floor of the Materials Test Reactor building. The targets would be shipped for irradiation to the Power Burst Facility, which would be restarted for this purpose. The Mo-99 would be extracted from the irradiated targets, either in existing hot cells at the Test Area North or at new hot cells constructed for this purpose. The ATR was also considered for Mo-99 production but was eliminated as a candidate site.
Draft Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada, DOE/EIS-0250D	Draft 64 FR 44200, 8/13/99	Yucca Mountain, INEEL, Other DOE and commercial facilities with spent nuclear fuel in storage - The Yucca Mountain EIS analyzes a Proposed Action to construct, operate and monitor, and eventually close a geologic repository for the disposal of spent nuclear fuel and high level radioactive waste at Yucca Mountain. The EIS also analyzes a No-Action Alternative, under which DOE would not build a repository at the Yucca Mountain site, and spent nuclear fuel and high-level radioactive waste would remain at 72 commercial and 5 DOE sites across the U.S. As part of the Proposed Action, the EIS analyzes the potential impacts of transporting spent nuclear fuel and high-level radioactive waste to the Yucca Mountain site from 77 sites across the U.S.	SNF - The decision on the Yucca Mountain EIS will directly effect INEEL spent nuclear fuel and high-level waste programs. If the site is not designated it is unknown if or when another site would be designated or if or when technology, such as transmutation, would be developed to treat the wastes for placement in other than a national geologic repository. If no site is designated the INEEL would have to provide for the long-term storage of spent nuclear fuel and high-level waste.
Department of the Navy Final Environmental Impact Statement for a Container System for the Management of Naval Spent Nuclear Fuel, DOE/EIS-0251	Final 11/1996 ROD (System) - 62 FR 1095, 1/1997 ROD (Location) – 62 FR 23770, 5/1997	INEEL – The Department of the Navy published the Final Environmental Impact Statement in November 1996. This EIS analyzed environmental impacts at the Naval Reactors Facility and other parts of the INEEL that might result from alternatives for loading, storing, and shipping naval spent nuclear fuel. Among other parts of the alternatives, it evaluated impacts from manufacturing container systems, loading, storage, and shipping operations at INEEL facilities, alternative locations for naval fuel storage at INEEL, and transportation of naval SNF to a	SNF - Analyzes environmental impacts at the INEEL and the location(s) for fabrication of container systems in the following areas: Manufacturing alternative container systems, Loading and storage at INEEL facilities, Unloading naval SNF at a repository surface facility or a centralized interim storage facility, Impacts of transportation of naval SNF

Title and Document Number	Status	Sites and Purpose	Potential Mission Impacts on the INEEL
		repository.	
Savannah River Site Spent Nuclear Fuel Management Final Environmental Impact Statement, DOE/EIS-0279	Final 3/2000 ROD 65 FR 48224, 8/7/00	SRS, INEEL - This EIS responds to the need for DOE to safely and effectively manage SNF and targets at the SRS, including placing these materials in forms suitable for ultimate disposition. Options to treat, package, and store this material are discussed.	SNF - Of the 28 metric tons of heavy metal (MTHM) of aluminum-clad SNF from FRRs and DRRs to be received by the SRS through 2035, some 5 MTHM will be received from the INEEL. In addition, the SRS will ship some 20 MTHM of non-aluminum-based SNF to the INEEL.
Surplus Plutonium Disposition Final Environmental Impact Statement, DOE/EIS-0283	Final 11/1999 ROD 65 FR 1608, 1/11/00	SRS, INEEL, Hanford, Pantex Site, LLNL, LANL, ORNL, Commercial Reactors - This EIS provides an assessment of the potential environmental impacts of dispositioning up to 50 metric tons of surplus, weapons-grade plutonium which are stored at seven DOE sites. One of the seven storage sites is the INEEL. The dispositioning would be accomplished either through immobilization or through use in MOX fuels.	ANL-W - The program analyzed was construction and operation of a MOX fuel fabrication facility at ANL-W.
Idaho High-Level Waste & Facilities Disposition Draft Environmental Impact Statement, DOE/EIS-0287D	Draft 65 FR 3432, 1/21/00	INEEL - The Draft EIS analyzes the potential environmental consequences of managing two waste types at the INEEL, high-level waste in a calcine form and liquid mixed transuranic waste (historically known as sodium bearing waste and newly generated liquid waste). It also analyzes the disposition of existing and proposed high-level waste facilities at INTEC after their missions have been completed.	HLW - The EIS will be the basis for negotiations under the Idaho Settlement Agreement. It is expected that the following decisions will be made: 1) How to treat INTEC mixed HLW (calcine) and liquid TRU sodium-bonded waste so that it can be transported out of Idaho to a storage facility or repository. 2) How to treat and where to dispose of other radioactive wastes associated with the HLW management program at INTEC. 3) How to manage treated INTEC wastes that are ready to be transported out of Idaho. 4) How to close HLW-related facilities at INTEC, including liquid waste storage tanks and bin sets.
Advanced Mixed Waste Treatment Project Environmental Impact Statement, DOE/EIS-0290	Final 1/1999 ROD 64 FR 16948, 4/7/99	INEEL - The EIS addresses 65,000 cubic meters of transuranic waste, alpha-contaminated low-level mixed waste, and low-level mixed waste at the Radioactive Waste Management Complex on the INEEL. DOE needs to treat, characterize, and repackage these wastes in a configuration that will allow for their disposal at WIPP. DOE anticipates that it may treat up to an additional 120,000 cubic meters of TRU waste, alpha MLLW, and	WM - The decision was to implement the preferred alternative to proceed with the construction and operation of the AMWTP.

Title and Document Number	Status	Sites and Purpose	Potential Mission Impacts on the INEEL
		MLLW as bounded by the EIS. These wastes are currently located, or may be generated, at other areas on the INEEL and at other DOE sites.	
Environmental Impact Statement for the Treatment and Management of Sodium-Bonded Spent Nuclear Fuel, DOE/EIS-0306	Final 65 FR 47988, 8/4/00 ROD 65 FR 56565, 9/19/00	INEEL, SRS - This EIS responds to the need for DOE to safely and effectively manage a certain surplus material, DOE-owned sodium-bonded spent nuclear fuel, and facilitate its eventual interment in a geologic repository. Management of this material is complicated by the fact that metallic sodium is reactive and the assumption that the repository will not accept a waste package containing untreated sodium metal.	ANL-W - In the final EIS, DOE announces its preferred alternative to be electrometallurgical treatment of sodium-bonded SNF at ANL-W except for Fermi-1 blanket SNF. A decision on Fermi-1 blanket SNF will be deferred until a later time.
Draft Programmatic Environmental Impact Statement for Accomplishing Expanded Civilian Nuclear Energy Research and Development and Isotope Production Missions in the United States, Including the Role of the Fast Flux Test Reactor, DOE/EIS-0310D	Draft 65 FR 46443, 7/28/00	ORNL, Hanford, INEEL, commercial facilities - DOE proposes to enhance its existing nuclear facility infrastructure to provide for: 1) production of isotopes for medical, research, and industrial uses, 2) production of plutonium-238 (Pu-238) for use in advanced radioactive isotope power systems for future NASA space exploration missions, and 3) the nation's nuclear research and development needs for civilian applications.	TRA, FDPF - The programs that are analyzed in this PEIS are the Advanced Test Reactor with support facilities and the Fluorinel Dissolution Process Facility (FDPF) for 35 years. In Alternative 2 the ATR is considered in a number of options both singly and in combination with the High Flux Isotope Reactor. The FDPF is considered as a storage and processing facility in the No Action alternative and Alternative 2.
Supplement Analysis for a Container System for the Management of DOE Spent Nuclear Fuel Located at the INEEL, DOE/ID-10636	Final 3/1999 ROD 64 FR 23825, 5/4/99	INEEL - The Proposed Action evaluated in this Supplement Analysis considers the use of a dual-purpose canister system, or comparable multi-purpose canister system, for the storage and ultimate shipment of DOE-ID spent nuclear fuel out of the State of Idaho.	SNF - DOE has decided to use a multi-purpose canister or comparable system (e.g., dual-purpose canister system or other system as described and analyzed in the context of the Container System EIS) for the management of DOE-owned spent nuclear fuel at the INEEL.
Environmental Impact Statement for the Transfer of the Heat Source/Radioisotope Thermoelectric Generator Assembly and Test Operations from the Mound Site, FR Vol. 63, No. 191, pg. 53031 FR Vol. 64, No. 95, pg. 26954	Notice of Intent 8/1998; Withdrawal 5/1999	Mound Site, ORNL, INEEL, Pantex Site, Hanford, NTS – This EIS was withdrawn.	TRA
Final Environmental Impact Statement For the Construction and Operation of an Independent Spent Fuel Storage Installation to Store the	Final 3/1998 NRC License Issued 3/1999	INEEL - This EIS provides an assessment of the potential environmental impacts of licensing the construction and operation, at the Idaho Nuclear Technology and Engineering	SNF - The "Notice of Availability of the Final EIS" issued by the NRC stated NRC's decision to issue a license for construction and operation, at the Idaho Nuclear

Title and Document Number	Status	Sites and Purpose	Potential Mission Impacts on the INEEL
Three Mile Island Unit 2 Spent Fuel at the Idaho National Engineering and Environmental Laboratory, NUREG 1626		Center, of an Independent Spent Fuel Storage Installation (ISFSI) for the dry storage of the fuel debris from the Three Mile Island Unit 2 reactor.	Technology and Engineering Center, of an Independent Spent Fuel Storage Installation (ISFSI) for dry storage of TMI core debris and commercial fuels.
Baseline Document for the Test Reactor Area Hot Cells (OPE-TRA-00-002)	Approved 1/2000	INEEL – This Baseline document was written to provide the historical operating parameters for the Test Reactor Area Hot Cells facility.	TRA Hot Cells facility

Appendix 5-2 INEEL RELATED NEPA ANALYSIS SUMMARIES

The following are summaries of the INEEL related NEPA analyses that were reviewed to establish the scope of operations that currently are covered by NEPA documentation. These are given to show the extent of analysis done for each NEPA document. The summaries are organized according to the following outline:

1. **General Scope/Purpose and Need of EIS/EA**
2. **Alternatives Analyzed**
3. **Decisions to be Made**
4. **INEEL Programs Analyzed**
5. **Decisions Regarding INEEL Programs**

The majority of these documents can be found on the EH NEPA web site at http://tis.eh.doe.gov/nepa/. The balance is available through the INEEL NEPA document control center maintained by the INEEL management and operating contractor.

Table of Contents

Environmental Assessment: Demolition of the S5G Cooling Tower; Butler Buildings 7, 8, and 9; S1W #2 Spray Pond; and S1W Exterior Ventilation, August 1997

1. General Scope/Purpose and Need of EIS/EA

The purpose of this Environmental Assessment is to evaluate the environmental impacts of the proposed action to demolish and dispose of a system and several structures at the Idaho National Engineering and Environmental Laboratory (INEEL), Naval Reactors Facility (NRF) and alternatives to the proposed action. The system is the S1W exterior ventilation system. The structures are the S5G cooling tower, Butler Buildings 7, 8, and 9, and the S1W #2 spray pond. Alternatives to the proposed action include no action and alternative use.

2. Alternatives Analyzed

<u>The Proposed Alternative</u>. The proposed action is to demolish and dispose of the S5GT cooling tower, Butler Buildings 7, 8, and 9, S1W #2 spray pond, and the S1W exterior ventilation system.

<u>No-Action Alternative</u>. The no-action alternative would involve leaving the S5G cooling tower, the Butler buildings, the S1W #2 spray pond, and the S1W exterior ventilation system in place in their current conditions. There would be no adverse environmental impact associated with leaving these inactive facilities in place. However, resources would have to be expended to maintain them in a safe and stable condition.

<u>Alternate Use Action</u>. Alternative uses for the buildings were considered. No feasible alternatives were found.

3. Decisions to be Made

The decisions to be made are whether to perform D&D on the subject buildings at the NRF.

4. INEEL Programs Analyzed

The INEEL program analyzed is NRF.

5. Decisions Regarding INEEL Programs

A Finding of No Significant Impact was made concerning the proposed action.

Environmental Assessment: Demolition of Fourteen Buildings and One Structure Ancillary to the Naval Prototype Plants at the Naval Reactors Facility, June 2000

1. General Scope/Purpose and Need of EIS/EA

The purpose of this Environmental Assessment is to evaluate the environmental impacts of the proposed action to demolish and dispose of fourteen buildings and one structure at the Idaho National Engineering and Environmental Laboratory (INEEL), Naval Reactors Facility (NRF) and alternatives to the proposed action.

2. Alternatives Analyzed

The Proposed Alternative: The proposed action is to demolish and dispose of Butler Buildings 10 and 10A, S1W Battery Butler Buildings 14 and 15, S1W Guardhouse, Flammable Storage Shed, S1W Pumphouse, Radiography Buildings, Radioactive Component Storage Warehouse, A1W Radioactive Waste Processing System Facility, and the S1W #1 Spray Pond over the next several years.

No-Action Alternative: The no-action alternative would involve leaving the buildings in place in their current conditions. There would be no significant adverse environmental impact associated with leaving these inactive facilities in place. However, resources would have to be expended to maintain them in a safe and stable condition.

Alternate Use Action: Alternative uses for the buildings were considered. No feasible alternatives were found.

3. Decisions to be Made

The decisions to be made are whether to perform D&D on the subject buildings at the NRF.

4. INEEL Programs Analyzed

The INEEL program analyzed is NRF.

5. Decisions Regarding INEEL Programs

A Finding of No Significant Impact was made concerning the proposed action.

DOE/EA-0821 - Operation of the Glass Melter Thermal Treatment Unit at the U. S. Department of Energy's Mound Plant in Miamisburg, Ohio, June 1995

1. General Scope/Purpose and Need of EIS/EA

The Mound Plant has an inventory of radioactive mixed waste, which presents a degree of risk to human health and the environment, since most of the waste is in the liquid state and much of it is combustible. Mound's stored radioactive mixed waste not only poses environmental concerns, but also presents legal problems for the Plant. This RCRA hazardous waste is being stored at Mound for the sole reason that no treatment and disposal options for it have yet been identified. RCRA Land Disposal Restriction regulations as recorded in 40 CFR 268.50 do not allow storage of land disposal restriction waste for this reason unless a specific storage extension for the waste has been granted by the EPA. Such extensions, even if granted, are by law of limited duration.

Treatment of Mound radioactive mixed waste by means of the glass melter offers a route toward correction of Mound's RCRA waste storage violation, and also a means to greatly minimize hazards associated with temporary storage of mixed waste by destruction of organic material and immobilization of many inorganic RCRA hazardous and radioactive constituents.

2. Alternatives Analyzed

The Proposed Alternative: Because of the demonstrated effectiveness of the glass melter, DOE is now considering incorporating this facility into its hazardous and mixed-waste treatment and disposal program for Mound operations.

No-Action Alternative: The no-action alternative assumes the continuation of present practices of waste storage and disposal. A total of 143 m3 of hazardous waste is presently being shipped to disposal facilities in Pinewood and Roebuck, South Carolina; Eldorado, Arkansas; and Pecatonica, Illinois.

An additional eight 55-gallon drums of mixed waste (approximately 1.6 m3) are currently being generated annually and stored on site in Building 23, and the storage capacity of Building 23, based on spill capacity, has been exhausted. Since no other storage capacity suitable for these wastes is available on site, adoption of the no-action alternative would require the construction of additional storage capacity.

Administrative Action: The initiation of administrative actions to reduce the generation of radioactive mixed waste provides an alternative for waste control. Training needs have been identified, and a training and communication program has been developed to ensure that employees understand their obligation to minimize waste generation in all processes and operations. Efforts to reduce waste generation at Mound cannot totally eliminate the generation of radioactive mixed wastes. Hazardous waste generating materials are already in radioactive systems, and will eventually become waste. Replacement of some hazardous materials will not be easy to accomplish under Mound's DOE mission requirements. Waste reduction will not affect waste already in storage. The need for disposal options will persist.

Off-Site Hazardous Waste Disposal: Mound currently uses the services of Laidlaw Environmental Inc., which is a full service waste treatment company specializing in the disposal of hazardous wastes. Laidlaw does not handle mixed wastes, so this disposal option does not address Mound's primary concern, that of stored and newly generated mixed wastes.

Quadrex HPS, Inc.: Quadrex HPS, Inc., located in Gainesville, Florida, is a waste-handling and storage company that can offer the disposal of scintillation fluids and nonradioactive ignitable hazardous wastes. The facility cannot accept non-scintillation mixed wastes, and could accept only those scintillation fluid wastes containing carbon-14, tritium, and other short-lived hospital/research lab type isotopes of concentrations no greater than 0.05 microcuries per gram of medium. While the Quadrex facility cannot accept non-scintillation mixed wastes, and could accept only a portion of Mound's tritium contaminated scintillation fluid waste, it could accept the three annual shipments of glass melter suitable waste currently being sent to the Laidlaw Environmental facilities. The Quadrex facility is located approximately 900 miles from the Mound Plant. Transport of the three annual hazardous waste shipments to Quadrex would involve a total annual travel distance of 2,703 miles.

Diversified Scientific Services, Inc.: DDSI, located in Kingston, Tennessee, operates an industrial boiler and expects to accept a variety of listed and characteristic RCRA hazardous wastes as fuel for electricity generation. This alternative is suspect because of air permit conditions and by impacts of the new Boiler and Industrial Furnace (BIF) regulations. In addition to the permitting unknowns, system capacities are extremely limited at the present time, and the waste acceptance priorities have not been defined.

Idaho National Engineering Laboratory: The Idaho National Engineering Laboratory has a permitted incinerator facility, WERF, capable of burning low-specific-activity (LSA) radioactive material and hazardous waste. WERF acceptance criteria would prohibit the acceptance at WERF of almost all of the waste proposed for treatment in the Glass Melter.

Los Alamos National Laboratory (LANL): The Los Alamos incinerator facility in New Mexico is in the process of being permitted to burn transuranic waste and some low-level radioactive mixed waste. Current operational plans do not include acceptance of off-site wastes, and the current LANL RCRA permit prohibits treatment of off-site waste.

Savannah River Site: The Savannah River Site is currently constructing the Consolidated Incinerator Facility (CIF). The CIF will be capable of handling both solid and liquid wastes that are RCTA hazardous, radioactive, or radioactive mixed (including scintillation fluids). The construction permit from the State of South Carolina, however, does not allow out-of-state waste to be treated in the CIF.

Oak Ridge Gaseous Diffusion Plant: The incinerator at the Oak Ridge Gaseous Diffusion Plant (ORGDP) facility is currently in use for the disposal of mixed wastes. The ORGDP incinerator has a substantial backlog of wastes that will take several years to destroy. Thus, this alternative would not be available to Mound Plant for several years and will not meet the Mound immediate needs.

Nevada Test Site: The Nevada Test Site would only be a reasonable alternative for Mound waste already treated at another facility. DOE has not yet decided to what extent the Nevada Test Site would be used for future disposal of offsite waste; such decisions will be made after completion of the Environmental Management Programmatic Environmental Impact Statement and the Nevada Test Site Site-wide EIS.

3. Decisions to be Made

The basic decision to be made was where to treat Mound's mixed waste, on-site in the glass melter, or off-site. The preferred alternative was the Mound Glass Melter.

4. INEEL Programs Analyzed

WERF was analyzed as a treatment option for Mound mixed waste.

5. Decisions Regarding INEEL Programs

The WERF is incompatible with most of the Mound mixed waste and was not selected.

DOE/EA-0843 - Idaho National Engineering and Environmental Laboratory Low-Level and Mixed Waste Processing, June 1994

1. General Scope/Purpose and Need of EIS/EA

The U. S. Department of Energy (DOE) prepared this Environmental Assessment (EA) to reduce the need to store accumulated waste, which in turn would reduce the radiation exposure to INEEL workers and reduce the risk of additional exposure from storage container deterioration. The proposed action would also reduce the volume of waste being disposed of at the Radioactive Waste Management Complex, thereby conserving its disposal capacity.

The proposed action includes transporting Low-Level Waste (LLW) to a commercial treatment facility for incineration to reduce the waste volume. The current proposal is to truck the LLW to a commercial incinerator, such as the Scientific Ecology Group, Inc. facility in Oak Ridge, Tennessee or an alternative facility. The Oak Ridge facility would treat the resultant ash as appropriate and returned to INEEL for management and disposal at the Radioactive Waste Management Complex.

2. Alternatives Analyzed

DOE analyzed the following alternatives: (a) Incinerate Mixed Low-Level Waste (MLLW) at the Waste Experimental Reduction Facility (WERF); reduce the volume of-the INEEL-generated LLW through sizing, compacting, stabilizing, and incineration at the WERF; and ship the INEEL LLW to a commercial incinerator for supplemental LLW volume reduction; (b) Treat MLLW by methods other than incineration and continue use of WERF to incinerate, compact, and size LLW; (c) Dispose of LLW without volume reduction and continue to store MLLW; Construct and operate a New MLLW incinerator and continue to incinerate, compact, and size LLW at the WERF; and (d) Treat MLLW at another DOE incinerator and continue to incinerate, compact, and size LLW at the WERF. In addition, the DOE evaluated the consequences of no action.

3. Decisions to be Made

The decision to be made was whether or not to treat INEEL LLW and MLLW and where that treatment should take place.

4. INEEL Programs Analyzed

The WERF incinerator is an existing facility that has treated both LLW and MLLW (on an experimental basis). The program analyzed included WERF incineration, sizing, compaction, and stabilization; offsite incineration in operating commercial facilities; and continued storage of MLLW at the Mixed Waste Storage Facility.

5. Decisions Regarding INEEL Programs

DOE decided to propose an additional alternative which consists of sizing, compacting, and stabilizing (mixing ash with cement) LLW at WERF, shipment of INEEL LLW to an offsite incinerator, and continued storage of MLLW. Future decisions on treatment of LLW and MLLW at WERF were deferred until completion of the INEL ER & WM EIS.

DOE/EA-0845 - Expansion of the Idaho National Engineering Laboratory Research Center, March 1994

1. General Scope/Purpose and Need of EIS/EA

The U.S. Department of Energy (DOE) prepared an Environmental Assessment (EA) to expand and upgrade facilities at the Idaho National Engineering and Environmental Laboratory Research Center (IRC). DOE proposed to construct a research laboratory addition on the northeast comer of existing laboratory building; upgrade the fume hood system the existing laboratory building; and construct a hazardous waste handling facility and a chemical storage building. The DOE also proposes to expand the capabilities of biotechnology research programs by increasing use of radio labeled compounds to levels in excess of current facility limits for three radionuclides.

The purposes of the actions are to enhance the efficiency and safety of existing IRC operations. Additional laboratory space is needed to support the current range of research activities at the IRC, and the existing IRC fume hood system needs to be improved. Self-contained hazardous waste operations and bulk chemical storage are needed to facilitate storage and handling capabilities in support of the IRC. Finally, biotechnology research requires the use of radio labeled compounds to conduct routine analytical procedures currently not available at the IRC.

2. Alternatives Analyzed

The DOE analyzed the proposed action to expand and upgrade the facility adjacent to the existing IRC and several in-town facilities. In addition, the DOE evaluated the consequences of no action.

3. Decisions to be Made

The decision to be made was whether to expand the capabilities of the IRC and perform the construction activities that were identified.

4. INEEL Programs Analyzed

IRC--DOE proposed to construct a research laboratory addition on the northeast comer of the existing laboratory building; upgrade the fume hood system the existing laboratory building; and construct a hazardous -waste handling facility and a chemical storage building. The DOE also proposes to expand the capabilities of biotechnology research programs by increasing use of radio labeled compounds to levels in excess of current facility limits for three radionuclides.

5. Decisions Regarding INEEL Programs

DOE determined construction and operation of proposed facilities would not cause significant environmental impacts and issued a Finding of No Significant Impact. The proposed action was implemented.

DOE/EA-0906 - Waste Characterization Facility at the Idaho National Engineering and Environmental Laboratory, February 1995

1. General Scope/Purpose and Need of EIS/EA

The DOE prepared an Environmental Assessment (EA), to construct and operate a Waste Characterization Facility (WCF) at the Idaho National Engineering and Environmental Laboratory (INEEL). This facility is needed to examine and characterize containers of transuranic (TRU) waste to certify compliance with transport and disposal criteria; to obtain information on waste constituents to support proper packaging, labeling, and storage; and to support development of treatment and disposal plans for waste that cannot be certified. DOE would construct the WCF at the Radioactive Waste Management Complex (RWMC).

2. Alternatives Analyzed

This EA analyzed the following alternatives: (a) constructing and operating a WCF at the INEEL to characterize, treat, and repackage, as necessary, contact-handled transuranic waste (CH-TRU), LLW, and mixed wastes from the Transuranic Storage Area (TSA), INEEL environmental restoration activities, and other DOE laboratories to meet regulatory and research requirements and (b) locating the facility at another location. In addition, the DOE evaluated the consequences of no action.

3. Decisions to be Made

The decision to be made was whether to build a characterization facility for TRU waste and where to locate that facility.

4. INEEL Programs Analyzed

The INEEL program analyzed included long-term management of stored TSA waste including appropriate characterization, treatment, packaging, and transport of waste to the Waste Isolation Pilot Plant (WIPP) or other designated disposal facilities. In support of anticipated near-term phase activities at WIPP, DOE was characterizing a small number of TRU waste containers at the INEEL's Argonne National Laboratory – West (ANL-W) facility. The characterization activities include container headspace gas sampling and analysis, visual waste examination and repackaging into instrumented test bins. The ANL-W facility has restricted waste characterization throughput capacity and limited ability to process boxed waste. This facility cannot meet expected throughput rates for the WIPP production phase.

5. Decisions Regarding INEEL Programs

The decision was made to proceed with construction of the WCF.

DOE/EA-0907 - Expansion of the Idaho National Engineering Laboratory Sewer System Upgrade, April 1994

1. General Scope/Purpose and Need of EIS/EA

The U. S. Department of Energy (DOE) prepared this Environmental Assessment (EA) to provide the Idaho National Engineering and Environmental Laboratory (INEEL) with a reliable method for treating and disposing of sanitary sewage waste. Each facility area at the INEEL has an independent sewage treatment system to accommodate all operations in that vicinity. Each system includes some type of sewage treatment plant and a connecting network of sewer lines to collect sewage. The treatment plants at these locations are deteriorating. The equipment is outdated (parts are no longer available) and inefficient and requires continual maintenance and repair. The U.S. Department of Energy (DOE) needs a reliable method for treating and disposing of sanitary sewage waste at Central Facility Area, Contaminant Test Facility at Test Area North, and Test Reactor Area that would be cost effective, low maintenance, and in compliance with the State of Idaho Water Land Application Permit regulations.

2. Alternatives Analyzed

The DOE analyzed the following alternatives: (a) Sewage treatment plant designs and the no action alternative.

3. Decisions to be Made

The decision to be made was whether to upgrade the existing sewer system at 3 INEEL facilities.

4. INEEL Programs Analyzed

INEEL sewer system upgrades.

5. Decisions Regarding INEEL Programs

DOE decided that the proposed action to upgrade the INEEL sewer system did not constitute a major Federal action significantly affecting the quality of the human environment and issued a Finding of No Significant Impact.

DOE/EA-0929 - Proposed Interim Storage of Enriched Uranium Above the Maximum Historical Storage Level at the Y-12 Plant, Oak Ridge, Tennessee, September 1994

1. General Scope/Purpose and Need of EIS/EA

The United States Department of Energy (DOE) has prepared an Environmental Assessment (EA) for the *Proposed Interim Storage of Enriched Uranium Above the Maximum Historical Storage Level at the Y-12 Plant, Oak Ridge, Tennessee*. The EA evaluates the environmental effects of transportation, prestorage processing, and interim storage of bounding quantities of enriched uranium at the Y-12 Plant over a ten-year period.

The Department is required by the Atomic Energy Act of 1954, as amended, to provide for the safe and secure storage of enriched uranium. This mission must be implemented in an environmentally responsible manner that is safe, timely, cost-effective, and consistent with the plans to reduce the nuclear weapons stockpile. Interim storage is needed immediately at a location where prestorage processing capability is available in order to support continued dismantlement of weapons, nonproliferation, and other purposes of national security. Processing of highly enriched uranium at the interim storage site would allow continued disassembly of weapons components, known as secondaries, received from the Pantex Plant. Currently, secondaries shipped from Pantex to the Y-12 Plant are scheduled for disassembly upon receipt at Y-12, except for secondaries which are part of the strategic reserve and are placed directly in storage. Interim storage would also enable the Department to remove enriched uranium from other sites where it is not needed. The Department also needs to process enriched uranium for material control, accountability, and maximum utilization of existing interim storage space in accordance with good management practices.

Interim storage for enriched uranium is needed to start immediately and continue until decisions are made and implemented regarding the long-term storage and disposition of all surplus weapons-usable fissile materials. While the Department has initiated the NEPA process for these decisions, it is not yet possible to project when future final decisions will be implemented. Because of the uncertainty on the timing of long-term storage and disposition actions, interim storage for enriched uranium may be needed for up to ten years. The Disposition PEIS would be followed by project-specific NEPA documents. If interim storage is required beyond ten years, the Department will prepare additional NEPA documentation.

2. Alternatives Analyzed

No Action Alternative--Under the no action alternative, the Y-12 Plant would continue to receive enriched uranium for interim storage until historical storage levels of enriched uranium are reached. Shipments from other sites would then be suspended, including the weapons components currently shipped from the Pantex Plant to Y-12 for disassembly. Only the Y-12 Plant currently has the processing capabilities necessary for disassembly of secondaries received from the Pantex Plant. Therefore, the no action alternative would not meet the Department's purposes of supporting the U.S. goals of nonproliferation and reduction of global nuclear danger, as discussed in the section below on Pantex.

Prestorage processing of the uranium-bearing materials presently on site would continue. It is anticipated that processing this backlog of material could take approximately seven years. This backlog does not include weapons components received from the Pantex Plant; the secondaries are scheduled for disassembly upon arrival at Y-12. The enriched uranium that could not be shipped to the Y-12 Plant would remain in storage at 23 sites.

Restricted Receipt of Highly Enriched Uranium (HEU)--Under this alternative, Y-12 would receive HEU from the Pantex Plant and may receive fissionable material from foreign sources. No enriched uranium would be received from any other domestic site. Because the majority of the HEU received at the Y-12 Plant is from Pantex, stopping shipments of enriched uranium from all domestic sites would only postpone exceeding the date for Y-12's historical interim storage level by a few months. There are no operational, environmental, or health and safety benefits attributable to receiving HEU only from this restricted suite of sites. This alternative would support dismantlement activities at Pantex and disassembly of secondaries at Y-12, but the effects on sites other than Pantex would be the same as those under the no action alternative.

Enriched Uranium Interim Storage at Site(s) Other Than the Y-12 Plant--Under this alternative, sites that currently have enriched uranium would ship it to a site (or sites) other than Y-12, where it could be received for interim storage, but without prestorage processing. Alternative interim storage sites could include (1) one of the sites where HEU is currently located, including Portsmouth, Savannah River, Hanford, Rocky Flats, or one of the national laboratories; (2) a Department of Defense (DOD) facility; or (3) a non-DOE or non-DOD facility. None of these sites has the existing facilities to process-enriched uranium for storage or the existing authorized capability to store the Pantex Plant HEU. Only the Y-12 Plant currently has the processing capabilities necessary for disassembly of secondaries received from the Pantex Plant. Prestorage processing capability could not be added at other sites in the immediate near term, and secondaries could not be disassembled. Therefore, this alternative could not meet the Department's purposes of supporting the U.S. goals of nonproliferation and reduction of global nuclear danger.

3. Decisions to be Made

The decision that is being made is where to store the DOE’s enriched uranium.

4. INEEL Programs Analyzed

INEEL programs analyzed are shipment of INEEL and ANL-W highly enriched uranium and low enriched uranium to the Y-12 plant at Oak Ridge, TN. The impacts of leaving the material in place were evaluated in the No Action Alternative.

5. Decisions Regarding INEEL Programs

The INEEL HEU and LEU will be shipped to the Y-12 plant.

DOE/EA-0985 - Environmental Assessment And (FONSI) Relocation and Storage Of TRIGA Reactor Fuel U.S. Department of Energy Richland, Washington, August 1995

1. General Scope/Purpose and Need of EIS/EA

The U.S. Department of Energy (DOE) needs to relocate the irradiated and unirradiated nuclear fuel assemblies from the Mark I TRIGA Reactor storage pool in order to complete the shutdown of the 308 Building, in the 300 Area on the Hanford Site, Richland, Washington. Shutdown of the 308 Building would place the building in a minimum surveillance condition prior to decommissioning activities, saving an estimated $600,000 per year.

2. Alternatives Analyzed

Proposed Action. The DOE proposes to relocate nuclear fuel assemblies (101 irradiated and three unirradiated) from the 308 Building storage pool in the 300 Area of the Hanford Site. Relocation of these fuel assemblies would allow the shutdown of the 308 Building, which is no longer needed for the fabrication of fuel assemblies and test assemblies for the Fast Flux Test Facility (FFTF).

No-Action Alternative. DOE would continue to store the fuel assemblies in the storage pool until the Record of Decision for Vol. 1 of the 1995 EIS is implemented.

Store the Fuel Assemblies in an existing Hanford Site Waste Storage Facility. Under this alternative, the fuel assemblies would be stored in an existing Hanford Site Waste Storage Facility, such as the Hanford Central Waste Complex.

Ship the Fuel Assemblies to the Idaho National Engineering Laboratory for Storage. Under this alternative, the fuel assemblies would be shipped directly to the Idaho National Engineering Laboratory for storage.

Ship the Fuel Assemblies to Another Existing Fuel Storage Basin on the Hanford Site. This alternative would relocate the fuel assemblies to another existing wet-storage facility on the Hanford Site.

Rail Transport. This alternative would utilize rail transport to relocate the fuel assemblies to the Interim Storage Area (ISA).

3. Decisions to be Made

The decision to make is to determine where to relocate nuclear fuel assemblies (101 irradiated and three unirradiated) from the 308 Building's Neutron Radiography Facility (NRF) Mark I TRIGA Reactor (TRIGA Reactor) storage pool, which is located in the 300 Area of the Hanford Site, near Richland, Washington.

4. INEEL Programs Analyzed

Receipt of the SNF from Hanford and long-term storage of the SNF.

5. Decisions Regarding INEEL Programs

The decision was made to proceed with the proposed action. However, this did not preclude future shipment to the INEEL once the injunction imposed by the State of Idaho on receipt of additional SNF (1993) was lifted.

DOE/EA-1034 - HPIL Replacement of the Idaho National Engineering and Environmental Laboratory, May 1995

1. General Scope/Purpose and Need of EIS/EA

The U. S. Department of Energy (DOE) prepared this Environmental Assessment (EA) to replace, upgrade, or move the Health Physics Instrumentation Laboratory (HPIL), or its functions, to provide a safe environment for maintaining, calibrating, and verifying radiation detection instruments used at the Idaho National Engineering and Environmental Laboratory (INEEL). The existing HPIL facility provides portable health physics monitoring instrumentation and direct reading dosimetry procurement, maintenance, calibration, and verification of radiation detection instruments, and research and development support-services to the INEEL and others. However, DOE did not design the existing facility for laboratory activities. The existing laboratory did not provide an adequate, safe environment for maintenance, calibration, and verification activities.

To ensure a safe environment for activities involving radioactive materials, a thorough maintenance and accurate calibration of radiation detection devices is necessary. To provide accurate exposure data, radiation detection instruments must routinely undergo testing, quality control, and quality assurance activities in accordance with DOE Orders and the American National Standards Institute (ANSI) guidelines.

2. Alternatives Analyzed

DOE analyzed the following six alternatives: (a) constructing a replacement facility, (b) relocating existing HPIL functions to the former Central Laundry and Respirator Facility, Building CFA-617, (c) renovating and expanding the current facility, CFA-633, (d) contracting with an off-site vendor and constructing a new on-site support building for shipping, receiving, storing, and verifying, and (e) contracting with an off-site vendor and renovating and expanding CFA-617 for shipping, receiving, storing, and verifying. In addition, the DOE evaluated the consequences of no action.

3. Decisions to be Made

The decision to be made was whether to upgrade the Health Physics monitoring capability at the INEEL by constructing new facilities or contracting to an outside vendor.

4. INEEL Programs Analyzed

INEEL programs analyzed were the Health Physics Instrumentation Laboratory replacement and program.

5. Decisions Regarding INEEL Programs

DOE decided to construct and operate new facilities and to keep the Health Physics Monitoring program at the INEEL, instead of contracting to an outside vendor.

DOE/EA-1050 - Test Area North Pool Stabilization Environmental Assessment for Stabilization of the Storage Pool at Test Area North, May 1996

1. General Scope/Purpose and Need of EIS/EA

The DOE prepared an EA to remove the canisters of Three Mile Island (TMI) core debris and commercial fuels from the Test Area North (TAN) Pool and transfer them to the INTEC for interim dry storage until an alternate storage location other than at the INEEL or a permanent federal spent nuclear fuel (SNF) repository is available. The TAN Pool would be drained and placed in an industrially and radiological safe condition for refurbishment or eventual decommissioning.

This EA identified and evaluated environmental impacts associated with (a) constructing an Interim Storage System (ISS) at INTEC; (b) removing the TMI and commercial fuels from the pool and transporting them to INTEC for placement in an ISS, and (c) draining and stabilizing the TAN Pool. DOE also proposed to remove and decontaminate or dispose of miscellaneous hardware in the INEEL RWMC.

DOE identified and proposed to eliminate vulnerabilities associated with SNF storage facilities. Vulnerabilities identified for TAN are storage of SNF in an unlined pool, wet storage of commercial SNF in aluminum coffins, and seismic inadequacy of the pool. In May of 1995, the State of Idaho asked the District Court to continue the prior injunction against SNF transportation by the Department of Energy, claiming that the 1995 EIS was defective. DOE, the Department of the Navy and the State of Idaho settled the litigation through a Settlement Agreement. The Settlement Agreement states: "DOE shall complete construction of the Three Mile Island dry storage facility by December 31, 1998. DOE shall commence moving fuel into the facility by March 31, 1999, and shall complete moving fuel into the facility by June 1, 2001."

The TAN Pool does not meet SNF storage requirements delineated in DOE Order 420.1. Principal deficiencies of the TAN Pool include lack of redundant containment of pool water (i.e., stainless steel pool liner), no provisions for detecting subsurface leaks from the pool, and inadequate control of the air space over the pool.

2. Alternatives Analyzed

This EA analyzes the following alternatives: (a) Refurbish the TAN Pool, (b) Construct a New Wet (underwater) Storage Facility, (c) Store the TMI Core Debris Canisters and Commercial Fuels in Existing ICPP Storage Systems (d) Construct an Independent Spent Fuel Storage Facility at a Point Removed From Above the Snake River Plain Aquifer, and (d) Construct an Independent Spent Fuel Storage Facility at TAN. In addition, the DOE evaluated the consequences of no action.

3. Decisions to be Made

The decision to be made was how to address the SNF vulnerabilities that were identified and how to meet the commitments made by DOE to the State of Idaho regarding removing SNF from the TAN pool.

4. INEEL Programs Analyzed

This environmental assessment (EA) identified and evaluated environmental impacts associated with spent nuclear fuel for (a) constructing an Interim Storage System (ISS) at INTEC; (b) removing the TMI and commercial fuels from the pool and transporting them to INTEC for placement in an ISS, and (c) draining and stabilizing the TAN Pool. DOE also proposed to remove and decontaminate or dispose of miscellaneous hardware in the INEEL RWMC.

5. Decisions Regarding INEEL Programs

DOE determined that the proposed action did not constitute a major Federal action significantly affecting the quality of the human environment and issued a Finding of No Significant Impact (FONSI). While the EA evaluated the impacts associated with the overall scope of the TAN Pool Stabilization Project, this FONSI was limited to actions that were within the scope of DOE's decision-making authority. The DOE applied to the NRC for licensing of: a) the transportation of the spent nuclear fuel and debris to INTEC and b) the construction and operation of the ISS. These actions are outside of the scope of DOE's decision-making authority; therefore, the NRC evaluated them as part of their independent NEPA evaluation and decision-making process.

DOE/EA-1059 - Environmental Assessment and FONSI- Radioactive Source Recovery Program, December 1995

1. General Scope/Purpose and Need for EA

Within the last several years, various governmental and other agencies such as the Department of Energy, (DOE), NRC, and the Conference of Radiation Control Program Directors (CRCPD) have voiced their concerns about the potential risks to the public health and safety from aging radioactive sources held by private companies, universities, and government entities. The aging of these sources, coupled with the increasing complexity of the licensing of nuclear materials has made radioactive source ownership more burdensome and costly, but source owners who want to get rid of their excess or unwanted sources have no options for doing so. This situation, potentially leading to mishandling or mismanagement of radioactive sources, causes a risk to public health and safety. If these sources are mishandled, members of the public could be exposed to radioactive emissions. If a source ruptures, members of the public could inhale or ingest radioactive material. DOE has already addressed some public health and safety concerns by reactivating a program to accept and manage plutonium-239 sealed radioactive neutron sources, and is now considering an additional program (the Radioactive Source Recovery Program) to protect public health and safety by accepting and managing other aging, unwanted, and excess radioactive sources.

Both public, private, and government owners have expressed the need to immediately turn over large numbers of ^{241}Am-Be and ^{238}Pu-Be neutron-emitting sealed sources to the federal government for safe management. This is because many of these sources are at or beyond the end of their useful life. DOE is the only government agency with the authority and the existing technical capability to safely manage these materials. The DOE now needs to extend its capability beyond an emergency response basis to receive and safely manage excess and unwanted ^{241}Am-Be and ^{238}Pu-Be neutron sealed sources and assure that these sources are no longer a risk to the public health and safety.

2. Alternatives Analyzed

No Action Alternative--The no-action alternative would maintain the current level of effort and cooperation between the DOE and the NRC in the receipt of neutron sources. This typically would not go beyond receipt of neutron sources on emergency basis. Actions would be initiated to remove these sources from their licensees, or in the case of abandonment, from local governmental agencies when they are deemed to represent a potential hazard to public health and safety by the NRC. The number of removal actions and frequency of source abandonment is expected to increase as more neutron sources reach the end of their useful life and as more companies consider sources to be a liability rather than an asset.

LANL Alternative--The DOE proposes to establish a program to accept and recover surplus ^{241}Am-Be and ^{238}Pu-Be sealed neutron sources (hereafter referred to as neutron sources) in facilities at Los Alamos National Laboratory (LANL), located in the Southwestern part of the United States at Los Alamos, New Mexico. Neutron sources would be received from companies, universities, source brokers, and government agencies across the country. The current neutron source holders and brokers would ship them to LANL where their identities would be verified, their outer shells of stainless steel would be breached, and their neutron-producing source material recovered by the chemical separation of the $^{241}AmO_2$ or $^{238}PuO_2$ from the Be or BeO. Recovered material would be placed in interim storage at LANL. It is anticipated that this program would have a duration of 15 years and would involve the recovery of less that 3 kilograms (kg [6.6 lb]) of Am-241 and less than 1 kg (2.2 lb) of Pu-238. Shipment of the sources continues to be the responsibility of the shipping organization.

A number of other options were proposed but were not analyzed in depth and were eliminated. Included were the alternatives of locating the source recovery effort at other DOE facilities and other facilities within LANL.

3. Decisions to be Made

The decisions to be made are whether to consolidate storage of certain radioactive sources from around the DOE complex at LANL.

4. INEEL Programs Analyzed

The TRA was initially proposed as a potential location for the source recovery effort. This proposal was dismissed due to unworkable programmatic impacts. Shipment of sources currently held by the INEEL was not included in the analysis.

5. Decisions Regarding INEEL Programs

None.

DOE/EA-1083 - New Silt/Clay Source Development and Use at the Idaho National Engineering and Environmental Laboratory, May 1997

1. General Scope/Purpose and Need of EIS/EA

The U. S. Department of Energy (DOE) proposed an Environmental Assessment (EA) to close its current silt/clay source and open as many as three new sources with volumes sufficient to support potential Idaho National Engineering and Environmental Laboratory (INEEL) projects through 2005. The current source, Spreading Area B [southwest of the Radioactive Waste Management Complex (RWMC)], is the sole INEEL silt/clay source. Of the estimated 717,700 cubic yards of silt/clay available in Spreading Area B, about 300,000 cubic yards remain and, at the present rate of mining and would be depleted in late 1997. A 1996 survey estimates that the INEEL needs 2,300,000 cubic yards of silt/clay material over the next ten years.

2. Alternatives Analyzed

This EA analyzed the following alternatives: (a) a combination of on-site locations -- Ryegrass Flats, Spreading Area A, and the Waste Reactor Research Test Facility and an off-site location. In addition, the DOE evaluated the consequences of no action or continuing to use Spreading Area B.

3. Decisions to be Made

The decision to be made was where to obtain soil for the numerous construction projects around the site.

4. INEEL Programs Analyzed

The silt/clay would be used for, but not be limited to a) the construction of soil caps for contaminated sites, research sites, and landfills, b) the replacement of radioactively contaminated soil with topsoil for revegetation, and backfill and, c) the sealing of sewage lagoons and other projects as shown below.

- Special Power Excursion Reactor Test No. IV
- Decontamination and Dismantlement soil covers for miscellaneous projects
- INEEL sewer upgrade
- INEEL radioactively contaminated soils repository
- Decontamination and Dismantlement of CFA-601 and 603
- North and east ditch at Argonne National Laboratory--West
- Subsurface Disposal Area cap
- Warm waste pond capping (Navel Reactors Facility)
- Transuranic pits and trenches
- Remote-handled low-level waste disposal vaults
- Pit 9
- Maintenance
- Boiling Water Reactor Experiment 08 ditch
- Warm waste pond
- Operations and Subsurface Disposal Area engineered barriers
- Capping and filling trenches at Test Area North

- Test Reactors Areas Sewer Lagoon

5. Decisions Regarding INEEL Programs

DOE determined that opening one to three new borrow sources concurrently or individually to meet INEEL silt/clay needs through 2005. The following on-site locations could provide this material: Ryegrass Flats, 5.5 miles east of the Central Facility Area (CFA); Spreading Area A, 9.0 miles southwest of CFA; and WRRTF, 25 miles north of CFA. While any of the three sites could meet the entire silt/clay needs of the INEEL, DOE will likely use a combination of sites to meet INEEL's needs because of costs and transportation efficiencies.

DOE determined that the proposed action did not constituted a major Federal action significantly affecting the quality of the human environment and issued a Finding of No Significant Impact (FONSI).

DOE/EA-1104 - Environmental Assessment and FONSI for Consolidation of Certain Materials and Machines for Nuclear Criticality Experiments and Training- Los Alamos National Laboratory, Los Alamos, New Mexico, May, 1996

1. General Scope/Purpose and Need of EIS/EA

DOE has committed to continuing its on-going experimentation program of general-purpose criticality experiments and to continuing to provide an education program for criticality safety professionals. Los Alamos Critical Experiments Facility (LACEF) is the last remaining operating facility in the United States capable of general-purpose criticality experiments and criticality training. Criticality experiments at other DOE sites have been eliminated from their areas of responsibility in an effort to streamline the DOE complex and avoid expensive program duplication. The transfer of certain materials and machines now located at other DOE sites to LACEF will allow DOE to further its capability to provide a robust experimentation program in support of reducing nuclear criticality safety risks.

The specific materials and machines identified are as follows: Hanford--741 unirradiated Low Enriched Uranium (LEU) fuel rods; Sandia National Laboratories (SNL) lightly irradiated and unirradiated Highly Enriched Uranium reactor fuel; and Oak Ridge National Laboratory (ORNL)--the Health Physics Research Reactor (HPRR) core which contains irradiated HEU reactor fuel. The INEEL material includes surplus slightly irradiated plutonium plates. LEU reactor fuels are composed of uranium metal that contains less than 20 percent of the uranium isotope uranium-235. HEU reactor fuels are composed of uranium metal that contains 20 percent or greater of the uranium isotope uranium-235. These nuclear materials, machines and sources are representative of those that could be utilized for criticality experiments at LACEF.

2. Alternatives Analyzed

No Action Alternative. Materials would remain at their present locations and would not be available for training purposes.

Proposed action. The proposed action consists of the shipment, storage, consolidation and use of surplus special nuclear materials and machines that would be used in support of the LACEF criticality experiments and training program at LANL. As stated, the available special nuclear materials and machines include the LEU fuel rods at Hanford, the CX particle bed fuel at SNL/NM, the HPRR at ORNL, the plutonium plates at INEL and the nesting shells at LANL. These materials and machines would be packaged and transported by either DOE or commercial carrier from their current locations to LACEF (except for the CX machine and equipment and nesting shells currently stored at LACEF). The storage and use of these materials would take place in any or all of the three kivas located at LACEF. The primary use of these materials and machines would be to conduct criticality experiments and criticality training.

3. Decisions to be Made

DOE has identified two primary disposition options for consideration: it can either declare and manage the surplus materials and machines as waste or it may move the material and machines to other DOE facilities where they can be used for the same or other purposes.

4. INEEL Programs Analyzed

The surplus weapons grade plutonium in storage at INEEL would be inspected and packaged in DOT authorized shipping containers. The INEEL materials would be shipped by DOE Safe Secure Transports to LANL as weapons grade material. The INEEL materials would be transported the 1363 km (818 mi) from Idaho National Engineering Laboratory to LANL as a single shipment of one to two DOT Specification 6M packages or containers. The materials would be inspected upon arrival and initially placed in a criticality safe storage configuration within one of the kivas. This 100 kg (220 lb) of plutonium would be stored at LACEF. Under the proposed action, the INEEL plutonium would be used for conducting experiments that examine the criticality behavior of plutonium.

The materials that were originally used at the INEEL in criticality experiments are at the Argonne National Laboratory West, Zero Power Research Reactor facility. That facility is currently shut down with little reasonable chance that it would be reactivated. Approximately 100 kg (220 lb) of weapons grade plutonium has been declared surplus to the INEEL needs and is, therefore, available for use in general criticality experiments. The proposed action consists of the shipment, storage, consolidation and use of surplus special nuclear materials and machines that would be used in support of the LACEF criticality experiments and training program at LANL. The anticipated operational life of the proposed action is approximately 30 years.

5. Decisions Regarding INEEL Programs

The Proposed Action was accepted. Based on the environmental assessment that analyzes the potential environmental effects that would be expected to occur if the DOE were to consolidate these surplus materials and machines at LACEF, the proposed action does not constitute a major federal action which would significantly affect the human environment within the meaning of NEPA. Therefore, no environmental impact statement is required for this proposal.

DOE/EA-1135 - Environmental Assessment for Offsite Thermal Treatment of Low-Level Mixed Waste, December 1996

1. General Scope/Purpose and Need of EA/EIS

The United States (US) Department of Energy (DOE) needs to treat contact-handled low-level mixed waste (MLLW) containing polychlorinated biphenyls (PCBs) and other organics, to meet existing regulatory standards for eventual disposal. Radioactive and hazardous waste is stored at DOE's Hanford Site located near Richland, Washington. The waste inventory includes contact-handled MLLW, which is made up of both low-level radioactive and hazardous constituents. Some of the Hanford Site MLLW contains organic constituents such as solvents and PCB's that require thermal treatment to meet regulatory standards for disposal. Thermal treatment by gasification and vitrification would also result in waste volume reduction and a highly stable form for disposal (Place 1993). Thermal treatment before disposal is required for some constituents of this Hanford Site MLLW under RCRA, and State of Washington regulations. Under RCRA, some MLLW is suitable for land disposal only after thermal treatment and/or stabilization.

2. Alternatives Analyzed

The proposed action is to transport up to 5,120 cubic meters of contact-handled low-level mixed waste from Hanford Site to the Allied Technology Group (ATG) gasification and vitrification building in Richland, Washington, for treatment, and to return the treated waste to Hanford for disposal. The waste would be staged to the ATG gasification and vitrification building over a ten-year period. The ATG gasification and vitrification building is located adjacent to the Hanford Site boundary in an industrial area in the city of Richland. After the Hanford Site MLLW is treated, the residue from the treatment, a leach-resistant glass material, would be returned to Hanford Site and disposed of in a disposal facility.

No Action Alternative. Under the no action alternative, MLLW would continue to accumulate at Hanford Site, pending future decisions. Also, life-cycle costs for the long-term storage of the untreated waste are greater than life-cycle costs for near-term waste treatment and disposal. This alternative would not support the purpose and need for the proposed action.

The following alternatives were considered in the process of identifying the proposed action, but were not feasible and not analyzed in detail in this document.

Treatment at the Waste Experimental Reduction Facility, Idaho - Under this alternative DOE would send the waste for treatment to the existing WERF facility at INEEL, approximately 500 miles from 200 West Area. The treated waste would be returned to the Hanford for eventual disposal. Risk of a transportation accident would be greater than for the proposed alternative. The higher risk would derive both from an increased accident probability due to a lack of access controls over much of the route and due to an increased accident frequency probability due to longer travel times. It is assumed that WERF would operate with efficiency equal to the ATG facility of the proposed action, and that the waste handling procedures would be similar to the ATG facility.

Approximately 82% of the Hanford Site MLLW generated between 1993 and 1995 from on-site and off-site generators would not be treatable at the INEEL's WERF facility. This is because the facility's waste acceptance criteria preclude numerous items from being incinerated, such TSCA waste and waste with more than 0.1 nCi/g of alpha emitting radionuclides. This alternative would only partially fulfill the purpose and need of the proposed action.

Build a Thermal Treatment Facility at the Hanford Site 200 West Area - Based on a study completed in 1993, a rotary kiln incinerator was proposed to be built on Hanford site for the purpose of treating Hanford Site MLLW (Place 1993). Construction costs—including direct, escalation, and contingency—were estimated to be $620 million for a stand-alone facility and $20 million in annual operating costs. The proposed incinerator would have treated contact-handled transuranic mixed waste, remote-handled MLLW, remote-handled transuranic mixed waste, as well as contact-handled MLLW, in a process employing a plasma arc furnace.

The facility would have been built and operated a 200 West Area, adjacent to the present temporary MLLW storage site. As with the preferred alternative, the treated and stabilized waste would have been disposed of at 200 West Area. This alternative would have fulfilled the purpose and need of the proposed action. The cost was considered to be too high; however, and construction was not projected for completion until 2005 (Place 1993).

Lockheed Environmental Systems and Technology Company Proposal - This alternative would use a plasma arc melter, housed in Lockheed's existing Waste Treatment Facility near the center of the INEEL, to process MLLW from the Hanford Site. The facility is presently being built but would have to be modified and permitted (RCRA/TSCA) to accept Hanford Site MLLW. Similar to the proposed action, the final waste form to be produced would be glass/slag.

This facility is approximately 500 miles from 200 West Area. The operational impact of this treatment is assumed to be similar to that of ATG's. Risk of a transportation accident would be greater than for the proposed action. The higher risk would derive both from an increased accident probability due to a lack of access controls over much of the route and to an increased accident frequency probability due to longer travel times.

Scientific Ecology Group Proposal - This proposed alternative was to treat the Hanford Site MLLW at a steam detoxification unit being built for other treatment purposes in an existing scientific Ecology group incineration building in Oak Ridge, Tennessee. The building is near the Clinch River and Grassy Creek approximately 11 miles southwest of the center of Oak Ridge. Final waste form would be microencapsulated ash and solid residual. This facility is approximately 2300 miles from 200 West Area. The operational impact of this treatment is assumed to be similar to that of ATG's. Risks of a transportation accident would be greater than for the proposed action, as would the cost of transporting the waste.

3. Decisions to be Made

The DOE needs to treat contact-handled MLLW, containing polychlorinated biphenyls (PCB's) and other organics, to meet existing regulatory standards for eventual disposal. Treatment followed by land disposal would reduce long-term surveillance and maintenance burdens at Hanford Site and would be in compliance with interagency agreements. This EA looked at six alternatives before choosing the preferred alternative. Basically the decision to be made was "where" the MLLW would be treated.

4. INEEL Programs Analyzed

Treatment of Hanford mixed waste at the Waste Experimental Reduction Facility (WERF) was one option but was dismissed because of the greater risk of a transportation accident and the shipping costs. Therefore the actual treatment itself was not analyzed.

5. Decisions Regarding INEEL Programs

No decisions were made that would affect INEEL programs.

DOE/EA-1148 - Electrometallurgical Treatment Research And Demonstration Project Environmental Assessment, May 1996

1. General Scope/Purpose and Need of the EA

The EA analyzed the potential environmental consequences of demonstrating the use of electrometallurgical technology to treat sodium-bonded spent nuclear fuel from the Experimental Breeder Reactor – II (EBR-II) Reactor. The technology was demonstrated on 1.6 metric tons of sodium-bonded uranium spent nuclear fuel from July of 1996 to August of 1999. The demonstration project treated 100 EBR-II Driver assemblies and 13 blanket assemblies in the Fuel Conditioning facility at Argonne National Laboratory-West. Treatment of the EBR-II fuel included chemically removing and reacting metallic sodium that was bonded to the fuel, and producing low-enriched uranium and two durable high level waste forms. One waste form is ceramic and the other is metallic. The demonstration was successful in that it met all success criteria put forth by the National Research Council, who monitored the progress of the demonstration.

2. Alternatives Analyzed

<u>No Action</u>- This alternative was to place all EBR-II spent nuclear fuel into interim retrievable storage without demonstrating the electrometallurgical technology.

<u>Conducting the research and demonstration project in an alternative location.</u> – This alternative was to demonstrate the electrometallurgical technology in another shielded hot-cell facility not located at Argonne National Laboratory-West. The alternative facility analyzed was the Test Area North Hot Shop.

<u>Conducting a smaller scope equipment performance verification project</u>. This alternative was to limit the demonstration to less than half of the spent fuel in the proposed action. This alternative would demonstrate the operability of the electrorefining equipment, but would not extract enough transuranic elements and fission products from the spent fuel to demonstrate the immobilization of these elements in the ceramic high-level waste form.

3. Decisions to be Made

The decision was whether or not to demonstrate the feasibility of electrometallurgical technology to treat sodium-bonded spent fuel from the EBR-II reactor. The treatment results in low-enrichment uranium and two waste forms (metallic and ceramic) that perform as well as the DOE standard borosilicate glass high-level waste form.

4. INEEL Programs Analyzed

The EA and FONSI affected the DOE-NE sponsored EBR-II Spent Fuel Treatment Project at Argonne National Laboratory-West, which is administered by the DOE Chicago Operations Office. The demonstration had positive results that led to the identification of electrometallurgical treatment as an alternative for making the EM sodium-bonded Fermi-1 blanket fuel ready for shipment to the national spent fuel repository. The Fermi-1 blanket fuel is stored at the INTEC facility.

5. Decisions Regarding INEEL Programs

The decision to demonstrate the feasibility of electrometallurgical treatment led to the identification of this technology as a possible method to make all INEEL sodium-bonded spent nuclear fuel ready for shipment to the national spent fuel repository.

DOE/EA-1149 - Closure of the Waste Calcining Facility (CPP-633), Idaho National Engineering and Environmental Laboratory, June 1996

1. General Scope/Purpose and Need of EA/EIS

The U. S. Department of Energy (DOE) prepared this Environmental Assessment (EA) to analyze the environmental impacts of closing the Waste Calcining Facility (WCF) at the Idaho National Engineering and Environmental Laboratory (INEEL). DOE proposes reduce the risk of radioactive exposure and release of radioactive and hazardous constituents and eliminate the need for extensive long-term surveillance and maintenance. DOE determined that they should close the facility to reduce the risks to human health and the environment and to comply with Resource Conservation and Recovery Act requirements.

DOE identified six facility components in the WCF as Resource Conservation and Recovery Act (RCRA)-units in the INEEL RCRA Part A application. The WCF closure must comply with Idaho Rules and Standards for Hazardous Waste contained in the Idaho Administrative Procedures Act (IDAPA). These state regulations, in addition to prescribing other requirements, incorporate by reference the federal regulations that prescribe the requirements for facilities granted interim status pursuant to the RCRA.

The 1995 EIS describes the WCF closure project. DOE determined in the Record of Decision (ROD) that they would implement certain actions and other actions deferred. The ROD states, for the WCF that "Implementation decisions will be made in the future pending further project definition, funding priorities and any further review under the Comprehensive Environmental Response Compensation and Liability Act, or the National Environmental Policy Act." In accordance with 40 CFR Part 1502.2, the WCF EA tiered from the 1995 EIS.

2. Alternatives Analyzed

This EA analyzes the following alternatives: (a) Closure-in-Place or the proposed action and (b) Closure-by-Removal. DOE believes that the two primary alternatives give an adequate range to describe potential impacts, and result in the intended purpose of the action, that is to bring the WCF to closure.

Other alternatives DOE considered for WCF closure included: phased removal of process equipment beginning with the silica gel adsorbers and ending with clean closure by removal; and various combinations of removal and grouting (e.g., remove RCRA-units and grout the remaining process equipment and cells). These alternatives offered no apparent advantages and were eliminated from detailed consideration due to estimated higher cost and occupational radiation doses.

3. Decisions to be Made

The decision to be made was how to close the Waste Calcining Facility.

4. INEEL Programs Analyzed

The project analyzed was closure of the Waste Calcining Facility.

5. Decisions Regarding INEEL Programs

The decision was made to close the WCF in place.

DOE/EA-1189 - Non-Thermal Treatment of Hanford Site Low-Level Mixed Waste, September 1998

1. General Scope/Purpose and Need of EA/EIS

The U.S. Department of Energy (DOE), Richland Operations Office (RL) needs to demonstrate the feasibility of commercial treatment of contact-handled low-level mixed waste (MLLW) to meet existing Federal and State regulatory standards for eventual land disposal. Treatment before disposal is required for some constituents of this Hanford Site MLLW under the Resource Conservation and Recovery Act. Under RCRA land disposal restrictions, some MLLW is suitable for land disposal only after stabilization.

The Hanford Site waste stream evaluated in this Environmental Assessment is existing waste that is currently stored at the Central Waste Complex located in the 200 West Area of the Hanford Site. Most of the waste packages that would be treated under the proposed action have surface radiation dose rates below 1 mrem/hr, and the highest package dose rate is approximately 100 mrem/hr. A total waste volume of 2,600 cubic meters was evaluated in this EA. This represents the maximum waste volume that would be treated for demonstration purposes. The waste stream evaluated in this EA represents a small fraction of the projected Hanford Site MLLW volume. This is an interim action under the Hanford Solid Waste Program Environmental Impact Statement.

2. Alternatives Analyzed

No Action Alternative - Under the No Action alternative MLLW would continue to be stored at the Hanford Site, pending future decisions. Life-cycle costs for the long-term storage of the untreated mixed waste are greater than the life-cycle costs for near-term waste treatment and disposal.

Preferred Alternative - DOE proposes to transport contact-handled MLLW from the Hanford Site to the ATG Mixed Waste Facility (MWF) in Richland, Washington, for non-thermal treatment and to return the treated waste to the Hanford Site for eventual land disposal. Over a 3-year period the waste would be staged to the ATG MWF, and treated waste would be returned to the Hanford Site. The ATG MWF would be located on an 18 hectare ATG Site adjacent to ATG's licensed low-level waste processing facility at 2025 Battelle Boulevard. The ATG MWF is to be located on the existing ATG Site, near the DOE Hanford Site, in an industrial area in the City of Richland.

The effects of siting, construction, and overall operation of the MWF have been evaluated in a separate State Environmental Policy Act EIS. The proposed action includes transporting the MLLW from the Hanford Site to the ATG Facility, non-thermal treatment of the MLLW at the ATG MWF, and transporting the waste from ATG back to the Hanford Site. Impacts from waste treatment operations would be bounded by the ATG State Environmental Policy Act EIS, which included an evaluation of the impacts associated with operating the non-thermal portion of the MWF at maximum design capacity (8,500 metric tons per year).

Treatment at the Advanced Mixed Waste Treatment Project, Idaho - Under this alternative DOE would send the waste for treatment at the proposed Advanced Mixed Waste Treatment Project Facility at the Idaho National Engineering and Environmental Laboratory, in Idaho Falls, Idaho, approximately 800 km (500 mi) from the 200 West Area. The proposed treatment facility includes compaction and non-thermal stabilization processes for contact-handled MLLW. The treated waste would be returned to the Hanford Site for eventual disposal. It is assumed that the Advanced Mixed Waste Treatment Project Facility would operate with an efficiency equal to the ATG MWF, and that waste-handling procedures would be similar to the ATG Facility.

Treatment at EnviroCare, Utah - Under this alternative DOE would send the waste for treatment at EnviroCare's mixed waste treatment facility in Clive, Utah, approximately 1,040 km (650 mi) from the 200 West Area. The treated waste would be returned to the Hanford Site for eventual disposal. It is assumed that Envirocare's waste treatment facility would operate with an efficiency equal to the ATG MWF, and waste-handling procedures would be similar to the ATG Facility.

Treatment at Nuclear Sources and Services Incorporated (NSSI), Texas - Under this alternative DOE would send the waste for treatment at NSSI's facility in Houston, Texas, approximately 3,700 km (2,300 mi) from the 200 West Area. The treated waste would be returned to the Hanford Site for eventual disposal. It is assumed that the NSSI waste treatment facility would operate with an efficiency equal to the ATG MWF, and that waste-handling procedures would be similar to the ATG Facility.

3. Decisions to be Made

The DOE needs to demonstrate the feasibility of commercial treatment of contact-handled low-level mixed waste (MLLW) to meet existing Federal and State regulatory standards for eventual land disposal. The decision to be made is where to conduct the feasibility testing.

4. INEEL Programs Analyzed

Hanford mixed waste was analyzed for treatment at the Advanced Mixed Waste Processing Facility including transportation of the waste from Hanford to the INEEL and shipment of the treated material back to Hanford for disposal.

5. Decisions Regarding INEEL Programs

No decisions were made that would affect INEEL programs.

DOE/EA-1207 - Pit Disassembly and Conversion Demonstration Environmental Assessment and Research and Development Activities, August 1998

1. General Scope/Purpose and Need of EIS/EA

This EA provides an assessment of the potential environmental impacts of various ways to disposition U.S. surplus weapons-usable fissile materials. Specifically, it evaluates the LANL Plutonium Facility-4's capability to disassemble and convert approximately 250 pits that are widely diverse in their characteristics.

The purpose of this action is to safely and efficiently disassemble surplus plutonium pits and convert the surplus plutonium metal into a suitable and unclassified oxide form.

The U. S. has declared 38.2 metric tons of weapons-usable plutonium to be surplus to national security needs. Disposition of surplus plutonium is needed to reduce reliance on institutional controls and to provide visible evidence of irreversible disarmament.

2. Alternatives Analyzed

A total of four alternatives were analyzed for two candidate DOE sites (i.e., LANL and LLNL). However, LLNL was quickly eliminated from consideration due to administrative limits on handling plutonium and transportation concerns.

No Action Alternative - An integrated pit disassembly and conversion line would not be demonstrated at LANL.

Disassembling and Converting Fewer Than 250 Pits - This alternative would not provide an adequately comprehensive experience base upon which to base a decision.

Disassembling and Converting Only Plutonium from Pits - This alternative would exclude disassembling and converting non-pit plutonium metal. And, therefore, would not generate the complete information needed for the proposed demonstration.

Disassembling and Converting Plutonium to a Metal Form Only - This alternative would not test and demonstrate conversion of pit plutonium to the oxide form most suitable for either immobilization of MOX fuel.

3. Decisions to be Made

The decision to be made by the DOE in this EA was whether the potential environmental impacts were acceptable if the LANL Plutonium Facility-4 was used to disassemble and convert approximately 250 pits.

4. INEEL Programs Analyzed

The EA briefly discussed the shipment of plutonium metal from the INEEL to LANL.

5. Decisions Regarding INEEL Programs

No decisions were made concerning INEEL programs.

DOE/EA-1210 - Lead Test Assembly Irradiation and Analysis Watts Bar Nuclear Plant, Tennessee and Hanford Site Richland, Washington, July 1997

1. General Scope/Purpose and Need of EIS/EA

The U.S. Department of Energy (DOE) needed to confirm the viability of using a commercial light water reactor (CLWR) as a potential source for maintaining the nations supply of tritium. The Proposed Action discussed in this environmental assessment is a limited scale confirmatory test that would provide DOE with information needed to assess that option.

The Proposed Action was to confirm the results of developmental testing conducted previously at DOE facilities and provide DOE with information regarding the actual performance of the Tritium Producing Burnable Absorber Rods (TPBARs) in a CLWR. It was also to demonstrate that tritium production could be carried out within the normal operating and regulatory constraints associated with a commercial nuclear power facility, without affecting the plants safety systems, production capacity, or normal operations. These activities would provide added confidence to the utilities and the NRC, which regulates commercial power reactors, that tritium production in a CLWR could meet national security needs in a technically straightforward, safe and cost effective manner.

Activities associated with the Proposed Action include replacing four conventional pressurized water reactor (PWR) burnable absorber assemblies with assemblies containing the TPBARs – Lead Test Assembly (referred to as TPBAR-LTAs) during the next refueling outage at the Watts Bar Nuclear plant (WBN), Unit 1 in southeastern Tennessee. The TPBARs were shipped from the Hanford Site near Richland, Washington to the Westinghouse fuel fabrication facility in Columbia, South Carolina, for assembly into TPBAR-LTAs. The TPBAR-LTAs were inserted into four new fuel assemblies at Westinghouse. The fuel assemblies with the TPBAR-LTAs (hereafter referred to as integrated assemblies) were then be shipped to WBN with the rest of the new fuel and stored until the next refueling outage, when they were inserted into the reactor. A typical fuel reload would contain more than 1000 burnable absorber rods, of which 32 were replaced by the TPBARs in the proposed test.

The TPBAR-LTAs were irradiated for one complete operating cycle (approximately 18 months), following which they were removed from the integrated assemblies and stored in the spent fuel pool. The fuel assemblies were placed back in the reactor as part of the refueling process. The TPBAR-LTAs were shipped to the Pacific Northwest National Laboratory (PNNL) at Hanford for post-irradiation examination (PIE). Because the fuel assemblies from the integrated assemblies could be returned to the reactor core during refueling, no shipment or disposal of spent nuclear fuel was required as part of the Proposed Action.

As part of the PIE activities at Hanford, the TPBARs were removed from the remaining hardware. The TPBARs were then be subjected to non-destructive evaluation (NDE), including a visual inspection and gamma radiography. The TPBARs were punctured to collect and analyze any gases that accumulate during irradiation, and the penetrations would be sealed before the TPBARs are stored or processed further.

The TPBARs have been examined by neutron radiography at the Argonne National Laboratory-West (ANL-W) near Idaho Falls, Idaho. Upon completion of the neutron radiography, the TPBARs will be returned to PNNL for destructive examination.

2. Alternatives Analyzed

No Action: Under a no-action alternative, DOE would not conduct the LTA program or post-irradiation examinations. The final selection of either a CLWR or an accelerator as the nations primary tritium source would be made without the benefit of the results of this proposed project. The no-action alternative is not consistent with the Departments purpose and need and therefore was not considered reasonable. However, evaluation of the No Action alternative is required by NEPA as a baseline against which to assess the impacts of the Proposed Action and alternatives.

Irradiation at Other Reactor/Analysis at Other DOE Laboratory: DOE considered the use of another commercial reactor to conduct the LTA program, as well as the use of other DOE laboratory facilities for examining the TPBARs. WBN was proposed for these tests because its refueling schedule provided optimum timing for obtaining the performance data needed by DOE, and because it was the only reactor of compatible design that was not encumbered by vendor restrictions on use of its fuel or other components for defense-related research. All other U.S. PWRs of this design obtain their fuel from foreign vendors that impose contractual restrictions on use of their products for defense-related purposes. Use of any facility other than WBN would have required DOE to replace all of the reactors fuel, resulting in possible delay of the tests as well as substantially increased cost. Therefore, DOE considered options other than use of WBN to be unreasonable for the proposed tests. A future, separate evaluation process would identify one or more facilities for the actual tritium production mission. Reactors owned by DOE (such as the FFTF at Hanford or the Advanced Test Reactor at the INEEL) or reactors operated by universities were not considered reasonable alternatives because they do not meet the purpose of, and need for, the Proposed Action, which is to demonstrate the viability of producing tritium in a CLWR.

Other DOE laboratories could perform the post-irradiation activities if the technology were transferred to those laboratories, and if the laboratories possessed hot cells large enough to contain the full length of the TPBAR-LTAs. This alternative was not considered reasonable because Hanford has the technology for post-irradiation examination of the TPBARs. Further, Hanford has hot cells suited for this purpose and has conducted similar types of examinations in the past. Use of alternate facilities would introduce technical uncertainties and impact both the schedule and cost for the proposed tests; therefore, this alternative was not evaluated in detail.

Analysis at Private Facility: DOE also considered the use of a private hot cell facility to conduct the analysis on the irradiated TPBARs. However, hot cells with the ability to handle the quantities of radioactive materials involved and to accommodate the full-length assemblies are generally not available outside the DOE complex. The exception would be a commercial nuclear fuel fabrication facility which is owned by a foreign corporation. However, the security measures required to perform the work in a foreign-owned facility would be difficult to implement. For these reasons, use of non-DOE facilities was not considered reasonable and is not evaluated further.

3. Decisions to be Made

The decision to be made was whether or not to conduct an LTA program to confirm the viability of using a commercial light water reactor (CLWR) to produce Tritium.

4. INEEL Programs Analyzed

The EA and FONSI affected the Hot Fuel Examination Facility (HFEF) at Argonne National Laboratory-West, which is administered by the DOE Chicago Operations Office. DOE Defense Programs (DP) funded modifications to the HFEF cask transfer tunnel to accommodate CLWR-sized fuel assemblies. DP also funded neutron radiography of the TPBARS in HFEF following their irradiation in the Watts Bar Nuclear Power Plant. The examination of the TPBARS in HFEF is scheduled to conclude by the end of FY 2000.

5. Decisions Regarding INEEL Programs

The decision to conduct the LTA program to include radiography of the post irradiation TPBARs at the HFEF involved the Argonne National Laboratory-West facility. The LTA examination was conducted without interfering with the ongoing Spent Fuel Treatment research funded by DOE-NE.

DOE/EA-1217 - Test Area North Pool Stabilization Project Update, August 1997

1. General Scope/Purpose and Need of EA/EIS

The U. S. Department of Energy (DOE) prepared an Environmental Assessment (EA) to update the "Test Area North Pool Stabilization Project" EA (DOE/EA-1050) and finding of no significant impact (FONSI) issued May 6, 1996. This update analyzes the environmental and health impacts of a "drying" process for the Three Mile Island (TMI) nuclear reactor core debris canisters now stored underwater in a facility on the Idaho National Engineering and Environmental Laboratory (INEEL). The pre-decision EA analyzed the drying process, but that particular process was determined to be ineffective and dropped from the EA and FONSI issued May 6, 1996. A new drying process was subsequently developed.

This environmental assessment (EA) identified and evaluated environmental impacts associated with (a) constructing an Interim Storage System (ISS) at INTEC; (b) removing the TMI and commercial fuels from the pool and transporting them to INTEC for placement in an ISS, and (c) draining and stabilizing the TAN Pool. DOE also proposed to remove and decontaminate or dispose of miscellaneous hardware in the INEEL Radioactive Waste Management Complex (RWMC).

DOE identified and proposed to eliminate vulnerabilities associated with SNF storage facilities. Vulnerabilities identified for TAN are storage of SNF in an unlined pool, wet storage of commercial SNF in aluminum coffins, and seismic inadequacy of the pool. In May of 1995, the State of Idaho asked the District Court to continue the prior injunction against SNF transportation by the Department of Energy, claiming that the 1995 EIS was defective. DOE, the Department of the Navy and the State of Idaho settled the litigation through a Settlement Agreement. The Settlement Agreement states: "DOE shall complete construction of the Three Mile Island dry storage facility by December 31, 1998. DOE shall commence moving fuel into the facility by March 31, 1999, and shall complete moving fuel into the facility by June 1, 2001."

The TAN Pool does not meet SNF storage requirements delineated in DOE Order 420.1. Principal deficiencies of the TAN Pool include lack of redundant containment of pool water (i.e., stainless steel pool liner), no provisions for detecting subsurface leaks from the pool, and inadequate control of the air space over the pool.

2. Alternatives Analyzed

This EA analyzed the following alternatives: (a) Refurbish the Test Area North (TAN) Pool, (b) Construct a new wet (underwater) storage facility, (c) Store the TMI core debris canisters and commercial fuels in existing Idaho Nuclear Technology Engineering Center (INTEC) storage systems (d) Construct an Independent Spent Fuel Storage Facility at a point removed from above the Snake River Plain Aquifer, and (e) Construct an Independent Spent Fuel Storage Facility at TAN. In addition, the DOE evaluated the consequences of no action.

3. Decisions to be Made

The decision to be made was how to address the SNF vulnerabilities that were identified and how to meet the commitments made by DOE to the State of Idaho regarding removing SNF from the TAN pool. This update specifically called for a different drying process.

4. INEEL Programs Analyzed

For Spent Nuclear Fuel Management, the DOE prepared this EA to update the "Test Area North Pool Stabilization Project" EA (DOE/EA-1050) and FONSI issued May 6, 1996. This update analyzes the environmental and health impacts of a "drying" process for the Three Mile Island (TMI) nuclear reactor core debris canisters now stored underwater in a facility on the INEEL. The pre-decision EA analyzed the drying process, but that particular process was determined to be ineffective and dropped from the EA and FONSI issued May 6, 1996. A new drying process was subsequently developed.

5. Decisions Regarding INEEL Programs

DOE prepared a pre-decision version of this updated EA and FONSI, dated June 1997, and made it available for a 30-day comment period on June 25, 1997. DOE did not receive comments on the pre-decision EA and FONSI.

DOE determined that the proposed action did not constituted a major Federal action significantly affecting the quality of the human environment and issued a Finding of No Significant Impact (FONSI). While the EA evaluated the impacts associated with the overall scope of the TAN Pool Stabilization Project, this FONSI was limited to actions that within the scope of DOE’s decision-making authority. The DOE applied to the NRC for licensing of: a) the transportation of the spent nuclear fuel and debris to INTEC and b) the construction and operation of the ISS. These actions are outside of the scope of DOE’s decision-making authority, therefore the NRC evaluated them as part of their independent NEPA evaluation and decision-making process.

DOE/EA-1310 - Decontamination and Dismantlement of the Advanced Reactivity Measurements Facility and Coupled Fast Reactivity Measurements Facility at the Idaho National Engineering and Environmental Laboratory, March 2000

1. General Scope/Purpose and Need of EIS/EA

The U. S. Department of Energy (DOE) prepared this Environmental Assessment (EA) to decontaminate and dismantle radiological contaminated and hazardous components and equipment in TRA-660, to allow future use by other programs. Additionally, the need for the proposed action is to reduce the potential risk of radioactive exposure and release of hazardous constituents from the facility.

2. Alternatives Analyzed

DOE analyzed the following alternatives: (a) removing all contaminated equipment and materials, disposing canal water, and backfilling the canal with fill material for future use of the facility and (b) decontamination and total dismantlement of TRA-660 and backfilling the area to grade with soil fill material. In addition, the DOE evaluated the consequences of no action.

3. Decisions to be Made

The DOE decided to prepare an EA to determine whether there would be any significant environmental impacts associated with the proposed action and reasonable alternatives, including the no action alternative. Based on the analysis in the EA that indicated there would be no significant impact, DOE has decided to proceed with the action as proposed.

The Advanced Reactivity Measurement Facility (ARMF) and the Coupled Fast Reactivity Measurement Facility (CFRMF) are research reactors located at the Test Reactor Area (TRA) on the Idaho National Engineering Laboratory (INEEL). The proposed action involves their removal and disposal. In general, the preparation of an EIS for the D&D of large reactors is appropriate because of factors such as residual contamination, residual environmental risk, and risk to workers. ARMF and CFRMF are small, about the size of a typical washing machine, suspended in the water-filled canal in TRA-660. The level of residual contamination, risk to the environment, or worker hazard associated with the removal and disposal of those reactors would be very small.

4. INEEL Programs Analyzed

The project analyzed was the D&D of the ARMF/CFRMF reactors at the Test Reactor Area.

5. Decisions Regarding INEEL Programs

Proceed with the D&D of the ARMF/CFRMF.

DOE/EIS-0026-S-2 - Waste Isolation Pilot Plant Disposal Phase Final Supplemental Environmental Impact Statement (SEIS), September 1997

1. General Scope/Purpose and Need of the EA/EIS

The U.S. Department of Energy needs to dispose of transuranic (TRU) waste generated by past, present, and future activities in a manner that protects public health and the environment. In previous NEPA documents, the Department examined alternatives to repository disposal at WIPP. In this document, the Department assesses whether and, if so how to dispose of TRU waste at WIPP.

Need for WIPP Disposal Phase final Supplemental EIS-II

- Identification of Additional TRU Waste Generator Sites.
- Changes in TRU Waste Volumes and Waste Forms.
- Changes in Compliance Status of Previously Disposed of TRU Waste.
- Passage of the Limited Work Authorization (LWA).
- Acquisition of New Data from the Experimental Program.
- Carlsbad Area Office/Waste Isolation Pilot Plant Waste Minimization and Pollution Prevention Awareness Program Plan (DOE 1995b).
- Publication of the WM PEIS (May 1997).
- Changes to the Planning-Basis Waste Acceptance Criteria (WAC).
- Changes to the Transportation Routes.
- Changes to the transuranic package transporter (TRUPACT-II) Certificate of Compliance (NRC 1989).
- Changes in the Status of Relevant Regulations.

2. Alternatives Analyzed

The DOE's proposed action is to continue with the phased development of WIPP by disposing of TRU waste at the facility, as authorized by Public Laws 96-164, 102-579, and 104-201. Under the Proposed Action, DOE would take the basic inventory, treat it to the Waste Acceptance Criteria, and dispose of it at WIPP.

No Action Alternative 1: Total Inventory (Including PCB-Commingled TRU Waste), Treat Thermally to Meet land disposal restrictions, Store Indefinitely, Dismantle WIPP.

No Action Alternative 2: Basic Inventory, Treat Newly Generated TRU Waste to WAC, Store at Generator Sites, Dismantle WIPP.

Action Alternative 1: Accept all TRU Waste (Except PCB-Commingled TRU Waste) at WIPP.

Action Alternative 2: Total Inventory (Including PCB-Commingled TRU Waste), Treat it Thermally to Meet Land Disposal Restriction, and Dispose of it at WIPP.

Action Alternative 3: Total Inventory (Except PCB-Commingled Waste), Treat by Shred and Grout, Dispose of at WIPP.

3. Decisions to be Made

Whether to open the Waste Isolation Pilot Plant (WIPP) for disposal of transuranic (TRU) waste or continue to maintain the waste in storage. The two no action alternatives examine the impacts of not opening WIPP.

Which portions of contact-handled (CH) TRU and remote-handled (RH) TRU waste inventory (identified in Chapter 2 as the Total Inventory consisting of the Basic Inventory and Additional Inventory) should be disposed of at WIPP or continued in storage. Analyses of the alternatives include impacts of both inventories.

Which minimal level of waste treatment should be required in the Waste Acceptance Criteria (WAC) to meet disposal performance standards or storage requirements prior to the disposal of or storage of waste. The three action alternatives differ in the treatment proposed, as do the two no action alternatives.

Whether to transport TRU waste primarily by truck or by rail. Three transportation options (truck, commercial rail, and dedicated rail) are assessed for all alternatives except the Proposed Action, where transportation by truck is the only option considered, and No Action Alternative 2, where there is no transportation.

Decisions based on SEIS-II may be a combination of the options presented within the alternatives analyzed. This means that portions of two or more of the alternatives analyzed in SEIS-II may be combined and used by the Department for the management or disposal of TRU waste.

The Preferred Alternative is the Proposed Action, reserving the possibility of using rail transportation in the future following appropriate NEPA review.

4. INEEL Programs Analyzed

Long-term disposition of the INEEL TRU waste including characterization and transportation.

5. Decisions regarding INEEL Programs.

INEEL TRU waste in storage will be characterized to meet with WIPP WAC and shipped to WIPP.

DOE/EIS-0161 - Final Programmatic Environmental Impact Statement (PEIS) for Tritium Supply and Recycling, October 1995

1. General Scope/Purpose and Need of the EA/EIS

The Department of Energy (DOE) proposes to provide tritium supply and recycling facilities for the Nation's Nuclear Weapons Complex (Complex). Tritium, a man-made radioactive isotope of hydrogen, is an essential component of every warhead in the current and projected U.S. nuclear weapons stockpile. These warheads depend on tritium to perform as designed. Tritium decays at 5.5 percent per year and must be replaced periodically as long as the Nation relies on a nuclear deterrent. The Complex does not have the capability to produce the required amounts of tritium. Projections require that new tritium be available by approximately 2011. The Tritium Supply and Recycling Programmatic Environmental Impact Statement (PEIS) evaluates the siting, construction, and operation of tritium supply technology alternatives and recycling facilities at each of five candidate sites: the Idaho National Engineering and Environmental Laboratory (INEEL), Nevada Test Site (NTS), Oak Ridge Reservation (ORR), the Pantex Plant, and the Savannah River Site (SRS).

2. Alternatives Analyzed

No Action Alternative. Under No Action, DOE would not establish a new tritium supply capability, the current inventory of tritium would decay, and DOE would not meet stockpile requirements of tritium. This would be contrary to DOE's mission as specified by the Atomic Energy Act of 1954, as amended. Sites would continue waste management programs to meet the legal requirements and commitments in formal agreements and would proceed with cleanup activities. Production facilities and support roles at specific sites, however, would be downsized or eliminated in accordance with the reduced workload projected for the year 2010 and beyond. The current DOE missions assumed to continue under No Action are listed for each candidate site.

Technologies Evaluated. Four new tritium supply technologies are being considered in this PEIS: Heavy Water Reactor (HWR), Modular High-Temperature Gas-Cooled Reactor (MHTGR), Advanced Light Water Reactor (ALWR), and the Accelerator Production of Tritium (APT). Each of these would be either collocated with a new tritium recycling facility or use upgraded recycling facilities at SRS. The PEIS also considers purchase of a commercial reactor and conversion to defense purposes or use of a commercial reactor for irradiation services. These commercial reactor alternatives would use upgraded recycling facilities and new extraction and target fabrication facilities at SRS. These tritium supply technologies and recycling facilities and their construction, operation, and waste generation data are discussed in the following sections.

Locations Evaluated. Five locations (INEEL, NTS, ORR, Pantex, and SRS) were considered as candidate sites for the tritium supply and recycling facilities. All of these sites, with the exception of INEEL, were currently performing defense program activities. For the commercial light water reactor alternatives, no specific site was identified. Therefore, any one of the existing operating commercial reactors or partially completed reactors was a potential candidate site for the tritium supply mission. At the time of analysis, 109 commercial nuclear power plants were located at 71 sites in 32 of the contiguous states.

3. Decisions to be Made

The decisions that were identified were the following:

Whether to build new tritium supply and new or upgraded tritium recycling facilities;

Where to locate new tritium supply and recycling facilities; and

Which technologies to employ for tritium supply?

The analysis was not intended to include decisions regarding clean-up or waste management at phased-out facilities; the ultimate disposition of these facilities; or the long-term storage, treatment, and ultimate disposal of some wastes and spent fuel. These activities were to be covered by separate NEPA documents. However, the PEIS does address the waste management implications of the alternatives considered to the extent needed to support programmatic decisions regarding the sites and technologies analyzed.

4. INEEL Programs Analyzed

The INEEL analysis included an overall site description and detailed descriptions of nine distinct and geographically separate functional mission areas. The analysis was grouped into the following two major categories, environmental management activities and other DOE activities.

Environmental management activities that were described include ongoing activities at the following facilities: Waste Engineering Development Facility, Waste Experimental Reduction Facility, Mixed Waste Storage Facility, Idaho Chemical Processing Plant, Radioactive Waste Management Complex, Power Burst Area, Test Area North, Auxiliary Reactor Area, Argonne National Laboratory West, Test Reactor Area, Naval Reactors Facility, and Central Facilities Area.

Other activities that were analyzed include research and development activities on reactor performance at TAN, materials testing and environmental monitoring activities conducted in the Auxiliary Reactor Area, breeder reactor development, the Waste Isolation Pilot Plant (WIPP) test program support at the ANL-W, and ATR operations at the TRA. Included in the ATR analysis is irradiation testing of reactor fuels and material properties; instrumentation for naval reactors; and production of radioisotopes in support of nuclear medicine, industrial applications, research, and product sterilization.

The NRF analysis included the submarine prototypes and the expended core facility. This included the testing of advanced design equipment and new systems for current naval nuclear power propulsion plants and obtaining data for future design. Additionally, facility usage included a comprehensive nuclear plant operational training program for naval personnel.

Non-DOE activities analyzed include research being conducted by the National Oceanic and Atmospheric Administration, the U.S. Geological Survey (USGS), and various institutions of higher learning.

5. Decisions Regarding INEEL Programs

The Record of Decision was issued in December 1995. The decisions that were made did not select any INEEL programs.

DOE/EIS-0200-F - Final Waste Management Programmatic Environmental Impact Statement For Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste, May 1997

1. General Scope/Purpose and Need of EA/EIS

This EIS provides complex-wide analysis of waste management treatment, storage, and disposal options for the following waste types: LLW, HW, TRU, MLLW, HLW. Included are preliminary estimates of the types and amounts of wastes that will be transferred to the WM program from the Environmental Restoration program.

This analysis looks at 54 sites across the complex of which 17 were designated to be major sites. The major sites were selected because they meet one of the following criteria: 1) they are candidates to receive wastes generated offsite, 2) they are candidates to host disposal facilities, 3) they manage HLW, or 4) they were included to be consistent with the Federal Facility Compliance Act (FFC Act) process.

The EIS emphasizes that the analysis was completed for the selection of sites at which to locate WM TSD facilities and not to provide comprehensive NEPA coverage for any specific site. From that standpoint, the analysis that was completed for the WM PEIS may not eliminate the need for additional analysis at a site-wide or project specific level.

Waste types not considered:

Non-hazardous and non-radioactive sanitary waste, non-hazardous solid waste, hazardous and low-level process wastewater, and commercial "Greater-Than-Class-C" LLW are not considered in this WM PEIS. Additionally, some wastes within the radioactive waste type categories, such as LLW, TRU, and HLW, have characteristics that require special considerations and different management than most of the other waste within that category. These wastes are "special case wastes" and are managed on a case-by-case basis; they are not specifically evaluated in the WM PEIS, although the waste volumes reported in the PEIS largely account for them.

2. Alternatives Analyzed

A total of 36 alternatives are analyzed for the different waste types. These alternatives reflect different national configurations of particular sites evaluated for each of the different waste types considered. The alternatives are comprised of a combination of site selections to be used for waste storage, treatment, and disposal on a complex-wide basis. The alternatives are grouped according to the following categories:

No Action Alternatives. Selection of this alternative would involve using only currently existing or planned waste management facilities at DOE sites or commercial vendors.

Decentralized Alternatives. Selection of these alternatives would result in managing waste where it is or where it will be generated, treated, or disposed of in the future. Unlike the No Action Alternative, this alternative may require the siting, construction, and operation of new facilities or modification of existing facilities.

Regionalized Alternatives. Selection of these alternatives would result in transporting wastes to various numbers of sites (fewer than the number of sites considered for the Decentralized

Alternatives but greater than the number of sites considered for the Centralized Alternatives). In general, those sites that now have the largest volumes of a given waste type were considered as regional sites for treatment, storage, or disposal.

Centralized Alternatives. Selection of these alternatives would result in transporting wastes to one or two sites for treatment, storage, or disposal. As with the Regionalized Alternatives, those sites that have the largest volumes of a given waste type were considered as sites for Centralized treatment, storage, or disposal.

3. Decisions to be Made

DOE used the analyses presented in the PEIS to decide on a programmatic or strategic approach to managing its waste.

MLLW – Decisions on where to treat and store MLLW were discussed in the document but are primarily made by the states and EPA under the FFC Act. The Final EIS was released after EPA and authorized State agencies issued orders implementing most of the site treatment plans. DOE issued Records of Decision on the treatment and disposal of MLLW, explaining what decisions were made by the States and the EPA and what alternatives were considered.

LLW – Decisions on where to treat, treatment methods, and where to dispose of LLW across the complex were discussed. Storage of LLW will remain where the waste is generated.

TRU – DOE will decide where to treat and store TRU based on evaluations in the WM PEIS and the requirement of the FFC Act because much of DOE's TRU is also mixed waste. DOE needs to decide where to treat TRU if treatment is deemed necessary before disposal at WIPP or some other form of disposition. DOE will also decide where to store treated TRU on the basis of the PEIS, a decision it must make regardless of whether or when WIPP opens.

HLW – DOE needs to decide where to store treated HLW until it can be permanently disposed of in a geologic repository. Treatment has already begun at SRS, West Valley Demonstration Project (WVDP), and Hanford.

HW – DOE will decide whether to continue its reliance on commercial vendors or to treat HW at selected DOE sites.

4. INEEL Programs Analyzed

For each of the waste types discussed above, there is a general description of the various pieces of the program. In addition, a general site overview was given with the environmental impacts of each of the alternatives.

The Cumulative Impacts section addresses INEEL impacts from each of the alternatives that include INEEL operations. Primarily this looks at overall impacts from a resource utilization standpoint and provides radiological exposure estimates.

The Site Data Tables provide waste generation and storage data and is summarized in 17 different tables from which the environmental impacts were taken.

5. Decisions Regarding INEEL Programs

The RODs issued as a result of this are programmatic in nature and site-specific NEPA analysis will still be required to implement specific treatment technologies or the particular location of a waste management facility.

HLW ROD – Maintain HLW in storage. DOE-ID is preparing a HLW EIS which will provide the basis for treatment and storage options.

TRU ROD – Prepare and store TRU waste on site prior to disposal at WIPP. It may be necessary to provide waste treatment for wastes from other sites. The ROD identified the INEEL as one place where complex-wide treatment maybe necessary. The TRU ROD only allows for shipment of these waste streams to the INEEL and does not address treatment methods or options.

LLW/MLLW ROD – The DOE has decided to perform minimum treatment at all sites and continue, to the extent practicable, disposal of onsite LLW at the INEEL. In addition the Department has decided to make the Hanford Site in Washington and the Nevada Test Site available to all DOE sites for LLW disposal. INEEL will continue to dispose of LLW generated by the Naval Nuclear Propulsion Program. For the management of mixed low-level waste analyzed in the WM PEIS, the Department has decided to treat MLLW at the INEEL (among other sites) and to dispose of MLLW at the Hanford Site and the NTS.

HAZ (Hazardous waste) ROD – The DOE decided to continue to use off-site commercial facilities for the treatment and disposal of major portions of the non-wastewater hazardous waste generated at DOE sites. The decision does not involve any transfers of non-wastewater hazardous waste among DOE sites. The decision for the INEEL was that all non-wastewater hazardous waste would continue to be treated and disposed at off-site commercial facilities.

DOE/EIS-0203F - DOE Programmatic Spent Nuclear Fuel Management and INEL Environmental Restoration and Waste Management Programs Final Environmental Impact Statement, Vols. 1 and 2, April 1995

1. General Scope/Purpose and Need of EA/EIS

The DOE's proposed action for Volume 1 is to safely, efficiently, and responsibly manage existing and projected quantities of DOE's SNF through the year 2035, pending ultimate disposition. Volume 1 was developed to support DOE's decision making on the most appropriate location for implementing national strategies for managing DOE's SNF until its ultimate disposition is determined and implemented. For planning purposes, it has been assumed that decisions regarding ultimate disposition strategies may require as long as 40 years to implement. The general environmental consequences of managing SNF in a range of configurations at various sites are summarized in this volume. This analysis includes options for storage, stabilization, and transportation of SNF.

For the purposes of the EIS, SNF was separated into two categories: commercial SNF and DOE- managed SNF. The management of commercial SNF (with a few special-case exceptions) is outside the scope of the 1995 EIS and was not discussed further.
The EIS analyzed SNF that is held at three major storage sites: Hanford, INEL, and SRS. In addition SNF held at a number of other sites was identified for disposition. Other sources of SNF that were analyzed include the Naval Nuclear Propulsion Program, Foreign Research Reactor SNF, non-DOE domestic research and test reactors SNF, and special-case commercial SNF at non-DOE locations.

Volume 2 addresses the Environmental Restoration and Waste Management Programs at the INEEL. The DOE objectives for the 10 years analyzed were to mitigate the impacts of past operations through environmental restoration and to treat, store, or dispose of waste at the INEEL in a way that minimizes future adverse impacts.

This section discusses the scope of the EIS as it relates to INEEL's ER&WM and spent nuclear fuel activities and the timeframe for decisions supported by this EIS. Activities addressed in the EIS primarily include those that have produced and continue to produce radioactive (high-level, transuranic, low-level, and mixed) wastes, hazardous waste, and INEEL industrial waste. Activities that fall outside the scope of the EIS are also identified. This EIS provides the analysis required under the National Environmental Policy Act for certain projects required to implement the Spent Nuclear Fuel and ER&WM Programs at the INEEL.

2. Alternatives Analyzed

<u>Summary of Alternatives for the Management of DOE Spent Nuclear Fuel</u>

No Action. Take minimum actions required for safe and secure management of SNF at or close to the generation site or current storage location.

Decentralization. Store most SNF at or close to the generation site or current storage location, with limited shipments to DOE facilities.

1992/1993 Planning Basis. Transport and store newly generated SNF at the INEEL or Savannah River Site. Consolidate some existing fuels at the INEEL or at the Savannah River Site.

Regionalization. Distribute existing and projected SNF among DOE sites based primarily on fuel type (Regionalization 4A) or geographic location (Regionalization 4B).

Centralization. Manage all existing and projected SNF inventories at one site until ultimate disposition.

Summary of Alternatives for the Management of the INEEL SNF, ER, and WM Programs

No Action. Complete all near-term actions identified and continue operating most existing facilities. Serves as benchmark for comparing potential effects from the other three alternatives.

Ten-Year Plan. Complete identified projects and initiate new projects to enhance cleanup, manage the INEEL waste streams and spent- nuclear fuel, prepare waste for final disposal, and develop technologies for spent nuclear fuel ultimate disposition.

Minimum Treatment, Storage, and Disposal. Minimize treatment, storage, and disposal activities at the INEEL to the extent possible (including receipt of spent nuclear fuel). Conduct minimum cleanup and decontamination and decommissioning prescribed by regulation. Transfer spent nuclear fuel and waste from environmental restoration activities to another site.

Maximum Treatment, Storage, and Disposal. Maximize treatment, storage, and disposal functions at the INEEL to accommodate waste and spent nuclear fuel from DOE facilities. Conduct maximum cleanup and decontamination and decommissioning.

Preferred Alternative. Complete activities as in Alternative B (ten-year Plan), plus accept offsite transuranic and mixed low-level waste for treatment and return treated waste to the source generator of to approved disposal facilities. Plan for a high-level waste treatment facility that minimizes resulting high-activity waste. Transfer aluminum-clad spent nuclear fuel to Savannah River Site.

3. Decisions to be Made

DOE faces a number of major programmatic and site-specific decisions regarding SNF management over the next 40 years, including:

Where should DOE locate specific SNF management activities?

> Broadly, the alternatives include managing the SNF where it is and minimizing shipments; consolidating the SNF at a limited number of sites (the Decentralization, 1992/1993 Planning Basis, and Regionalization 4A and 4B alternatives); or consolidating the SNF at a central site.

What capabilities, facilities, and technologies are needed for SNF management?

> DOE has identified the need for SNF interim storage sites and must select appropriate means at each site for meeting these needs under each of the SNF siting alternatives.

What research and development activities should support the SNF management program?

INEEL Decisions to be Made Based on this EIS

Spent Nuclear Fuel: What is the appropriate strategy of the INEEL to implement DOE's national spent nuclear fuel decisions regarding transportation, receipt, processing, and storage of spent nuclear fuel?

What is the appropriate storage capacity for spent nuclear fuel?

Environmental Restoration and Waste Management: What is the appropriate strategy of the INEEL to implement DOE'S national environmental restoration and waste management decisions?

What are the appropriate cleanup activities under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, and the Federal Facility Agreement and Consent Order of 1991?

What are the necessary capabilities, facilities, research and development, and technologies for treating, storing, and disposing of each waste type?

What treatment technologies should be used for sodium-bearing and high-level wastes and other radioactive and mixed waste?

4. INEEL Programs Analyzed

Broadly, the INEEL programs analyzed include the SNF, ER, WM, Infrastructure, ANL-W, and NRF programs. Also included was technology development activities needed to implement the programs.

5. Decisions Regarding INEEL Programs

The decision made was a modification of the Ten-Year Plan which includes additional features drawn from the Minimum and Maximum treatment, storage and disposal alternatives. Ongoing spent fuel management, environmental restoration and waste management activities and projects would continue and be enhanced to meet current and expanded spent fuel and waste handling needs. These enhanced activities would be needed to comply with regulations and agreements and would result from acceptance of specific additional off site-generated materials and waste.

DOE/EIS – 0218F - Final Environmental Impact Statement for the Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel, February 1996

1. General Scope/Purpose and Need of EIS/EA

This Environmental Impact Statement (EIS), prepared by DOE's Office of Environmental Management (EM) and the Department of State, meets a commitment made by DOE to prepare an environmental review of the impacts of extending a program for accepting foreign research reactor (FRR) spent nuclear fuel (SNF).

Since the 1950s, as part of the "Atoms for Peace" program, the US has provided peaceful nuclear technology to foreign nations in exchange for their promise to forego development of nuclear weapons. A major element of this program was the provision of research reactor technology and the Highly Enriched Uranium (HEU) necessary to fuel the reactors. In 1978, the US initiated the Reduced Enrichment for Research and Test Reactors program to reduce the use of HEU in civilian programs by promoting the conversion of FRRs from HEU fuel to low-enriched fuel (LEU).

Since 1958, the US has accepted the return of the fuel as SNF to ensure US control of the complete cycle of fuel management, especially HEU. This return program for SNF ended in 1988 for HEU and 1992 for LEU.

2. Alternatives Analyzed

The proposed action is for DOE and the Department of State to jointly adopt a policy to manage SNF from FRR. Only SNF containing uranium enriched in the US would be covered by the proposed action. The purpose of the proposed policy is to promote US nuclear weapons nonproliferation policy objectives, specifically by seeking to reduce, and eventually eliminate, HEU from civilian commerce. The proposed policy applies solely to aluminum-based and TRIGA FRR SNF and target material containing HEU and LEU of US origin.

To implement the proposed action, the EIS analyzed three "Management Alternatives," which are:

Management Alternative 1: Accept and manage FRR SNF in the US. This could be implemented by accepting FRR SNF (containing HEU or LEU enriched in the US) for management in the US.

FRR SNF containing uranium enriched in the US would be transported to the US in casks designed on the basis of international regulations that are essentially identical to those promulgated by the NRC and certified by the US Department of Transportation. In accordance with the Record of Decision for the 1995 EIS, all of the aluminum clad FRR SNF accepted by DOE would be managed at the Savannah River Site in South Carolina, and any other FRR SNF, such as the TRIGA elements, to be accepted by DOE would be managed at the INEEL, pending ultimate disposition. All five of the SNF management sites originally considered were analyzed in this EIS to maintain maximum consistency with the analyses provided in the 1995 EIS.

Management Alternative 2: Facilitate the management of FRR SNF overseas. This could be implemented by US assistance in SNF storage or reprocessing.

Under this Management Alternative, DOE and the Department of State would seek to facilitate the management of FRR SNF overseas in a manner that would be consistent with US nuclear weapons nonproliferation policy. DOE and the Department of State have evaluated two sub-alternatives: Overseas Storage and Overseas Reprocessing.

a. Overseas Storage

The US would assist FRRs that are able to store their SNF in facilities in their own countries as a step toward final disposition. US assistance would be provided to ensure that appropriate storage technologies, regulations and safeguards were applied.

b. Overseas Reprocessing

The US would facilitate and provide non-technical (financial and/or logistical) assistance to FRRs and reprocessors to facilitate reprocessing of SNF fuel overseas in facilities operated under international safeguards consistent with US nuclear weapons nonproliferation concerns.

The overseas reprocessing option was evaluated in light of the US nuclear weapons nonproliferation policy on HEU minimization. In this analysis, factors such as the following were considered:

A commitment that HEU separated during reprocessing would be blended down to LEU for research reactors, which are converting to LEU.
The foreign reprocessors would provide the capability to reprocess LEU as well as HEU.
Research reactors would be encouraged to convert to LEU if a LEU fuel exists or is developed that will allow such operation.

Arrangements would have to be worked out with foreign reprocessors that would be consistent with US nuclear weapons nonproliferation objectives to minimize the civil use of HEU worldwide.

Management Alternative 3: A hybrid, or combination of elements from the above two Management Alternatives.

In implementing the proposed action, DOE and the Department of State could combine implementation elements from Management Alternatives 1 and 2, such as partial storage or reprocessing overseas with partial storage or chemical separation in the US.

To demonstrate the kind of hybrid alternatives that could be developed, this EIS considers the following hybrid alternative example: DOE and the Department of State would facilitate the reprocessing of FRR SNF at Western European reprocessing facilities (e.g., Dounreay or Marcoule) for research reactors in countries that could accept the waste from reprocessing, and DOE would accept and manage in the US the rest of the FRR SNF from countries that could not accept the waste from reprocessing. Of the FRR SNF to be accepted in the US, the aluminum-based portion would be chemically separated at the Savannah River Site and the TRIGA portion would be stored in existing facilities at the INEEL.

The impacts to the US environment from hybrid alternatives would be covered by the analyses presented in the EIS for Management Alternative 1, because the analyses for Management Alternative 1 consider the maximum amount of FRR SNF that could be accepted, stored, and/or chemically separated in the US.

Management Alternative 4: No action alternative.

In the No Action Alternative, the US would neither manage FRR SNF containing uranium enriched in the US, nor provide technical assistance or financial incentives for overseas storage or reprocessing. In this case, there would be no FRR SNF shipments to the US and no assistance to foreign countries for managing FRR SNF overseas.

Preferred Alternative: In its Final EIS, DOE announced the preferred alternative as Management Alternative 1 (Manage Foreign Research Reactor Spent Nuclear Fuel in the United States), with certain modifications.

The components for basic implementation of Management Alternative 1 provide the foundation for the analyses of impacts presented in the EIS. They are:

Policy Duration;
Financing Arrangement;
Amount of Foreign Research Reactor Spent Nuclear Fuel;
Location for Taking Title to Foreign Research Reactor Spent Nuclear Fuel;
Marine Transport;
Port(s) of Entry;
Ground Transport;
Foreign Research Reactor Spent Nuclear Fuel Management Sites; and
Storage Technologies.

For receipt and management of FRR SNF within the US, the EIS analyzed impacts at the following 10 candidate ports of entry:

Charleston, SC (includes Naval Weapons Station and Wando Terminal, Mt. Pleasant);
Galveston, TX;
Hampton Roads, VA (includes Terminals at Newport News, Norfolk, and Portsmouth, VA);
Jacksonville, FL;
Military Ocean Terminal Sunny Point, NC;
Naval Weapons Station Concord, CA;
Portland, OR;
Savannah, GA;
Tacoma, WA; and
Wilmington, NC.

For receipt and management of FRR SNF within the US, the EIS analyzed (as in the Programmatic SNF&INEL Final EIS before it) five management sites:

Savannah River Site;
Idaho National Environmental and Engineering Laboratory;
Oak Ridge Reservation;
Hanford Site; and

Nevada Test Site.

For the purpose of site impact analyses, the implementation of the policy was divided into two functional periods: the period during which receipt and management of FRR SNF would be accomplished by using existing facilities (Phase 1); and the period during which new or refurbished facilities could be used (Phase 2).

3. Decisions to be Made

The principal policy decision for which this EIS will provide a basis is: whether the US should adopt a policy for the management of FRR SNF containing uranium enriched in the US.

A decision to manage FRR SNF in the US would require decisions to be made on: the duration of the policy, amount of fuel to be accepted, transportation modes, ports of entry, and method of spent nuclear fuel management (storage, chemical separation, or use of a new treatment and/or packaging technology).

A decision to facilitate management of FRR SNF overseas, would require decisions to be made on what assistance the US would provide to foreign nations for storage or reprocessing of the spent nuclear fuel overseas.

4. INEEL Programs Analyzed

Implementation of Management Alternative 1, would impact the INEEL as follows:

As a potential Phase 1 storage site under Management Alternative 1, the INEEL would receive and manage FRR SNF at existing dry and/or wet storage facilities. The existing facilities identified for this purpose would be the Fluorinel Dissolution and Fuel Storage Facility in CPP-666, the Irradiated Fuel Storage Facility in CPP-603, and the CPP-749 storage area.

As a potential Phase 2 storage site, the INEEL could continue to receive and manage FRR SNF at a new dry storage or wet storage facility to be constructed at the site.

5. Decisions Regarding INEEL Programs

On May 13, 1996, DOE released its RECORD OF DECISION for the FINAL ENVIRONMENTAL IMPACT STATEMENT on a Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel.

The decision reads, in part: DOE, in consultation with the Department of State, has decided to implement a new foreign research reactor spent fuel acceptance policy as specified in the Preferred Alternative contained in the Final EIS (the Final EIS, DOE/EIS-218F of February 1996), subject to additional stipulations specified in Section VII of this Record of Decision. The new policy applies only to aluminum-based and TRIGA FRR SNF and target material containing uranium enriched in the US. The purpose of the acceptance policy is to support the broad United States' nuclear weapons nonproliferation policy calling for the reduction and eventual elimination of the use of highly enriched (weapons-grade) uranium in civil commerce worldwide.

Over the life of the foreign research reactor SNF acceptance program, DOE could accept approximately 19.2 metric tons of heavy metal (MTHM) of foreign research reactor SNF in as many as 22,700 separate elements and approximately 0.6 MTHM of target material. Most of the fuel will arrive through the Charleston Naval Weapons Station in South Carolina (about 80 percent), with a very limited amount arriving through the Concord Naval Weapons Station in California (about 5 percent). Most of the target material and some of the fuel (about 15 percent) will arrive overland from Canada. Shipments through Charleston began in September 1996 and those through Concord began in July 1998.

After a limited period of storage, DOE will process and package the fuel as necessary at the SRS and the Idaho National Engineering and Environmental Laboratory to prepare it for disposal in a geologic repository.

DOE/EIS-0229 - Storage and Disposition of Weapons--Usable Fissile Materials - Final Programmatic Environmental Impact Statement, November 1996

1. General Scope/Purpose and Need for EA/EIS

The purpose of this action is to implement the President's *Nonproliferation and Export Control Policy* in a safe, reliable, cost-effective, and timely manner.

Disposition of surplus plutonium is needed to reduce reliance on institutional controls and to provide visible evidence of irreversible disarmament. DOE recognizes the need to strengthen national and international arms control efforts by providing a storage and disposition model for the international community.

2. Alternatives Analyzed

A total of nine alternatives with numerous variants were analyzed for eight candidate DOE sites.

Long-term Storage Alternatives and Related Activities. The "Long-term Storage Alternatives and Related Activities" alternatives are grouped as follows:

(1) No Action Alternative
(2) Preferred Alternative
(3) Upgrade at Multiple Sites
(4) Consolidation of Plutonium

Plutonium Disposition Alternatives and Related Activities. The "Plutonium Disposition Alternatives and Related Activities" alternatives are grouped as follows:

(1) No Disposition Action
(2) Preferred Alternative
(3) Deep Borehole Category
    (A) Direct Disposition
    (B) Immobilized Disposition

(4) Immobilization Category
    (A) Vitrification
    (B) Ceramic Immobilization
    (C) Electrometallurgical Treatment

(5) Reactor Category
    (A) Existing Light Water Reactor
    (B) Partially Completed Light Water Reactor
    (C) Evolutionary Light Water Reactor
    (D) Canadian Deuterium Uranium Reactor

3. Decisions to be Made

The decisions to be made by the DOE in this EIS were:

(1) For Storage

(A) The strategy for long-term storage of non-surplus, weapons-usable plutonium and non-surplus Highly Enriched Uranium (HEU)

(B) The strategy for storage of surplus plutonium and surplus HEU pending disposition

(C) The storage site(s) and (if appropriate) facilities

(2) For Disposition

(A) The strategy and technologies for disposition of surplus, weapons-usable plutonium

4. INEEL Programs Analyzed

Concerning HEU storage, the INEEL is identified as a potential site for the "No Action Alternative" (i.e., Maintain Existing HEU Storage).

Concerning plutonium disposition, the INEEL is identified as a potential site for the "Pit Disassembly/Conversion" and "MOX Fuel Fabrication" alternatives.

5. Decisions Regarding INEEL Programs

The material at the INEEL will continue to remain in INEEL storage until a permanent disposition is identified.

INEEL may be selected (based on additional analysis) as a location for a MOX fuel fabrication facility and a pit disassembly and conversion facility.

DOE/EIS-0249-F - Medical Isotopes Production Project: Molybdenum 99 and Related Isotopes Environmental Impact Statement, April 1996

1. General Scope/Purpose and Need of EA/EIS

The U.S. Department of Energy (DOE) proposes to establish a domestic source for and to produce molybdenum-99 (Mo-99) and related medical isotopes, including iodine-131, xenon-133, and iodine-125. DOE proposed this project to ensure a reliable supply to the U.S. medical community of the metastable isotope technetium-99 (Tc-99m), which is produced from Mo-99. This Final Environmental Impact Statement (EIS) analyzes the environmental impacts of alternatives to accomplish the proposed action.

2. Alternatives Analyzed

This EIS evaluates the reasonable alternatives that would meet the purpose and need for agency action and identifies alternatives that were considered but eliminated from detailed study, and briefly discusses the reasons for their elimination. In addition, a No Action alternative, as required by the Council on Environmental Quality regulations for compliance with the National Environmental Policy Act (NEPA), is presented as a basis for comparison.

<u>No Action</u>. Under this alternative, DOE would not establish a production source for Mo-99.

<u>Annular Core Research Reactor – Sandia National Laboratory (SNL) and the Los Alamos National Laboratory (LANL) Chemistry and Metallurgy Research (CMR) Facility</u>. Wing 9 of the LANL Chemistry and Metallurgy Research building or a building within an existing facility at SNL/NM would be used to fabricate targets. The operating Annular Core Research Reactor and supporting facilities at SNL/NM would be used to produce Mo-99 and related isotopes. Low-level radioactive wastes would be disposed of at the Nevada Test Site.

<u>Omega West Reactor/Chemistry and Metallurgy Research Facility, LANL</u>. All process steps would be carried out onsite at LANL. Wing 9 of the Chemistry and Metallurgy Research building would be used for fabricating the targets and recovering Mo-99 in the hot cells. The target irradiation would occur in the Omega West Reactor, which would be repaired and restarted for this purpose. Low-level radioactive wastes would be disposed of onsite at LANL.

<u>Oak Ridge Research Reactor/Radioisotope Development Laboratory – Oak Ridge National Laboratory (ORNL)</u>. The Radioisotope Development Laboratory would be customized and dedicated for target fabrication and Mo-99 processing. Mo-99 would be produced by irradiating targets using the Oak Ridge Research Reactor, which would be restarted and designated as the Medical Isotope Production Center. Low-level radioactive wastes would be disposed of at the Nevada Test Site.

Power Burst Facility (PBF) /Test Area North (TAN) - INEEL. All process steps would be carried out onsite at INEL. Targets would be fabricated at INEEL at the TAN in a building similar to the Experimental Test Reactor Critical Facility annex or the lower floor of the Materials Test Reactor building. The targets would be shipped for irradiation to the Power Burst Facility, which would be restarted for this purpose. The Mo-99 would be extracted from the irradiated targets, either in existing hot cells at the Test Area North or at new hot cells constructed for this purpose. Low-level radioactive wastes would be disposed of onsite at INEEL.

3. Decisions to be Made

DOE must decide whether to produce Mo-99 and other medical isotopes or leave this production capability to the private sector or foreign suppliers. In addition, DOE must decide what facilities would be used if the decision is made to provide the capability.

4. INEEL Programs Analyzed

Power Burst Facility/Test Area North. All process steps would be carried out onsite at INEEL. Targets would be fabricated at INEEL at the Test Area North in a building similar to the Experimental Test Reactor Critical Facility annex or the lower floor of the Materials Test Reactor building. The targets would be shipped for irradiation to the Power Burst Facility, which would be restarted for this purpose. The Mo-99 would be extracted from the irradiated targets, either in existing hot cells at the Test Area North or at new hot cells constructed for this purpose. Low-level radioactive wastes would be disposed of onsite at INEEL.

The ATR was also considered for Mo-99 production but was eliminated as a candidate site.

5. Decisions Regarding INEEL Programs

No INEEL programs were selected for the proposed action.

The preferred alternative was selected. This included target fabrication at the Chemistry and Metallurgy Research (CMR) at LANL, target irradiation at the Annular Core Research Reactor (ACRR) at Sandia, and the hot cell adjacent to the ACRR for isotope extraction. Any of the other medical isotopes that were discussed in the analysis (Xe-133, I-125, I-131) can be produced at any of the alternative production sites that were considered in the analysis. I-131 and Xe-133 are basically byproducts of Mo-99 production. I-125 can be produced by irradiating Xe-124.

DOE/EIS-0250D - Draft Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada, July 1999

1. General Scope/Purpose and Need of the EA/EIS

In 1982, Congress enacted the Nuclear Waste Policy Act (NWPA) which acknowledged the Federal Government's responsibility to provide permanent disposal of the nation's spent nuclear fuel and high-level radioactive waste, and established the Office of Civilian Radioactive Waste Management. The NWPA began a process for selecting sites for technical study as potential geologic repository locations. DOE identified nine candidate sites; the Secretary of Energy nominated five of the nine sites for further consideration and President Reagan approved three as candidates. In 1987, Congress significantly amended the NWPA. The amended NWPA identified one of the three presidentially approved candidate sites, Yucca Mountain (YM), as the only site to be studied as a potential location for a geologic repository. Congress directed the Secretary of Energy to study the Yucca Mountain site and recommend whether the President should approve the site for development as a repository. Congress also required that a Final EIS accompany a secretarial recommendation to approve the Yucca Mountain site to the President. The YM EIS is that EIS.

2. Alternatives Analyzed

The YM EIS analyzes a Proposed Action to construct, operate and monitor, and eventually close a geologic repository for the disposal of spent nuclear fuel and high level radioactive waste at YM. The EIS also analyzes a No-Action Alternative, under which DOE would not build a repository at the YM site, and spent nuclear fuel and high-level radioactive waste would remain at 72 commercial and 5 DOE sites across the U.S. As part of the Proposed Action, the EIS analyzes the potential impacts of transporting spent nuclear fuel and high-level radioactive waste to the YM site from 77 sites across the U.S. This analysis includes information on such matters at the comparative impacts of truck and rail transportation, alternative intermodal (rail to truck) transfer station locations, associated heavy-haul truck routes, and alternative rail transport corridors in Nevada. Although it is uncertain at this time when DOE will make any transportation-related decisions, DOE believes that the EIS provides the information necessary to make decisions regarding the basic approaches as well as the choice among alternative transportation corridors. Follow-on implementing decisions, such as selection of a specific rail alignment within a corridor, or the specific location of an intermodal transfer station or the need to upgrade the associated heavy-haul routes, would require additional field surveys, state and local government consultations, environmental and engineering analyses, and NEPA reviews.

3. Decisions to be Made

If the Secretary of Energy recommends the YM Site to the President, a comprehensive statement of the basis for the recommendation, including the Final EIS, will accompany the recommendation. The Draft EIS has been prepared so that DOE can consider the Final EIS, including the public input on the Draft EIS, in making a decision on whether to recommend the site to the President. If after the recommendation by the Secretary, the President considers the site qualified for an application to the Nuclear Regulatory Commission for a construction authorization, the President will submit a recommendation of the site to Congress. The Governor or legislature of Nevada may object to the site by submitting a notice of disapproval to Congress within 60 days of the Presidents action. If the Governor of legislature of Nevada do not object, site designation would become effective without further action by the President or Congress. If the Governor or legislature does object, the site would be disapproved unless Congress passed a joint resolution of repository siting approval and the President signed it into law. If the YM Site designation became effective the Secretary of Energy would submit to the Nuclear Regulatory Commission a License Application, based on a particular facility design, for construction and authorization no later than 90 days after the designation.

4. INEEL Programs Analyzed

The Draft YM EIS considers a repository inventory of 70,000 MTHM comprised of 63,000 MTHM of commercial spent nuclear fuel and 7,000 MTHM of DOE spent nuclear fuel and high-level radioactive waste. This overall inventory includes approximately 50 metric tons of surplus weapons-usable plutonium as spent mixed-oxide fuel and immobilized plutonium.

The decision on the YM EIS will directly effect the INEEL spent nuclear fuel and high-level waste programs. If the site is not designated, it is unknown if or when another site would be designated or if or when technology, such as transmutation, would be developed to treat the wastes for placement in other than a national geologic repository. If no site were designated, the INEEL would have to provide for the long-term storage of spent nuclear fuel and high-level waste.

5. Decisions Regarding INEEL Programs

The YM EIS accounts for the inventory of INEEL spent nuclear fuel and high-level waste but does not place these in any priority or order for shipment off the INEEL to the YM site.

DOE/EIS-0251 - Department of the Navy Final Environmental Impact Statement for a Container System for the Management of Naval Spent Nuclear Fuel, November 1996

1. General Scope/ Purpose and Need of EA/EIS

The Department of the Navy published the Final Environmental Impact Statement in November 1996. This EIS analyzed environmental impacts at the Naval Reactors Facility and other parts of the INEEL that might result from alternatives for loading, storing, and shipping naval spent nuclear fuel. Among other parts of the alternatives, it evaluated impacts from manufacturing container systems, loading, storage, and shipping operations at INEEL facilities, alternative locations for naval fuel storage at INEEL, and transportation of naval SNF to a repository.

The first ROD resulting from this EIS, published in January 1997 (62 FR 1095), documented a decision by the Navy and the DOE, as a cooperating agency, to select a dual-purpose canister system for the loading, storage, transport, and possible disposal of naval SNF. A second ROD was published in April 1997, announcing the selection of the Naval Reactors Facility as the location for naval spent nuclear fuel loading and dry storage facilities. This EIS and the associated RODs completed all NEPA analyses needed to support actions related to naval spent nuclear fuel required under Section F.4 of the Settlement Agreement with the state of Idaho.

2. Alternatives Analyzed

The Container System EIS considered six alternative dry storage container systems for the loading, storage, transport, and possible disposal of post-examination naval spent nuclear fuel and the management of special case waste (i.e., low-level radioactive waste that contains concentrations of certain short- and long-lived isotopes which requires disposal by more stringent measures than land burial). The alternatives included the use of either existing dry storage containers or dry storage containers that could be produced by manufacturers of such equipment.

Because of differences in configurations among naval spent nuclear fuel assemblies, all alternatives required containers to have internal baskets designed for specific naval spent nuclear fuel types. A brief description of the six alternatives analyzed in the Container System EIS follows:

1) Multi-Purpose Canister Alternative

This alternative uses about 300 large (125-ton) multi-purpose canisters for storage, transportation, and disposal of naval spent nuclear fuel, without repackaging or further handling of individual spent nuclear fuel assemblies.

2) No Action Alternative

Use of existing technology to handle, store, and subsequently transport naval spent nuclear fuel to a geologic repository or a centralized interim storage site using the Navy M-140 transportation cask.

3) Current Technology/Rail Alternative (Current Technology Supplemented by High Capacity Rail Casks)

This alternative uses the same storage methods and M-140 transportation cask described in the no-action alternative, but with redesigned internal structures for the M-140 cask to accommodate a larger amount of naval spent nuclear fuel per cask, thus reducing the total number of shipments required.

4) Transportable Storage Cask Alternative

This alternative uses an existing, commercially available transportable storage cask for storage at the INEEL as well as for transportation to a repository or centralized interim storage site.

5) Dual-Purpose Canister Alternative

This alternative uses an existing, commercially available canister and overpack system for storage at the INEEL and shipment of naval spent nuclear fuel to a geologic repository or centralized interim storage site.

6) Small Multi-Purpose Canister Alternative

This alternative uses about 500 smaller (75-ton) multi-purpose canisters, rather than large multi-purpose canisters.

3. Decisions to be Made

DOE must select a container system for the management of naval SNF that would also provide for management of special case low-level radioactive waste.

4. INEEL Programs Analyzed

Analyzes environmental impacts at the INEEL and the location(s) for fabrication of container systems in the following areas:

Manufacturing alternative container systems
Loading and storage at INEEL facilities
Unloading naval SNF at a repository surface facility or a centralized interim storage facility
Impacts of transportation of naval SNF

5. Decisions Regarding INEEL Programs

In December of 1996, the Department of the Navy released its *Record of Decision, Container System for the Management of Naval Spent Nuclear Fuel*, U.S. Department of the Navy, Federal Register Notice, p. 1095, January 8, 1997 (62 FR 1095). The decision is as follows.

DECISIONS: The Navy announces its decision to use a dual-purpose canister system for the management of post-examination naval SNF and special case low-level radioactive waste. The primary benefits of a dual-purpose canister system are efficiencies in container manufacturing and fuel reloading operations and potential further reduction in radiation exposure.

This decision does not constitute final action for location(s) for dry loading naval SNF which is currently stored at the INTEC or which will be stored at the INTEC prior to establishment of a dry storage facility, or for locations(s) for temporary dry storage of naval SNF at the INEEL. Those actions will be the subject of an upcoming ROD.

In April of 1997, the Department of the Navy released its *Second Record of Decision for a Dry Storage Container System for the Management of Naval Spent Nuclear Fuel*, U.S. Department of the Navy, Federal Register Notice, p. 23770, May 1, 1997 (62 FR 23770).
The decision is as follows.

<u>DECISIONS</u>: The Navy and DOE have determined the location where naval SNF which is, or which will be, stored at the INTEC will be loaded into dual purpose canisters, and the location where all dual purpose canisters loaded with naval SNF and special case waste will be temporarily stored prior to the naval SNF being shipped to a permanent geologic repository or centralized interim storage facility outside of the State of Idaho when one becomes available. In this second Record of Decision, the Navy and DOE announce the decision to load the naval SNF which is, or which will be, stored at the INTEC, into dual-purpose canisters at the Naval Reactors Facility (NRF). Both the INTEC and the NRF are located on the INEEL in southeastern Idaho. The Navy and DOE also announce the additional decision that all dual purpose canisters loaded with naval SNF and special case waste will be stored at a developed area on the INEEL site to the east of the Expended Core Facility (ECF) at the NRF.

DOE/EIS – 0279 - Savannah River Site Spent Nuclear Fuel Management Final Environmental Impact Statement, March 2000

1. General Scope/Purpose and Need of EIS/EA

This Environmental Impact Statement (EIS) responds to the need for DOE to safely and effectively manage spent nuclear fuel (SNF) and targets at the Savannah River Site (SRS) in Aiken County, South Carolina, including placing these materials in forms suitable for ultimate disposition. Options to treat, package, and store this material are discussed.

DOE anticipates placing most of its aluminum-based SNF inventory in a geologic repository after treatment or repackaging. However, DOE does not expect any geologic repository to be available until at least 2010 and shipments from DOE sites would not begin until about 2015. Until a repository is available, the Department intends to develop and implement a safe and efficient SNF management strategy that includes preparing aluminum-based SNF stored at SRS or expected to be shipped to SRS for disposition offsite. DOE is committed to avoiding indefinite storage at the SRS of this SNF in a form that is unsuitable for final disposition. Therefore, DOE needs to identify management technologies and facilities for storing and treating this SNF in preparation for final disposition.

The materials addressed in this EIS consist of approximately 68 metric tons heavy metal (MTHM) of SNF. This SNF can be described as having three general points of origin:

- 20 MTHM of aluminum-based SNF at SRS;
- as much as 28 MTHM of aluminum-clad SNF from foreign research reactors (FRR) (18 MTHM), and domestic research reactors (DRR) (10 MTHM) to be shipped to SRS through 2035; and
- 20 MTHM of stainless steel or zirconium-clad SNF and some Americium/Curium Targets stored at SRS.

The EIS describes six categories of SNF based on fuel size, physical or chemical properties, and radionuclide inventories. These categories are described in the following table.

Spent Nuclear Fuel Groups

Fuel Group	Volume (MTRE)[a]	Mass (MTHM)[b]
A. Uranium and Thorium Metal Fuels	610	19
B. Material Test Reactor-Like Fuels	30,800	20
C. HEU/LEU[c] Oxides and Silicides Requiring Resizing or Special Packaging	470[d]	8
D. Loose Uranium Oxide in Cans	NA	0.7
E. Higher Actinide Targets	NA	<0.1
F. Non-Aluminum-Clad Fuels[e]	1,900	20.4
Total	**33,780**	**68.2**

NA = Not applicable

a. MTRE = Materials test reactor equivalent. An MTRE is a qualitative estimate of SNF volume that provides information on the amount of space needed for storage. An MTRE of Materials Test Reactor-Like Fuels would usually be one fuel assembly measuring about 3 inches by 3 inches by 2 feet long.

b. MTHM = Metric tons of heavy metal.
c. HEU = highly enriched uranium; LEU = low enriched uranium.
d. Fuel group also includes about 2,800 pins, pin bundles, and pin assemblies.
e. This fuel group will be shipped to INEEL. It will not be treated at SRS.

This EIS is directly related to decisions made in (and is therefore tiered off of) two other larger strategic and programmatic EISs impacting the larger DOE complex. They are discussed below.

Final Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Environmental Impact Statement; DOE/EIS-0203-F; April 1995.

DOE prepared this EIS (DOE 1995b) in compliance with a Court Order dated December 22, 1993, in the case of Public Service Company of Colorado v. Andrus, No. 91-0054-5-HLR (D. Idaho).

In the Record of Decision (60 FR 28680), DOE decided to manage its SNF by type (fuel cladding and matrix material) at the Hanford Site, the INEEL, and the SRS. Section C.1.2 in Appendix C of the SRS SNF Management EIS discusses its relationship to the programmatic SNF EIS. The amendment to the Record of Decision (61 FR 9441) has no impact on SRS.

Final Environmental Impact Statement on a Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel; DOE/EIS-0218F; February 1996.

This EIS (DOE 1996a) analyzes the management of FRR SNF that contains uranium originally produced or enriched in the United States (US). It also analyzes appropriate ways to manage such fuel received in the US, amounts of fuel, shippers, periods of time over which DOE would manage the fuel, modes of transportation, and ownership of the fuel.

In its Record of Decision (61 FR 25091), DOE determined it would accept from 41 listed countries aluminum-based SNF, Training Research Isotope General Atomic (TRIGA) SNF, and target material containing uranium enriched in the US. After a limited period of storage, DOE will process and package the SNF as necessary at the SRS and the INEEL to prepare it for disposal in a geologic repository. Section C.1.2 in Appendix C explains the relationship of the FRR SNF EIS to this EIS.

2. Alternatives Analyzed

The EIS was unable to analyze clear and distinct alternatives due to the complexity and number of considerations - mainly the number of SNF types vs. the treatment technologies.

<u>No Action Alternative</u>. The no action alternative consists of consolidation and collection of newly received shipments for storage in existing wet basins. In this option, the DOE would fail in its commitment to manage its SNF at the SRS in a road-ready condition for shipment to the repository or to the INEEL as required in the two overarching EISs from which this one is tiered.

To implement the proposed action, DOE analyzed impacts in five major areas of consideration: 1) the ultimate SNF repository, 2) SRS facilities, 3) new packaging technologies, 4) new processing technologies, and 5) conventional processing technologies.

Preferred Alternative. Under the preferred alternative, DOE would implement several of the technologies analyzed to manage SNF at SRS. These technologies are: 1) Melt and Dilute, 2) Conventional Processing, and 3) Repackage and Prepare to Ship to Other DOE Sites. Each of these technologies would treat specific groups of spent nuclear fuel.

For the Melt and Dilute technology, DOE would construct a treatment facility within an existing structure - building 105-L at the SRS, and build a new dry storage facility in the near by L Area for the product.

The Conventional Processing technology option would take place in the existing Fluorinel Cell Maintenance and Load Area (FH) Canyons.

For the Repackage and Prepare to Ship to Other DOE Sites technology option, only SNF bound for the INEEL is likely impacted. No new facility would be built for this purpose. This SNF would be prepared and packaged into a transportation cask at its current storage location and then shipped to the INEEL. Other SNF considered under this option (Higher Actinide Targets) would continue to be stored in their current locations until final disposition is determined.

3. Decisions to be Made

DOE will make decisions in the four following areas regarding the management and preparation of SNF for storage and ultimate disposition:

The selection of the appropriate treatment or packaging technologies to prepare aluminum-based SNF that is to be managed at SRS.

Whether DOE should construct new facilities or use existing facilities to store and treat or package aluminum-based SNF that is expected to be managed at SRS.

Whether DOE should repackage and dry-store stainless steel and zirconium-clad SNF pending shipment to the Idaho National Engineering and Environmental Laboratory.

Whether DOE should repackage and dry store Mark-51s and other americium/curium targets in the event dry storage capability becomes available at SRS.

4. INEEL Programs Analyzed

DOE proposes actions in five areas of management for the subject SNF. DOE proposes to:

A. Safely manage SNF that is currently located or expected to be received at SRS, including treating or packaging aluminum-based SNF for possible offsite shipment and disposal in a geologic repository and packaging non-aluminum clad fuel for on-site dry storage or offsite shipment.

B. Select a new non-chemical processing technology that would put aluminum-based FRR SNF into a form or container suitable for direct placement in a geologic repository. Treatment or conditioning of the fuel would address potential repository acceptance criteria and potential safety concerns. Implementing the new non-chemical processing treatment or packaging technology would allow DOE to manage the SNF in a road-ready condition at SRS in dry storage pending shipment offsite.

C. Manage the other aluminum-alloy SNF that is the subject of this EIS (DRR and DOE reactor fuels) in the same manner as the FRR SNF.

D. Use H Canyon to chemically separate highly enriched uranium-spent fuel.

E. Use conventional processing to stabilize some materials before a new treatment facility is in place. The rationale for this is to avoid the possibility of urgent future actions, including expensive recovery actions that would entail unnecessary radiation exposure to workers, and in one case, to manage a unique waste form (i.e., core filter block).

5. Decisions Regarding INEEL Programs

On August 7, 2000, DOE released its Record of Decision for the Savannah River Site Spent Nuclear Fuel Management Final Environmental Impact Statement.

The decision reads, in part:

…DOE has decided to implement the Preferred Alternative identified in the EIS. As part of the Preferred Alternative, DOE will develop and demonstrate the Melt and Dilute technology to manage about 97 percent by volume and 60 percent by mass of the aluminum-based SNF considered in the EIS (48 metric tons of heavy metal (MTHM) aluminum-based SNF).

Following development and demonstration of the technology (including characterization and qualification of the Melt and Dilute product to meet anticipated repository acceptance criteria), DOE will begin detailed design, construction, testing, and startup of a Treatment and Storage Facility (TSF). The SNF will remain in existing wet storage until treated and placed in dry storage in the TSF. The TSF will combine the transfer and treatment (Melt and Dilute) functions, to be constructed in the existing 105–L building, with a new dry storage facility to be constructed in L Area near the 105–L building.

DOE also has decided to use Conventional Processing (i.e., the existing canyons) to stabilize about 3 percent by volume and 40 percent by mass of the aluminum-based SNF. If the TSF becomes available before these materials have been stabilized, DOE may use the Melt and Dilute technology rather than Conventional Processing for their stabilization. DOE has also decided to continue to store small quantities of higher actinide materials until DOE determines their final disposition.

In addition, DOE will ship approximately 20 MTHM of non-aluminum-based SNF from the SRS to the Idaho National Engineering and Environmental Laboratory (INEEL). If DOE identifies any imminent health and safety concerns involving any aluminum-based SNF before the TSF becomes available, DOE will use Conventional Processing to stabilize the material of concern.

Of the 28 MTHM of aluminum-clad SNF from FRRs and Domestic Research Reactors to be received by the SRS through 2035, some 5 MTHM will be received from the INEEL. In addition, the SRS will ship some 20 MTHM of non-aluminum-based SNF to the INEEL.

DOE/EIS-0283 - Surplus Plutonium Disposition Final Environmental Impact Statement, November 1999

1. General Scope/Purpose and Need of EIS/EA

This EIS provides an assessment of the potential environmental impacts of dispositioning up to 50 metric tons of surplus, weapons-grade plutonium which are stored at seven DOE sites. One of the seven storage sites is the INEEL. The dispositioning would be accomplished either through immobilization or through use in mixed oxide (MOX) fuels.

"The purpose and need of this proposed action is to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in a timely, and environmentally safe, manner."

2. Alternatives Analyzed

A total of 16 alternatives, including the No Action Alternative, were analyzed for implementation at one or more of five candidate DOE sites (i. e., Hanford, SRS, INEEL, Pantex, and ORNL). In two of the 16 alternatives:

(A) The ANL-W facility at the INEEL was a candidate location for the MOX fuel fabrication facility.

(B) The INEEL was a candidate location for the Pit Disassembly and Conversion facility.

No Action Alternative. Surplus weapons-grade plutonium is stored safely rather than immobilized or used in MOX fuel.

Pit Disassembly and Conversion Alternatives. Fifteen (15) alternatives at five DOE sites were evaluated.

Plutonium Conversion and Immobilization Alternatives. Fifteen (15) alternatives at two DOE sites were evaluated.

MOX Fuel Fabrication Alternatives. Eleven (11) alternatives at four DOE sites were evaluated.

3. Decisions to be Made

The decisions to be made by the DOE in this EIS are:

(A) Whether to construct and operate pit conversion facilities and, if so, where;

(B) Whether to construct and operate immobilization facilities and, if so, where; and

(C) Whether to construct and operate MOX fuel fabrication facilities and, if so, where.

4. INEEL Programs Analyzed

The program analyzed was construction and operation of a MOX fuel fabrication facility at ANL-W.

5. Decisions Regarding INEEL Programs

The INEEL was not a preferred location for any activity. The preferred locations for the facilities were:

(A) SRS for pit conversion, immobilization and MOX facilities. "SRS is preferred for the MOX facility because this activity complements existing missions and takes advantage of existing support infrastructure and staff expertise."

(B) LANL for lead assembly activities

(C) ORNL for post-irradiation examination activities

DOE/EIS-0287D - Idaho High-Level Waste and Facilities Disposition Draft Environmental Impact Statement, December 1999

1. General Scope/Purpose and Need of the EA/EIS

The Draft EIS analyzes the potential environmental consequences of managing two waste types at the INEEL, high-level waste in a calcine form and liquid mixed transuranic waste (historically known as sodium bearing waste and newly generated liquid waste). It also analyzes the disposition of existing and proposed high-level waste facilities at INTEC after their missions have been completed. From the purpose given on Page S4, Section 1.2-To resolve waste management issues DOE needs to decide: How to treat INTEC mixed HLW so that it can be transported out of Idaho to a storage facility or repository; How to treat and where to dispose of other radioactive wastes that are associated with the HLW management program at INTEC; How to manage treated INTEC wastes that are ready to be transported out of Idaho; How to close HLW-related facilities at INTEC, including certain liquid waste storage tanks, bin sets, the New Waste Calcining Facility, and facilities that would be constructed under the waste processing alternatives and treatment options, and associated laboratories and support facilities.

2. Alternatives Analyzed

<u>No Action</u>. The New Waste Calcining Facility (NWCF) calciner would be placed in standby in June 2000. The calciner would not be upgraded and no liquid TRU/Sodium Bonded Waste (SBW) would be calcined after that date. The NWCF calciner and bin sets would remain in standby indefinitely. The High Level Liquid Waste Evaporator would continue to operate to reduce liquid mixed TRU volume to enable DOE to cease use of the 5 pillar and panel tanks by 2003. Maintenance necessary to protect workers and the environment would continue but there would be no upgrades.

<u>Continued Current Operations</u>. The NWCF calciner would be placed in standby after June 2000 and upgrades for RCRA permitting would be completed by 2010. The calciner would operate from 2011 to 2014 to calcine remaining liquid TRU/SBW. Tank Farm heels and newly generated liquid waste would pass through an ion exchange column. LLW would be grouted and disposed of on the INEEL and TRU waste would be disposed of at WIPP. The calcine would be stored in the bin sets indefinitely.

<u>Separations Option</u>. The Separations Alternative comprises 3 options, each of which uses a chemical separation processes, such as solvent extraction. Because HLW would be separated into fractions, DOE would need to determine, before undertaking the separation process, whether any of the fractions are waste incidental to reprocessing that would be more appropriately managed as TRU or LLW rather than HLW.

<u>Full Separations Option</u>. This option would separate the most highly radioactive and long-lived radioactive isotopes from the calcine and liquid mixed TRU/SBW.

<u>Planning Basis Option</u>. This option reflects previously announced DOE decisions and agreements with the State of Idaho. It is similar to the Full Separations Option except that, prior to separation, the liquid mixed TRU would be calcined and stored in the bin sets along with the HLW. Under this option the calciner would be placed in standby and upgraded to meet RCRA

requirements. Calcine would be retrieved, dissolved, and separated as with the Full Separations option.

Transuranic Separations Option. There would be no HLW after treatment under this option. DOE would retrieve and dissolve the calcine and liquid TRU/SBW. The wastes would be separated into TRU and LLW fractions.

Non-Separations Alternative. This Alternative would process the calcine and liquid TRU/SBW into an immobilized form by a target date of 2035 for subsequent shipment to a repository. There are three treatment options under this alternative.

Hot Isostatic Pressed Waste Option. All liquid TRU waste would be calcined and all calcine would be converted to an impervious, no-leaching, glass ceramic waste form.

Direct Cement Waste Option. All liquid TRU waste would be calcined and all calcine would be converted to a cement-like solid.

Early Vitrification Option. Both liquid TRU waste and calcine would be vitrified into a non-leaching, glass like solid. DOE would construct a vitrification facility.

Minimum INEEL Processing Alternative. The calcine would be retrieved and packaged and placed into shipping containers. The containers would be shipped to Hanford where the calcine would be dissolved and separated into high activity and low activity fractions. The fractions would be vitrified. The vitrified waste would be returned to Idaho or sent directly to a geologic repository.

Facility Disposition Alternatives. INTEC facilities involved in the treatment or management of HLW would be left standing or closed under several alternatives.

No Action. The facilities would not be dismantled and disposed of, they would be placed in an industrially safe condition and surveillance and maintenance would continue until 2095.

Clean Closure Alternative. Facilities would be removed and disposed of; the site would be decontaminated until it was indistinguishable from background.

Performance-Based Closure. Closure methods would be determined on a case-by-case basis depending on risk.

Closure to Landfill Standards. Facilities would be closed in accordance with State of Idaho and Federal requirements specified for closure of landfills.

Performance-Based Closure with Class A Grout Disposal. The Tank Farm and Bin Sets would be used for the disposal of Class A LLW in a grout form and closed under performance-based standards. The class A LLW would be produced under the Full Separations Option.

Performance-Based Closure with Class C Grout Disposal. The Tank Farm and Bin Sets would be used for the disposal of Class C LLW in a grout form and closed under performance-based standards. The class C LLW would be produced under the TRU Separations Option.

3. Decisions to be Made

The EIS will be the basis for negotiations under the Idaho Settlement Agreement. It is expected that the following decisions will be made:

- How to treat INTEC mixed HLW (calcine) and liquid TRU/SBW waste so that it can be transported out of Idaho to a storage facility or repository.
- How to treat and where to dispose of other radioactive wastes associated with the HLW management program at INTEC.
- How to manage treated INTEC wastes that are ready to be transported out of Idaho.
- How to close HLW-related facilities at INTEC, including liquid waste storage tanks and bin sets.

4. INEEL Programs Analyzed

This EIS analyzes and makes long-term decisions for the INEEL HLW program.

5. Decisions Regarding INEEL Programs

The Record of Decision is expected in late spring or early summer of 2001.

DOE/EIS-0290 - Advanced Mixed Waste Treatment Project Final Environmental Impact Statement, January 1999

1. General Scope/Purpose and Need of the EA/EIS

The EIS addresses 65,000 cubic meters of transuranic waste, alpha-contaminated low-level mixed waste, and low-level mixed waste at the Radioactive Waste Management Complex on the INEEL. Approximately 95% of this waste is classified as mixed waste because it contains hazardous waste regulated under RCRA. Some of the wastes also contain polychlorinated biphenyls (PCBs), which are regulated under TSCA. The wastes are all intermingled in common containers. DOE needs to place these wastes in a configuration that will allow for their disposal at WIPP or other appropriate facility in compliance with state and federal law and consistent with the schedule contained in the Idaho Settlement Agreement. DOE anticipates that it may treat up to an additional 120,000 cubic meters of TRU waste, alpha MLLW, and MLLW as bounded by the EIS. These wastes are currently located, or may be generated, at other areas on the INEEL and at other DOE sites. Transfers of TRU waste from other sites would require revision of the TRU ROD on the Final Waste Management Programmatic EIS and be subject to agreements between DOE and states relating to the treatment and storage of TRU waste.

2. Alternatives Analyzed

Action. Ongoing TRU waste, Alpha MLLW, and MLLW management operations and projects would continue and existing facilities would remain in use. The management and operations (M&O) contractor (rather than British Nuclear Fuels, Limited (BNFL)) would continue preparation to ship 3100 cubic meters of TRU waste to WIPP using existing facilities. Shipments to WIPP would occur that could be supported by existing facilities at the INEEL.

Proposed Action/Preferred Alternative. The M&O contractor would continue preparation to ship 3,100 cubic meters of TRU waste to WIPP using existing facilities. The construction and operation phases of the AMWTP would be implemented in accordance with the existing contract with BNFL.

Non-thermal Treatment Alternative. The M&O contractor would continue preparation to ship 3.100 cubic meters of TRU waste to WIPP using existing facilities. The AMWTP facility would be constructed but without incineration or microencapsulation process. Supercompaction and macroencapsulation would be used to treat the wastes. Wastes that require thermal treatment to meet disposal criteria would be repackaged and re-stored until a treatment option is identified and evaluated under NEPA.

Treatment and Storage Alternative. The M&O contractor would continue preparation to ship 3.100 cubic meters of TRU waste to WIPP using existing facilities. The AMWTP facility would be built in the same location, contain the same treatment processes, and produce the same final waste forms as the preferred alternative. The difference between this alternative and the Preferred Alternative is that the treated waste would not be shipped to an off-site disposal facility but would be placed in RCRA-permitted storage units at the RWMC.

Alternatives Considered but Not Analyzed. DOE also considered but did not analyze treatment of wastes at existing offsite treatment facilities, siting of the AMWTP at other locations on the

INEEL, Treatment using other non-thermal treatment processes and treatment using other thermal treatment processes.

3. Decisions to be Made

Decisions to be made are whether to proceed with the proposed construction and operation of a TRU treatment facility to potentially include LLW and MLLW treatment.

A procurement contract for treatment services was awarded to BNFL Inc. on December 20, 1996. Construction and operation of the treatment facility was contingent upon DOE's completion of an EIS and issuance of a record of decision. If DOE decided not to move forward with construction and operation of the facility, the contract would have been terminated.

4. INEEL Programs Analyzed

Construction and operation of a new TRU treatment facility at the RWMC.

The EIS and ROD affect Waste Management Programs under the Assistant Manager for Environmental Management and operations at the Radioactive Waste Management Complex. AMWTP operations will eventually probably replace WERF operations.

5. Decisions Regarding INEEL Programs

The decision in the ROD (March 1999) was to implement the preferred alternative to proceed with the construction and operation of the AMWTP in accordance with the contract with BNFL.

DOE/EIS – 0306 - Final Environmental Impact Statement for the Treatment and Management of Sodium-bonded Spent Nuclear Fuel, July 2000

1. General Scope/Purpose and Need of EIS/EA

This Environmental Impact Statement (EIS), prepared by DOE's Office of Nuclear Energy (NE), responds to the need for DOE to safely and effectively manage a certain surplus material, DOE-owned sodium-bonded spent nuclear fuel (SBSNF), and facilitate its eventual interment in a geologic repository. Management of this material is complicated by the fact that metallic sodium is reactive and the assumption that the repository will not accept a waste package containing untreated sodium metal.

The EIS evaluated treatment and management options for four categories of DOE-owned SBSNF totaling some 60 MTHM. The categories are: 1) Experimental Breeder Reactor (EBR)-II driver and blanket assemblies; 2) Fast Flux Test Facility (FFTF) elements and assemblies; 3) miscellaneous SNF from liquid metal reactor experiments; and 4) Fermi-1 Blanket assemblies.

The fuels addressed within the EIS concern some 60 metric tons of heavy metal (MTHM) of sodium bonded SNF associated with the research and development of liquid metal fast breeder reactors. These fuels are of two types--driver and blanket fuels. Driver fuel contains highly enriched fissile isotope uranium-235, and is placed at the center of the reactor core to drive the reaction. Blanket fuel contains the non-fissile isotope uranium-238 and is placed at the perimeter of the core to breed plutonium-239.

These fuels contain metallic sodium between the cladding and the metallic fuel pins to promote heat transfer from the fuel to the reactor coolant. Not all driver assemblies contain sodium. However, all of the blanket assemblies considered here do contain sodium.

The EIS evaluated the potential direct, indirect, and cumulative environmental impacts associated with the treatment of SBSNF in one or more SNF management facilities. In addition, the EIS evaluated the environmental impacts of the No Action Alternative.

The EIS analyzed the potential environmental impacts associated with the proposed actions, which includes:

1) preparation prior to treatment;
2) treatment and management;
3) transportation; and
4) decontamination and deactivation of the equipment used for treatment.

Impacts from the transport to INEEL of SBSNF from DOE sites such as the Hanford Site in Washington, Sandia National Laboratories in New Mexico, and Oak Ridge National Laboratory in Tennessee are considered adequately addressed in the INEL SNF EIS.

2. Alternatives Analyzed

DOE has proposed to treat and manage SBSNF at one or more of the following SNF management facilities: ANL-W at the INEEL, and the F-Canyon or Building 105-L at SRS. The impacts from the treatment and management of SBSNF at INEEL and SRS and their SNF management facilities are described. In addition to the No Action Alternative, the EIS analyzed six alternatives under the proposed action that employ one or more of the following technology options: electrometallurgical treatment (EMT), the plutonium-uranium extraction (PUREX) Process, packaging in high-integrity cans, and the melt and dilute process. The use of EMT at a site other than ANL-W, the GMODS process, the direct plasma arc-vitreous ceramic treatment, and the chloride volatility process were considered and deemed not to be reasonable alternatives under the proposed action, and were, therefore, dropped from further consideration.

The EIS proposed and analyzed seven alternatives:

1) No action. The no action option includes: 1) continued storage at current locations; and 2) packaging in high-integrity cans without treatment for direct disposal into the repository;
2) Electrometallurgically treat blanket and driver fuel at ANL-W;
3) Clean and package blanket fuel in high-integrity cans and electrometallurgically treat driver fuel at ANL-W;
4) Declad and clean blanket fuel and electrometallurgically treat driver fuel at ANL-W, and PUREX process blanket fuel at SRS;
5) Melt and dilute blanket fuel and electrometallurgically treat driver fuel at ANL-W;
6) Declad and clean blanket fuel and electrometallurgically treat driver fuel at ANL-W, and melt and dilute blanket fuel at SRS; and
7) Melt and dilute blanket and driver fuel at ANL-W.

3. Decisions to be Made

As presented within the EIS, based on the analytical results, as well as cost, schedule, and nonproliferation considerations, DOE will make the following decisions:

1) Whether to use an existing, mature technology to treat the SBSNF, and if so, which technology should be selected and where should it be implemented; and
2) Whether to take no action now and wait for further information regarding the potential development of a geologic repository, or promote the development of a less mature (e.g., glass material oxidation and dissolution system, plasma arc) or new treatment technology.

In summary, DOE must select a treatment technology or management strategy for SBSNF, and the location for the treatment or management of SBSNF to facilitate disposal in a geologic repository.

4. INEEL Programs Analyzed

This EIS analyzed the use of seven different technologies:

1) an electrometallurgical treatment (EMT) process;
2) the PUREX process;
3) placement of SNF in high-integrity cans;
4) a melt and dilute process;
5) a glass material oxidation and dissolution system process;
6) a direct plasma arc-vitreous ceramic process; and
7) chloride volatility process.

This EIS analyzed use of these technologies at three facilities located at two DOE sites:

1) The Idaho National Engineering and Environmental Laboratory, ANL-W facilities; and
2) The Savanna River Site
   - The F-Canyon
   - Building 105-L.

5. Decisions Regarding INEEL Programs

In the final EIS, DOE announces its preferred alternative to be electrometallurgical treatment of SBSNF at ANL-W except for Fermi-1 blanket SNF. A decision on Fermi-1 blanket SNF will be deferred until a later time. A record of decision has not been issued at this time.

Under the preferred option, the Office of Nuclear Energy (NE) has proposed to treat the first three categories of SNF described totaling some 26 MTHM.

The Office of Environmental Management (EM) is responsible for developing an evaluation of alternative management methodologies for the 34 MTHM of Fermi-1 blanket sodium-bonded SNF. EM has charged the DOE Operations Office at the INEEL (DOE-ID) with this task.

DOE/EIS-0310D - Draft Programmatic Environmental Impact Statement for Accomplishing Expanded Civilian Nuclear Energy Research and Development and Isotope Production Missions in the United States, Including the Role of the Fast Flux Test Facility, July 2000

1. General Scope/Purpose and Need of the EIS/EA

DOE proposes to enhance its existing nuclear facility infrastructure to provide for: 1) production of isotopes for medical, research and industrial uses, 2) production of plutonium-238 (Pu-238) for use in advanced radioactive isotope power systems for future NASA space exploration missions, and 3) the nation's nuclear research and development needs for civilian applications.

Isotope Production – Production of medical and industrial isotopes involves 1) fabricating specially designed targets at a target fabrication facility, 2) irradiating the targets in an irradiation facility to generate specific medical isotopes, and 3) processing the targets at a target fabrication facility to prepare the medical isotopes for shipment to customers.

Pu-238 Production – Production of Pu-238 involves the fabrication of Np-237 targets, irradiating the targets in an irradiation facility, and processing the targets to prepare the Pu-238 product for shipment to Los Alamos National Laboratory where it would be fabricated into heat sources for radioisotope power systems.

Nuclear Research and Development – Nuclear research and development initiatives requiring an enhanced DOE facility infrastructure fall into three basic categories: materials research, nuclear fuel research, and advanced reactor development.

2. Alternatives Analyzed

No Action Alternatives. Under the No Action alternative, FFTF would be maintained in standby status for the 35 years covered in this NI PEIS. Ongoing operations at existing operating facilities would continue. DOE would not establish a domestic Pu-238 production source. Transportation of Pu-238 from Russia and throughout the U. S. is analyzed with various storage and transportation options. Three facilities are analyzed for storage and processing options.

Alternative 1 – Restart FFTF. The FFTF at Hanford would be restarted and operated for 35 years. FFTF would be used to irradiate targets for medical and industrial isotope production, Pu-238 production, and nuclear research and development irradiation requirements. Ongoing operations at existing operating facilities would continue. Three facilities were analyzed for target preparation and post-irradiation processing.

Alternative 2 – Use Only Existing Operational Facilities. DOE would use existing operating DOE reactors or U. S. commercial nuclear power plants to produce Pu-238 for future space missions as well as to continue to produce medical and industrial isotopes and support nuclear research and development in DOE reactors and accelerators.

Alternative 3 – Construct New Accelerators. One or two new accelerators would be used for target irradiation for a period of 35 years. The new accelerators, to be constructed at an existing or new DOE site, would be used to irradiate all of the targets. Ongoing operations at existing operating facilities would continue.

Alternative 4 – Construct New Research Reactor. A new research reactor would be used for target irradiation for a period of 35 years. The new research reactor, to be constructed at an existing or new DOE site, would be used to irradiate all targets. Ongoing operations at existing facilities would continue.

Alternative 5 – Permanently Deactivate FFTF. FFTF at Hanford would be permanently deactivated without making enhancements to DOE's nuclear facilities infrastructure. Ongoing operations at existing operating facilities would continue.

3. Decisions to be Made

DOE must decide whether to enhance current U.S. nuclear infrastructure to meet projected requirements for future medical and industrial isotope production, nuclear research and development, and/or plutonium-238 production.

DOE must select the facilities to support its proposed missions if a decision is made to enhance U.S. nuclear infrastructure.

DOE must determine whether to restart FFTF as part of a nuclear infrastructure enhancement program and, if not, whether to remove FFTF from standby condition and permanently deactivate it in preparation for its eventual decontamination and decommissioning.

DOE must decide whether to continue purchasing pluonium-238 from Russia to support future NASA space missions if U.S. nuclear infrastructure is not enhanced.

DOE must determine whether its inventories of neptunium-237 should be relocated for continued storage or processed for disposal as waste.

4. INEEL Programs Analyzed

The programs that are analyzed in this PEIS are the Advanced Test Reactor with support facilities and the Fluorinel Dissolution Process Facility (FDPF) for 35 years. In Alternative 2 the ATR is considered in a number of options both singly and in combination with the High Flux Isotope Reactor. The FDPF is considered as a storage and processing facility in the No Action alternative and Alternative 2.

Included is a description of base operations at the Test Reactor Area including operation of the Advanced Test Reactor, Advanced Test Reactor Critical facility, and the Nuclear Materials Inspection and Storage facility and other supporting facilities. This also includes an analysis of environmental impacts of base operations.

The FDPF analysis includes transportation from SRS and storage of Neptunium-237 and associated isotopes for 35 years. Fabrication and processing Np-237 targets associated with Pu-238 production is also included.

5. Decisions Regarding INEEL Programs

The Final PEIS is not yet completed. The ROD is projected to be completed in December 2000.

DOE/ID-10636 - Supplement Analysis for a Container System for the Management of DOE Spent Nuclear Fuel Located at the INEEL, March 1999

1. General Scope/Purpose and Need of EIS/EA

The Supplement Analysis (SA) responds to the Settlement Agreement (U.S. District Court 1995) signed by the State of Idaho, the U.S. Department of the Navy, and the U.S. Department of Energy (DOE) in October 1995. The SA states in Section F.4, "DOE and the Navy shall employ Multi-Purpose Canisters ("MPCs") or comparable systems to prepare spent fuel located at INEL for shipment and ultimate disposal of such fuel outside Idaho." The SA further requires that a Record of Decision (ROD) for appropriate National Environmental Policy Act (NEPA) analysis be completed by April 30, 1999.

This SA analyzes two separate, but applicable EIS documents. They are:

Programmatic Spent Nuclear Fuel (SNF) Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement (EIS), DOE/EIS-0203-F, U.S. Department of Energy, Washington, DC, April 1995; (1995 EIS) and

Final Environmental Impact Statement for a Container System for the Management of Naval Spent Nuclear Fuel, DOE/EIS-0251, U.S. Department of the Navy, November 1996 (Navy Container System EIS).

The Proposed Action evaluated in this Supplement Analysis considers the use of a dual-purpose canister system, or comparable multi-purpose canister system, for the storage and ultimate shipment of DOE-ID spent nuclear fuel out of the State of Idaho.

The evaluation of the Proposed Action considers the potential environmental impacts for: (a) the manufacturing of canister systems, (b) loading and storage of spent nuclear fuel at the Idaho National Engineering and Environmental Laboratory (INEEL), (c) transportation of DOE-ID spent nuclear fuel for ultimate disposition outside Idaho, and (d) cumulative impacts. Impacts of the Proposed Action were compared to impacts previously evaluated in the SNF & INEL EIS and the Navy Container System EIS.

2. Alternatives Analyzed

Because this is a Supplement Analysis, no alternatives were analyzed.

3. Decisions to be Made

DOE must decide whether:

- an existing EIS should be supplemented;
- a new EIS should be prepared; or
- no further NEPA documentation is required.

4. INEEL Programs Analyzed

The programs analyzed are described within the two EIS's listed above.

On June 1, 1995, DOE published a ROD (60 FR 28680) for the SNF & INEL EIS. In the ROD, the DOE and the U.S. Department of the Navy, as a cooperating agency, announced their decision regarding management of existing and reasonably foreseeable inventories of SNF through the year 2035.

In November 1996, the Department of the Navy published the Navy Container System EIS. In the first ROD resulting from this EIS published in January 1997, (62 FR 1095) the Navy and the DOE, as a cooperating agency, announced their decision regarding selection of a dual-purpose canister system for the loading, storage, transport, and possible disposal of naval SNF. These actions, in addition to the issuance of a second ROD regarding location of loading and dry storage facilities for naval SNF, completed the Navy's action required under Section F.4 of the Settlement Agreement.

The Navy Container System EIS and its resulting RODs addressed only naval SNF located at the INEEL. To complete all actions required under Section F.4 of the Settlement Agreement, further National Environmental Policy Act (NEPA) evaluation was required to address the non-Navy DOE SNF located at the INEEL. DOE has prepared this SA to determine what further NEPA review may be required in fulfillment of its responsibilities under Section F.4 of the Settlement Agreement.

5. Decisions Regarding INEEL Programs

On March 4, 1999, the Idaho Manager signed and issued the *Department of Energy, Idaho Operations Office (DOE-ID) Determination and Record of Decision on National Environmental Policy Act (NEPA) Analysis*. The determination and decision are as follows.

<u>DETERMINATION AND DECISION</u>: Based on the Supplement Analysis and in accordance with my authority under Section 5.a. (11) of DOE Order 451.1A, I (the Manager) have determined that the environmental impacts of DOE-ID's use of multiple purpose canisters or comparable system as described herein has been adequately analyzed in the SNF & INEL EIS and Navy Container System EIS. No further NEPA documentation is required and neither a supplemental EIS, nor a new EIS need to be prepared. This determination and decision constitutes final agency action by DOE-ID to procure and use dual purpose or multi purpose canisters or comparable systems for the storage and transport of INEEL spent nuclear fuel. This determination and decision does not preclude issuing another Record of Decision for the SNF & INEL EIS if it becomes necessary to do so. Also, this decision does not commit DOE to a single course of action or the use of a particular spent nuclear fuel container system if improvements in design are made in the future and are selected pursuant to future NEPA review and coordination with the State of Idaho. Finally, this determination and decision does not in any way select or predispose a means of transportation of the SNF, whether road or rail, nor does it select a transportation route or destination.

On May 4, 1999, DOE released its *Record of Decision for a Multi-purpose Canister or Comparable System for Idaho National Engineering and Environmental Laboratory Spent Nuclear Fuel* (64 FR 23825). The decision is as follows.

<u>DECISION</u>: DOE has decided to use a multi-purpose canister or comparable system (e.g., dual-purpose canister system or other system as described and analyzed in the context of the Container System EIS) for the management of DOE-owned spent nuclear fuel at the INEEL,

based on cost, operational efficiency, regulatory acceptance, and environmental and public health considerations. Except for those fuels that may be processed (e.g., sodium bonded fuel) and a small fraction of spent nuclear fuel (10% or less) that may be suitable for shipment using existing transportation casks, a multi-purpose canister system (or comparable system) will be used for the loading and storage of DOE-owned spent nuclear fuel at the INEEL and for transportation of this spent nuclear fuel for ultimate disposition outside the State of Idaho. This decision does not commit DOE to a single course of action or the use of a particular spent nuclear fuel container system if improvements in design are made in the future and are selected pursuant to future NEPA review and coordination with the State of Idaho.

OPE-TRA-00-002 - Baseline Document for the Test Reactor Area Hot Cells (TRAHC), January 2000

1. General Scope/Purpose and Need of EIS/EA

The TRAHC were in operation prior to the effective date of the National Environmental Policy Act statue, January 1, 1970. As a result, NEPA documentation was never prepared for TRAHC facility construction or operations. This has created difficulties for the ID NEPA Compliance Officer (NCO) and the INEEL NEPA Planning Board in determining what constitutes ongoing operations and what constitutes new activity requiring NEPA review. This document establishes an environmental Baseline Document for the TRAHC for NEPA purposes. This document will be used by the NCO as the baseline against which any future proposed activity is measured to determine requirements for NEPA review.

2. Alternatives Analyzed

Due to the nature of the Baseline Document, no alternatives were considered.

3. Decisions to be Made

No decisions were made as a result of the preparation of this document.

4. INEEL Programs Analyzed

TRA Hot Cell operations were analyzed to define historical operations, operating parameters, operational incidents, waste stream generation, air effluents, and worker radiological exposure.

5. Decisions Regarding INEEL Programs

No decisions were made based on the approval of this document.

NUREG-1626 - Final Environmental Impact Statement for the Construction and Operation of an Independent Spent Fuel Storage Installation to Store the Three Mile Island Unit 2 Spent Fuel at the Idaho National Engineering and Environmental Laboratory, Docket No. 72-20, March 1998

1. General Scope/ Purpose and Need of EA/EIS

The Final Environmental Impact Statement was prepared by the Nuclear Regulatory Commission (NRC), Office of Nuclear material Safety and Safeguards to assess the potential environmental impacts of licensing the construction and operation of an independent spent fuel storage installation (ISFSI) for the dry storage of the fuel debris from the Three Miles Island Unit 2 (TMI-2) reactor. The ISFSI is to be located at the then Idaho Chemical Processing Plant (ICPP), now known as the Idaho Nuclear Technology Engineering Center (INTEC) at the Idaho National Engineering and Environmental Laboratory (INEEL).

As part of its overall spent nuclear fuel (SNF) management program, the U.S. Department of Energy (DOE) has prepared a final programmatic EIS that provides an overview of the SNF management strategy proposed for the INEEL, including the construction and operation of the TMI-2 ISFSI. In addition, the DOE Operations Office (DOE-ID) has prepared an environmental assessment (EA) to describe the environmental impacts associated with the stabilization of the TAN storage pool and the construction/operation of the ISFSI at INTEC.

The NRC has determined that its proposed action is substantially the same as actions considered in DOE's environmental documents, and therefore as permitted under 10 CFR Part 51, has elected to adopt the DOE documents as the NRC FEIS.

The NRC's proposed action is to issue a license authorizing DOE-ID to construct and operate a dry storage ISFSI at INTEC. The proposed action considered in the DOE-ID environmental documents is to remove the TMI-2 core debris from the TAN storage pool in preparation for transport and dry storage. Established storage cask technologies would be used for dry storage on a concrete base mat constructed at INTEC. The TMI-2 debris canisters would be stored in a dry shielded canister (DSC) and transported to INTEC for storage in an ISFSI. The ISFSI would be an aboveground storage system using horizontal storage modules (HSMs) that would be sited, constructed, and operated at INTEC.

DOE's need for the proposed action is to meet the terms and conditions of the Settlement Agreement reached among the DOE, the State of Idaho, and the U.S. Department of the Navy (US District Court Civil No. 91-0035-S-EJL and Civil No. 91-0054-S-EJL, dated October 17, 1995). Under the terms of this agreement, the DOE has committed to constructing the ISFSI by December 31, 1998 and beginning to move fuel into the facility by March 31, 1999. In addition to terms in the Settlement Agreement, vulnerabilities in SNF storage at the TAN storage pool need be addressed by remedial action or by emptying the pool of SNF and water.

2. Alternatives Analyzed

The alternatives analyzed within the DOE-ID environmental documents included no-action, storage methods, and storage location alternatives. They are discussed below.

1) No-Action

The no-action alternative is denial of the license application for the ISFSI resulting in continued storage of SNF in the TAN pool.

2) Storage Methods

The FEIS considers alternative SNF storage methods, including:

- Constructing a new wet storage pool;
- Refurbishing the existing TAN pool; and
- Constructing the ISFSI, as described, at INTEC.

3) Storage Locations

The FEIS considers alternative SNF storage locations, including:

- TAN;
- Birch Creek Area;
- Lemhi Range Area; and
- INTEC.

DOE-ID determined to build the described ISFSI using DSCs and HSMs at INTEC.

3. Decisions to be Made

The NRC's proposed action and decision is whether to issue a license authorizing DOE-ID to construct and operate a dry storage ISFSI at INTEC.

4. INEEL Programs Analyzed

The analyses required for the NRC to make its decision included the environmental impacts of:

- Construction; and
- Operation.

5. Decisions Regarding INEEL Programs

The NRC concluded that the TMI-2 ISFSI represented only a small part of overall SNF management activities at the INEEL. The NRC further concluded that the potential impacts of construction and operation of the ISFSI are small when considered within the context of the: 1) Settlement Agreement; 2) current vulnerabilities at the TAN pool; 3) current environmental conditions at the INEEL; and 4) ongoing operations at the INEEL. The NRC determined to support licensing of the ISFSI in the FEIS. The NRC issued the license on March 19, 1999 (SNM-2508).

Appendix 5-3 NEPA ANALYSIS CONSIDERED BUT ELIMINATED

The following table shows the balance of the NEPA analysis that was considered for incorporation into the Supplement Analysis. These EISs and EAs were found to not consider INEEL operations or activities and, as such, were eliminated from consideration.

INEEL	Idaho National Engineering and Environmental Laboratory
LANL	Los Alamos National Laboratory
LLNL	Lawrence Livermore National Laboratory
NTS	Nevada Test Site
ORNL	Oak Ridge National Laboratory
RFETP	Rocky Flats Environmental Treatment Park
SRS	Savannah River Site

Title and Document Number	Status	Site(s)
Final Environmental Impact Statement for the Nevada Test Site and Other offsite Test Locations Within the State of Nevada, DOE/EIS-0243	Final 10/1996 ROD 61 FR 65551, 12/9/96 Amended ROD 65 FR 10061, 2/25/00	NTS, LLW Generators who may ship waste to NTS for disposal
Sandia National Laboratories/New Mexico Final Site-wide Environmental Impact Statement, DOE/EIS-0281	Final 64 FR 60799, 11/8/99 ROD 64 FR 69996, 12/15/99	SNL
Hanford Comprehensive Land Use Plan Environmental Impact Statement, DOE/EIS-0222F	Final 9/1999 ROD 64 FR 61615, 11/12/99	Hanford (INEEL operations were not analyzed - the SNF shipments to the INEEL were included in the SNF PEIS).
Site Wide Environmental Impact Statement for Continued Operation of the Los Alamos National Laboratory, DOE/EIS-0238	Final 64 FR 8338, 2/19/99 ROD 64 FR 50797, 9/20/99	LANL
Final Programmatic Impact Statement for Alternative Strategies for the Long-Term Management and Use of Depleted Uranium Hexafluoride, DOE/EIS-0269	Final 4/1999 ROD 64 FR 43358, 8/10/99	Paducah Site, Portsmouth Site, ORNL
Environmental Assessment for the Parallex Project Fuel Manufacture and Shipment, DOE/EA-1216	FONSI 1/1999	LANL

Title and Document Number	Status	Site(s)
Interim Management of Nuclear Materials, DOE/EIS-0220	Final 10/20/95 ROD 60 FR 65300, 12/19/95; 1st Sup. ROD 61 FR 6633, 2/21/96; 2nd Sup. ROD 61 FR 48474, 9/13/96; 3rd Sup. ROD 62 FR 17790, 4/11/97; 4th Sup. ROD 62 FR 61099, 11/14/97	SRS
Savannah River Site Waste Management Final Environmental Impact Statement, DOE/EIS-0217	Final 7/1995 ROD 60 FR 55249, 10/30/95 Sup. ROD 62 FR 27241, 5/19/97	SRS, Pantex, RFETP
Environmental Assessment and Finding of No Significant Impact for Storage of Non-Defense Spent Nuclear Fuel, DOE/EA-1185	FONSI 3/1997	Hanford
Tank Waste Remediation System Environmental Impact Statement, DOE/EIS-0189	Final 8/1996 ROD 2/1997	Hanford
Final Environmental Impact Statement for the Continued Operation of the Pantex Plant and Associated Storage of Nuclear Weapon Components, DOE/EIS-0225	Final 11/1996 ROD 62 FR 3880, 1/27/97	Pantex, SRS, ORNL, LANL
Stockpile Stewardship and Management PEIS, DOE/EIS-0236	Final 11/1996 ROD 12/1996	NTS, ORNL, Pantex Plant, SRS, LANL, LLNL, SNL, Kansas City Plant
Disposition of Surplus Highly Enriched Uranium Final Environmental Impact Statement, DOE/EIS-0240	Final 6/1996 ROD 12/1996	ORNL, SRS, Babcock & Wilcox Plant, Nuclear Fuel Services Plant
Environmental Assessment for the Proposed Chemistry and Metallurgy Research (CMR) Building Upgrades at the Los Alamos National Laboratory, Los Alamos, New Mexico, DOE/EA-1101	FONSI 9/1996	LANL
Management of Spent Nuclear Fuel on the Oak Ridge Reservation Oak Ridge, Tennessee, DOE/EA-1117	FONSI 2/1996	ORNL (Implements the 1995 SNF EIS at Oak Ridge)
Sandia LLW Assessment for Sandia National Laboratories/New Mexico Offsite Transportation of Low-Level Radioactive Waste, DOE/EA-1180	FONSI 1996	NTS, Hanford, SRS, U. S. Ecology, Chem. Nuclear Site, Envirocare
Defense Waste Processing Facility Supplemental Environmental Impact Statement, DOE/EIS-0082S	Final 11/1994 ROD 60 FR 18589, 4/12/95	SRS
Environmental Assessment And (FONSI) Operation Of The Hb-Line Facility And Frame Waste Recovery Process For Production Of Pu-238 Oxide At The Savannah River Site, DOE/EA-0948	FONSI 4/1995	SRS, LANL

Title and Document Number	Status	Site(s)
Final F-Canyon Plutonium Solutions Environmental Impact Statement, DOE/EIS-0219	Final 12/1994 ROD 2/1995	SRS
Environmental Assessment for Hazardous Materials Testing at the Liquefied Gaseous Fuels Spill, DOE/EA-0864	FONSI 11/1994	NTS
The Tokamak Fusion Test Reactor Decontamination and Decommissioning Project and The Tokamak Physics Experiment at the PPPL, DOE/EA-0813	FONSI 5/1994	Princeton, Hanford
Environmental Assessment for Interim Storage of Plutonium Components at Pantex and Department of Energy Response to Comments Received from the State of Texas, DOE/EA-0812	FONSI 1/1994	Pantex, LANL, SRS, Hanford

APPENDIX 5-4 – NEPA REVIEW COMPLETED BY PROGRAM

Overview of Analysis

The following is a summary of the INEEL operations that were analyzed organized according to major program along with a reference of where the analysis was completed.

Table of Contents

ANL-W

NEPA Document	Scope of Analyzed INEEL Operations
Nuclear Criticality Experiments and Training Equipment – DOE/EA - 1104	The surplus weapons grade Pu in storage at ANL-W and INTEC would be inspected and packaged for shipment to LANL. This material will be used at LANL for training criticality professionals from around DOE.
Electrometallurgical Treatment in the FCF – DOE/EA-1148	The EA and FONSI affected the DOE-NE sponsored EBR-II SNF Treatment Project at ANL-W. This addressed the electrometallurgical treatment of sodium-bonded FERMI-1 blanket fuel. This activity took place in the Fuel Conditioning Facility.
Lead Test Assembly EA - DOE/EA-1210	The EA and FONSI affected the Hot Fuel Examination Facility (HFEF) at Argonne National Laboratory-West, which is administered by the DOE Chicago Operations Office. DOE Defense Programs (DP) funded modifications to the HFEF cask transfer tunnel to accommodate CLWR-sized fuel assemblies. DP also funded neutron radiography of the TPBARS in HFEF following their irradiation in the Watts Bar Nuclear Power Plant. The examination of the TPBARS in HFEF is scheduled to conclude by the end of FY 2000.
SNF and INEL ER & WM EIS – DOE/EIS – 0203	The EIS analyzed all ANL-W activities with the exception of reactor operations.
Surplus Pu Disposition EIS - DOE/EIS-0283	The EIS analyzed construction and operation of a MOX fuel fabrication facility at ANL-W.
Sodium-Bonded SNF EIS - DOE/EIS – 0306	The EIS analyzed the use of seven different treatment technologies for treatment and management of Sodium-Bonded SNF at three different sites including ANL-W.

ER

NEPA Document	Scope of Analyzed INEEL Operations
Pit 9 Retrieval - DOE/EA-0854	This EA covered construction and operation of the Pit 9 waste retrieval, treatment, and packaging facilities.
SNF and INEL ER & WM EIS – DOE/EIS – 0203	The EIS covered the entire ER program for all 10 Waste Area Groups.

HLW

NEPA Document	Scope of Analyzed INEEL Operations
WM PEIS – DOE/EIS-0200	The EIS analyzed the DOE programmatic impacts from the HLW program across the complex. Decisions were made for locations of treatment and storage facilities but not for specific operations.
SNF and INEL ER & WM EIS – DOE/EIS – 0203	The EIS covered the entire HLW program.
HLW & Facilities Disposition EIS - DOE/EIS-0287D	This EIS analyzes and makes long-term decisions for the INEEL HLW program based on a new set of planning assumptions and treatment technologies. The analysis covers facility operation through 2095.

IFF

NEPA Document	Scope of Analyzed INEEL Operations
Expansion of the INEL Research Center - DOE/EA-0845	This EA is to expand and upgrade facilities at the IRC. DOE proposed to construct a research laboratory addition on the northeast comer of existing laboratory building; upgrade the fume hood system the existing laboratory building; and construct a hazardous -waste handling facility and a chemical storage building.

Infrastructure

NEPA Document	Scope of Analyzed INEEL Operations
INEL Sewer System Upgrade - DOE/EA-0907	INEEL sewer system upgrades at three facilities.
Interim Storage of Enriched Uranium EA - DOE/EA-0929	INEEL programs analyzed are shipment of INEEL and ANL-W highly enriched uranium and low enriched uranium to the Y-12 plant at Oak Ridge, TN. The impacts of leaving the material in place were evaluated in the No Action Alternative.
HPIL Replacement - DOE/EA-1034	INEEL programs analyzed are the Health Physics Instrumentation Laboratory replacement and program.
New Silt/Clay Source Development - DOE/EA-1083	The program analyzed was the need for new soil excavation sites at the INEEL.
Nuclear Criticality Experiments and Training Equipment – DOE/EA - 1104	The surplus weapons grade Pu in storage at ANL-W and INTEC would be inspected and packaged for shipment to LANL. This material will be used at LANL for training criticality professionals from around DOE.
Closure of the WCF - DOE/EA-1149	The program analyzed was closure of the Waste Calcine Facility.

NEPA Document	Scope of Analyzed INEEL Operations
Pit Disassembly and Conversion Demonstration - DOE/EA-1207	The EA briefly discussed the shipment of plutonium metal from the INEEL to LANL.
D&D of the ARMF/CFRMF - DOE/EA-1310	The project analyzed was the decontamination and dismantlement of the Advanced Reactivity Measurement Facility and Coupled Fast Reactivity Measurements Facility at the TRA.
SNF and INEL ER & WM EIS – DOE/EIS – 0203	The EIS covered the portions of the Infrastructure program that affect ER, WM, and SNF operations. Included were impacts of a 11,600 person workforce, power usage, water usage, emergency services, etc.

NRF

NEPA Document	Scope of Analyzed INEEL Operations
1997 Demolition NRF EA	Demolition of the S5G Cooling Tower; Butler Buildings 7, 8, and 9; S1W #2 Spray Pond; and S1W Exterior Ventilation
2000 Demolition NRF EA	Demolition of Fourteen Buildings and One Structure Ancillary to the Naval Prototype Plants at the Naval Reactors Facility
SNF and INEL ER & WM EIS – DOE/EIS – 0203	This EIS covered all operations at NRF in 1995.
Yucca Mountain EIS - DOE/EIS-0250D	The EIS considers a repository inventory of 70,000 metric tons of heavy metal (MTHM) comprised of 63,000 MTHM of commercial spent nuclear fuel and 7,000 MTHM of DOE spent nuclear fuel and high-level radioactive waste. This overall inventory includes approximately 50 metric tons of surplus weapons-usable plutonium as spent mixed-oxide fuel and immobilized plutonium.
Navy Container Systems EIS - DOE/EIS-0251	Analyzes environmental impacts at the INEEL and the location(s) for fabrication of container systems in the following areas: Manufacturing alternative container systems, Loading and storage at INEEL facilities, Unloading naval SNF at a repository surface facility or a centralized interim storage facility, Impacts of transportation of naval SNF.
Savannah River Site SNF EIS - DOE/EIS – 0279	Discusses overall SNF shipments between the INEEL and Savannah River Site.
Sodium-Bonded SNF EIS - DOE/EIS – 0306	The EIS analyzed the use of seven different treatment technologies for treatment and management of Sodium-Bonded SNF at three different sites including ANL-W.
Supplement Analysis for a SNF Container System - DOE/ID-10636	The Navy Container System EIS and its resulting RODs addressed only naval SNF located at the INEEL. To complete all actions required under Section F.4 of the Settlement Agreement, further National Environmental Policy Act (NEPA) evaluation was required to address the non-Navy DOE SNF located at the INEEL. DOE has prepared this SA to determine what further NEPA review may be required in fulfillment of its responsibilities under Section F.4 of the Settlement Agreement.

SNF

NEPA Document	Scope of Analyzed INEEL Operations
Relocation and Storage of TRIGA Reactor Fuel – DOE/EA-0985	Evaluates shipment of fuel to the INEEL prior to the 1995 SNF EIS. This has been superseded by the 1995 SNF EIS ROD.
EA for Stabilization of the Storage Pool at TAN - DOE/EA-1050	This EA identified and evaluated environmental impacts associated with spent nuclear fuel for (a) constructing an Interim Storage System (ISS) at INTEC; (b) removing the TMI and commercial fuels from the pool and transporting them to INTEC for placement in an ISS, and (c) draining and stabilizing the TAN Pool.
Electrometallurgical Treatment in the FCF – DOE/EA-1148	The EA and FONSI affected the DOE-NE sponsored EBR-II SNF Treatment Project at ANL-W. This addressed the electrometallurgical treatment of sodium-bonded FERMI-1 blanket fuel. The FERMI fuel was in storage at INTEC.
TAN Pool Stabilization Project Update - DOE/EA-1217	This update analyzes the environmental and health impacts of a "drying" process for the Three Mile Island (TMI) nuclear reactor core debris canisters that were stored underwater at TAN.
SNF and INEL ER & WM EIS – DOE/EIS – 0203	The EIS covered the entire SNF program managed at the INEEL.
EIS on a Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor SNF - DOE/EIS – 0218F	The INEEL would receive and manage FRR SNF at existing dry and/or wet storage facilities. The existing facilities identified for this purpose would be the Fluorinel Dissolution and Fuel Storage Facility in CPP-666, the Irradiated Fuel Storage Facility in CPP-603, and the CPP-749 storage area. As an alternative, the INEEL could continue to receive and manage FRR SNF at a new dry storage or wet storage facility to be constructed at the site.
Yucca Mountain EIS - DOE/EIS-0250D	The EIS considers a repository inventory of 70,000 metric tons of heavy metal (MTHM) comprised of 63,000 MTHM of commercial spent nuclear fuel and 7,000 MTHM of DOE spent nuclear fuel and high-level radioactive waste. This overall inventory includes approximately 50 metric tons of surplus weapons-usable plutonium as spent mixed-oxide fuel and immobilized plutonium.
Navy Container Systems EIS - DOE/EIS-0251	Analyzes environmental impacts at the INEEL and the location(s) for fabrication of container systems in the following areas: Manufacturing alternative container systems, Loading and storage at INEEL facilities, Unloading naval SNF at a repository surface facility or a centralized interim storage facility, Impacts of transportation of naval SNF.
Savannah River Site SNF EIS - DOE/EIS – 0279	Discusses overall SNF shipments between the INEEL and Savannah River Site.

NEPA Document	Scope of Analyzed INEEL Operations
Supplement Analysis for a SNF Container System - DOE/ID-10636	The Navy Container System EIS and its resulting RODs addressed only naval SNF located at the INEEL. To complete all actions required under Section F.4 of the Settlement Agreement, further National Environmental Policy Act (NEPA) evaluation was required to address the non-Navy DOE SNF located at the INEEL. DOE has prepared this SA to determine what further NEPA review may be required in fulfillment of its responsibilities under Section F.4 of the Settlement Agreement.
Construction and Operation of the Independent Spent Fuel Storage Installation – NUREG-1626	The program analyzed is the storage of TMI-2 core debris and commercial fuels in an ISFSI at the INEEL. All alternatives would take place at the INEEL except for the alternative "Construct An ISFSI At A Location Not Located Above The Snake River Aquifer." This includes Refurbish the Test Area North Pool Alternative, Construct New Wet Storage Facility Alternative, and Storage at INTEC Alternative.

TRA

NEPA Document	Scope of Analyzed INEEL Operations
Baseline Document for the Test Reactor Area Hot Cells - OPE-TRA-00-002	TRA Hot Cell operations were analyzed with consideration of historical operations, operating parameters, operational incidents, waste stream generation, air effluents, and worker radiological exposure.
Nuclear Infrastructure PEIS - DOE/EIS-0310D	The programs that are analyzed in this PEIS are the Advanced Test Reactor with support facilities and the Fluorinel Dissolution Process Facility (FDPF) for 35 years. In Alternative 2 the ATR is considered for Np-237 irradiation in a number of options both singly and in combination with the High Flux Isotope Reactor. The FDPF is considered as a storage and processing facility in the No Action alternative and Alternative 2.

WM

NEPA Document	Scope of Analyzed INEEL Operations
Operation of the Glass Melter Thermal Treatment Unit at the Mound Plant - DOE/EA-0821	WERF was analyzed as a treatment option for Mound mixed waste.
Low-Level and Mixed Waste Processing - DOE/EA-0843	The WERF incinerator is an existing facility that has treated both LLW and MLLW (on an experimental basis). The EA analysis was for INEEL LLW and MLLW and included WERF incineration, sizing, compaction, and stabilization; offsite incineration in operating commercial facilities, and continued storage of MLLW at the MLLWSF.
TRU Waste Characterization Facility - DOE/EA-0906	The EIS analyzes construction and operation of a waste characterization facility for transuranic waste at the RWMC.

NEPA Document	Scope of Analyzed INEEL Operations
Environmental Assessment for Offsite Thermal Treatment of Low-level Mixed Waste - DOE/EA-1135	Treatment of Hanford mixed waste at the Waste Experimental Reduction Facility (WERF) was one option but was dismissed because of the greater risk of a transportation accident and the shipping costs. Therefore the actual treatment itself was not analyzed.
Non-Thermal Treatment of Hanford Site Low Level Waste - DOE/EA-1189	Hanford mixed waste was analyzed for treatment at the Advanced Mixed Waste Processing Facility including transportation of the waste from Hanford to the INEEL and shipment of the treated material back to Hanford for disposal.
Waste Isolation Pilot Plan Disposal Phase Final Supplemental Environmental Impact Statement - DOE/EIS-0026-S-2	Long-term disposition of the INEEL TRU waste including characterization and transportation.
Tritium Supply and Recycling Programmatic Environmental Impact Statement - DOE/EIS-0161	The INEEL was an alternative for construction of a new tritium source. The INEEL analyses included an overall site description and detailed descriptions of nine distinct and geographically separate functional mission areas. The analysis was grouped into the following two major categories, environmental management activities and other DOE activities.
Waste Management Programmatic EIS - DOE/EIS-0200-F	The EIS analyzed the DOE programmatic impacts from the LLW, Mixed LLW, and TRU programs across the complex. Decisions were made for locations of treatment, storage, and disposal facilities but not for specific operations.
SNF and INEL ER & WM EIS – DOE/EIS – 0203	The EIS covered the WM program managed at the INEEL for all waste streams. This included LLW treatment, storage, and disposal; MLLW treatment and storage; Hazardous Waste storage and disposal; and Transuranic waste treatment, storage and disposal options.
Advanced Mixed Waste Treatment Project EIS - DOE/EIS-0290	Construction and operation of a new TRU treatment facility at the RWMC.

Proposed New Projects

NEPA Document	Scope of Analyzed INEEL Operations
Radioactive Source Recovery Program - DOE/EA-1059	The TRA was initially proposed as a potential location for the source recovery effort. This proposal was dismissed due to unworkable programmatic impacts. Shipment of sources currently held by the INEEL was not included in the analysis.

Consolidation of Certain Materials and Machines for Nuclear Criticality Experiments and Training - DOE/EA-1104	The materials that were originally used at the INEEL in criticality experiments are at the Argonne National Laboratory West, Zero Power Research Reactor (ZPRR) facility. That facility is currently shut down with little reasonable chance that it would be reactivated. Approximately 100 kg (220 lbs.) of weapons grade plutonium has been declared surplus to the INEEL needs and is, therefore, available for use in general criticality experiments. The proposed action consists of the shipment, storage, consolidation, and use of surplus special nuclear materials and machines that would be used in support of the LACEF criticality experiments and training program at LANL. The anticipated operational life of the proposed action is approximately 30 years.
Storage and Disposition of Weapons-Usable Fissile Materials FEIS - DOE/EIS-0229	Concerning HEU storage, the INEEL is identified as a potential site for the "No Action Alternative" (i.e., Maintain Existing HEU Storage). Concerning plutonium disposition, the INEEL is identified as a potential site for the "Pit Disassembly/Conversion" and "MOX Fuel Fabrication" alternatives.
Medical Isotopes Production Project: Molybdenum 99 and Related Isotopes EIS - DOE/EIS-0249-F	Power Burst Facility/Test Area North. All process steps would be carried out onsite at INEEL. Targets would be fabricated at INEEL at the Test Area North in a building similar to the Experimental Test Reactor Critical Facility annex or the lower floor of the Materials Test Reactor building. The targets would be shipped for irradiation to the Power Burst Facility, which would be restarted for this purpose. The Mo-99 would be extracted from the irradiated targets, either in existing hot cells at the Test Area North or at new hot cells constructed for this purpose. Low-level radioactive wastes would be disposed of onsite at INEEL. The ATR was also considered for Mo-99 production but was eliminated as a candidate site.
Tritium Supply and Recycling Programmatic EIS - DOE/EIS-0161	The INEEL analyses included an overall site description and detailed descriptions of nine distinct and geographically separate functional mission areas. The analysis was grouped into the following two major categories, environmental management activities and other DOE activities. This document presents an in depth analysis of INEEL operations.

Appendix 6-1 PROGRAM CHANGE ANALYSIS DOCUMENTS

Program Change Analysis

One of the major pieces of the Supplement Analysis is the change analysis for the different programs that were addressed by the 1995 EIS. The change analysis is a disciplined approach to determining what has changed over the last five years in each of the programs. These changes were then evaluated to determine whether the program changes have resulted in potential environmental impacts that are different than were previously reported or whether those changes are expected to produce impacts different than were previously reported.

The method by which the change analysis was done looked at four important pieces of information. First is a review of the portion of the program was covered by the1995 EIS, second is a review of the current status of the program, third is a description of the major changes in the program, and fourth is an evaluation of the environmental impacts of those changes. The environmental impacts were evaluated on a qualitative basis for each discipline (i.e. air, water, land use, etc.) Appendix 6-3 was developed to determine where environmental changes have taken place. The summary statements from Appendix 6-3 are the same as the summary statements that are given here.

In order to completely capture the scope of each program, the above analysis was completed by program and organized by 1) projects that were included, 2) other program elements not included in the specific projects, 3) program elements that were not addressed in the 1995 EIS, and 4) proposed major projects.

Table of Contents

1.0 DECONTAMINATION AND DECOMMISSIONING

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
I	**Projects Analyzed in the 1995 EIS**			
1	**C-2.5 Auxiliary Reactor Experiment (ARA-II) D&D:** This project includes decontamination and decommissioning of the ARA-II facilities.	D&D&D completed as a partial Entombment in 1999 under a 1993 NEPA EA/FONSI.	With the exception of the schedule changes, the Environmental Impacts and Project Data Sheet in the EIS bounded the activity.	Impacts are no different than previously analyzed
2	**C-2.6 Boiling Water Reactor Experiment (BORAX-V) D&D:** This project includes decontamination and decommissioning of the BORAX-V facilities.	D&D&D completed as a partial Entombment under a series of NEPA Categorical Exclusion.	With the exception of the schedule changes, the Environmental Impacts and Project Data Sheet in the EIS bounded the activity.	Impacts are no different than previously analyzed
3	**C-4.2.1 Central Liquid Waste Processing Facility D&D:** This project included the removal of radioactive liquid waste tanks and associated piping from the basement of the ANL-W Analytical Laboratory Building. The tanks were formerly used in a radioactive liquid evaporation system that was replaced by a newer system in 1984. The project included decontamination of the rooms that formerly housed the tanks.	This project was completed in October of 1997 and was the same as the project described in section C-4.2.1 of the 1995 EIS. The project was categorically excluded from further NEPA review by DOE-CH in April of 1997.	Since release of the ROD, there have been no operational differences.	Impacts are no different than previously analyzed

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
4	**C-4.2.2 Engineering Test Reactor (TRA-642) D&D:** This project includes decontamination and decommissioning of the TRA-642 facilities.	D&D currently scheduled to begin in FY'05 with completion TBD (based on funding)	With the exception of the schedule changes, the Summary of Environmental Impacts and Project Data Sheet included in the EIS bound the activity with the exception of ground water impacts.	Impacts may be different than previously analyzed due to ground water impacts.
5	**C-4.2.3 Materials Test Reactor (TRA-603) D&D:** This project includes decontamination and decommissioning of the TRA-603 facilities.	Deactivation of the MTR Canal is currently scheduled to begin in FY'03 through FY'04. D&D is currently To Be Determined.	With the exception of the schedule changes, the Summary of Environmental Impacts and Project Data Sheet included in the EIS bound the activity with the exception of ground water impacts.	Impacts may be different than previously analyzed due to ground water impacts.
6	**C-4.2.4 Fuel Processing Complex (CPP-601) D&D:** This project includes decontamination and decommissioning of the CPP-601 facilities.	Deactivation/Closure planned FY'04 through approximately FY'10	With the exception of the schedule changes, the Summary of Environmental Impacts and Project Data Sheet included in the EIS bound the activity with the exception of ground water impacts.	Impacts may be different than previously analyzed due to ground water impacts.
7	**C-4.2.5 Fuel Receipt and Storage Facility (CPP-603) D&D:** This project includes decontamination and decommissioning of the CPP-603 facilities.	Deactivation has been initiated with the project scheduled from FY'01 to FY'11. NEPA EA is currently under preparation with FONSI, expected May 2001.	With the exception of the basin water being allowed to evaporate rather than transferred to the PEW, the Summary of Environmental Impacts and Project Data Sheet included in the EIS bound the activity with the exception of ground water	Impacts may be different than previously analyzed due to ground water impacts.

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
			impacts.	
8	**C-4.2.6 Headend Processing Plant (CPP-640) D&D:** This project includes decontamination and decommissioning of the CPP-640 facilities.	Due to common walls, roof, ventilation, and utilities, will be Included as part of the Fuel Processing Complex activities FY'04 - FY'10.	With the exception of the schedule changes, the Summary of Environmental Impacts and Project Data Sheet included in the EIS bound the activity with the exception of ground water impacts.	Impacts may be different than previously analyzed due to ground water impacts.
9	**C-4.2.7 Waste Calcine Facility (CPP-633) D&D:** This project includes decontamination and decommissioning of the CPP-633 facilities.	D&D&D completed June 1999 as a HWMA/ RCRA Closure to 40CRF265.310 Landfill Standards supported by a NEPA EA/FONSI for the project that tiered down from the '95 EIS.	The project grouted the facility in-place and resulted in no liquid decon waste and only minor volumes of LLW or MLLW were generated with minor worker rad exposure.	The implemented D&D strategy was not addressed in the 1995 EIS. Entombment of the facility resulted in less radiological exposure but left radiological wastes in the ground.
II	***Balance of the Program in the 1995 EIS***			
	General description of the D&D program and the process used to transition facilities from operational facilities through the D&D process.	This process has not appreciably changed from what was described.	No major changes.	Impacts are no different than previously analyzed
III	**Other parts of the program not analyzed in the 1995 EIS**			
1		The Decontamination and Dismantlement (D&D) Program process application affected a direct pathway to facility removal and reduced S&M		

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
		liability and cost. The merging of Deactivation with D&D; I.e., D&D&D introduced an intermediate step for hazard elimination and waste removal rendering the facility safe and stable with reduced S&M while awaiting D&D. The merging of D&D&D has included the dispositioning of non-contaminated facilities previously under the Facility Disposition Initiative (FDI). These changes have not altered the application of the D&D&D process. The process is applied by a graded approach based on the facility/site conditions.		
2		The 1995 EIS did not address ground water impacts of D&D decisions. This is only important when a significant source term is being left in the ground as a part of the decision. The important aspects of this are the cumulative impacts from the decision with other current or planned ground water impacts.		
IV	**Proposed major projects**			
			Long-range planning through 2045 involves D&D&D	

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
			application to in excess of 800 facilities. Short-term planning through 2006 could involve 5 - 10 facilities/sites depending on risk and funding. These projects are identified in the INEEL Infrastructure Long-Range Plan.	

2.0 ENVIRONMENTAL RESTORATION PROGRAM

2.1 Environmental Restoration Program Change Analysis

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
I	**Projects Analyzed in the 1995 EIS**			
1	**C-2.2 Remediation of Groundwater Contamination:** The proposed general project objective of the Remediation of Groundwater Contamination Project is to reduce contamination in the vicinity of an injection well that is located in the Test Area North Technical Support Facility. This project would reduce the concentrations of trichloroethylene, tetrachloroethylene, dichloroethylene, lead, strontium-90, and other contaminants in the groundwater surrounding the TSF-05 injection well at the Technical Support Facility.	The proposed general objective of the remediation has not changed. The project described is more accurately referred to as OU 1-07B. The objective of the OU 1-07B Record of Decision (ROD) signed in August 1995 was to reduce contaminant levels in the groundwater to drinking water standards (MCLs) by 2095 using plume extraction and treatment combined with hydraulic containment. The current remediation approach is enhanced bioremediation of the hot spot at the site of injection combined with pump and treat of the medial portion of the plume and monitored natural attenuation of the distal portion of the plume.	The project description given in the previous EIS is dated. The ROD was changed by an Explanation of Significant Difference (ESD) signed in November 1997 (INEEL/EXT-97-00931). The implementation of phases A and B, as described in the ROD, generated new information concerning the effectiveness of hot spot removal, plume definition, schedule and waste management requirements. The ESD defined treatability studies to determine if in-situ bioremediation or in-situ chemical oxidation would be more effective approaches to achieving the objectives of the ROD. The bioremediation treatability study was very successful.	Alternate ground water cleanup methods have resulted in positive impacts

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
		This remedy is more completely described in a Proposed Plan ("Proposed Plan for Operable Unit 1-07B - Final Remedial Action at the TSF Injection Well (TSF-05) and the Surrounding Groundwater Contamination (TSF-23)") sent out for public comment in November 2000. An amendment to the 1995 OU 1-07B ROD is expected to be signed in October 2001 after public comments on the proposed plan are fully considered.		
2	**C-2.3 Pit 9 Retrieval:** This project has been previously evaluated (DOE 1993a) and approved with a Finding of No Significant Impact (issued September 29, 1993). It was expected to be operable as of August 1996. This Pit 9 Interim Action would excavate and treat wastes contaminated with radioactive and hazardous substances disposed of at Pit 9 of the Subsurface Disposal Area of the RWMC. Included	The project described in the previous EIS is more accurately referred to as OU 7-10, which is the name of the CERCLA unit. Some documents have referred to this CERCLA unit as "Alt. Pit 9," although OU 7-10 is the preferred title. It involves the remediation of soils and buried waste in one pit of the subsurface disposal area of the RWMC. The current scope and objectives are best described in "Explanation of Significant	The proposed general objectives of Pit 9 remediation have not changed but the relationship of the Pit 9 remediation to the remediation of the entire subsurface disposal area has changed. The Pit 9 Interim Action Record of Decision was implemented through a 1994 fixed price subcontract with Lockheed Martin Advanced Environmental Systems. The contract was terminated for default by the INEEL	The impacts are due to the project being partially completed

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	in the project would be the design, construction, and operation of a double-containment retrieval enclosure, treatment facilities, waste storage facilities, and an office facility for project personnel.	Differences for the Pit 9 Interim Action Record of Decision at the Radioactive Waste Management Complex (September 1, 1998)." At this time it is not possible to forecast which wastes will be retrieved and which wastes will remain. The current sub-project, OU 7-10 Staged Interim Action has completed Stage I characterization of Pit 9 and delivery to the regulators of a retrieval system design to demonstrate retrieval of a 20 x 20 ft section of the pit. Stage II of the sub-project involves constructing the retrieval system and demonstrating retrieval. Stage III is the remediation of the entire pit. The comprehensive RI/FS is scheduled for delivery to the regulators for review in March 2002. The retrieval system design can not be implemented quickly enough to provide soil or waste samples to support	Management and Operations contractor in 1998. No retrieval or treatment of Pit 9 waste has occurred. The ROD was changed through an Explanation of Significant Difference (ESD) in January 1995 and changed again through an Explanation of Significant Difference in September 1998. The January 1995 ESD addressed cost estimates that had increased significantly for the selected remedy identified in the Pit 9 ROD. The ESD was implemented to present revised project cost estimates, including additional costs identified in the firm fixed-price subcontract for the operations, maintenance and capital cost elements. The September 1998 ESD addressed the fact that the INEEL management and operating contractor (LMITCO) had terminated the subcontract to the Pit 9 remediation contractor	

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
		RI/FS analysis. The DOE has requested a schedule extension that would permit demonstration of retrieval after the RI/FS is submitted and allow resources to be concentrated on the RI/FS. The Comprehensive ROD for WAG 7 will incorporate the remediation of Pit 9 and Pad A (OU 7-09) since any remedial approach will, at the least, involve a cap over the entire subsurface disposal area to prevent surface water infiltration. The schedule for specific actions required by the Pit 9 ROD is under discussion with the regulators.	(LMAES) for default. DOE adopted a contingency plan that would allow the DOE to meet its obligations for the remediation of Pit 9, without the participation of the subcontractor.	
3	**C-2.4 Vadose Zone Remediation:** The proposed general objective of the Remediation of Organic Contamination of the Vadose Zone Project is to prevent organic contaminant migration to the Snake River Plain Aquifer in groundwater contaminant concentrations	The proposed general objective of the remediation has not changed. The project described in the previous EIS is more accurately referred to as OU 7-08. It is the remediation of volatile organic compounds from the vadose zone beneath the subsurface	Since release of the ROD, there have been no operational differences.	Impacts are no different than previously analyzed

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	exceeding acceptable risk levels and/or Federal and State maximum contaminant levels. These contaminants are primarily volatile organic contamination found in the unsaturated hydrogeologic zone (vadose zone) beneath the Subsurface Disposal Area of the RWMC at the INEEL. The action is to remove and treat vapors of volatile organic contaminants from soils and underlying rock. Cleanup goals would be established as vadose zone contaminant concentrations that would not result in groundwater contaminant concentrations exceeding maximum contaminant levels or resulting in unacceptable risks to future groundwater users.	disposal area of the RWMC. The proposed actions described in the previous EIS were implemented and are continuing. Volatile organic compounds (VOCs), primarily carbon tetrachloride, trichloroethylene, tetrachlorethylene and 1,1,1-trichloroethane, are vacuum extracted from the vadose zone beneath the subsurface disposal area and destroyed through catalytic oxidation. At the end of FY 2000, 80,211 pounds of VOCs had been removed and destroyed. Performance goals for the project cannot be identified as discrete contaminant concentrations in the vadose zone because of: 1) The complex relationship between vadose zone concentrations and future groundwater concentrations, and 2) The lack of regulatory driven standards for the contaminants of concern in vadose zone soils. Operations will cease when the agencies agree that		

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
		the remediation goals have been met.		
II	**Balance of the Program in the 1995 EIS**			
1	The CERCLA process is a well-defined process for addressing environmental contamination. This process is identified in the 1995 EIS Section 2.2.6.1. This section lays out the basic process for performing remedial actions under CERCLA. The INEEL is divided into 10 Waste Area Groups to provide for more efficient management of these remedial actions. DOE has identified and currently is implementing the remediation process on areas at the INEEL site where hazardous substances have been or are suspected of having been released to the environment. Since 1986, about 500 suspected release sites have been identified at the INEL site for investigation. As of June 1994, over 270 of the suspected release sites	Four hundred and fifty nine (459) sites were identified in Table A.2 of the FFA/CO. Currently, 593 suspected release sites have been identified at the INEEL site for investigation. Four hundred and twenty two (422) of the suspected release sites have been designated as requiring no action, or no further action with institutional controls. A complete description of the ER program is available in Section 2.2 "Environmental Restoration Program Description." The following provides online information concerning the current state of specific remedial actions. The INEEL ER Disposition Maps are located at Internet Site: http://emi-	Additional sites have been identified and remediated reducing the amount of environmental contamination.	The ER program will cleanup environmental contamination and leave the environment in an approved long-term status

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	had been proposed or designated as requiring no further action.	web.inel.gov/dmaps2000.html followed by clicking on "ER" and then on "INEEL." The map provides information on Response Strategy, Media Type, Estimated Volume, Regulatory Process, Approved Decision, Processing, and Disposition. All project documents are considered to be part of the decision-making process. These documents are maintained in the "Administrative Record and Information Repository." This Repository is located at Internet Site: http://ar.inel.gov/		
III		**Other Parts of the Program Not Analyzed in the 1995 EIS**		
1		The groundwater analysis in the 1995 EIS did not address the CERCLA wastes. This risk to groundwater has now been addressed through the Composite Analysis Document ("Radioactive Waste Management Complex Low-Level Waste Radiological Composite Analysis," INEEL/EXT-97-01113,		

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
		September 2000). The WAG 7 RI/FS will do further analyses and modeling. The INEEL Consolidated Soils facility is planned as a part of the WAG 3 remedial action. This facility is built to RCRA subtitle C standards with a double liner, leachate collection system, and monitoring system for the disposal of contaminated soils from ER projects.		
IV		**Proposed Major Projects**		
1		There are no planned major projects in the ER program that are not previously analyzed.		

2.2 Environmental Restoration Program Description

The Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA, also known as Superfund) is intended to provide response to, and cleanup of, environmental problems not adequately covered by permit programs of the many other environmental laws. The Superfund Amendments and Reauthorization Act of 1986 (SARA) amended some provisions of CERCLA including allowing state participation in the identification of sites for the National Priority List and stipulating public participation in the selection of proposed remedial actions.

The INEEL was placed on the Superfund National Priority List in 1989. **The Environmental Restoration Program is usually dated from the signing of the Federal Facility Agreement and Consent Order (FFA/CO) by EPA Region 10, the State of Idaho and DOE-ID in December 1991**. The FFA/CO established the process by which CERCLA has been applied to the INEEL. The site is divided into 10 Waste Area Groups (WAGs), one of each of the seven facility areas (including Argonne-West and the Naval Reactors Facility), one for the above ground areas between the facilities and one for the groundwater under the site. The later two WAGs have been combined as WAG 6/10. Each WAG is further divided into Operational Units and the OUs are a grouping of specific contaminated sites. Each site is identified, characterized and the level of risk determined. Some sites have been determined to have such low risk to the worker, public and the natural environment that no action or no further action will be taken beyond the initial characterization or corrective action. Other sites have been determined to have risk high enough to require remediation. The CERCLA program has a bias for action. Several interim actions were begun while other sites were being characterized. The remediation approach for each site requiring remediation is described in a Record of Decision signed by all three parties to the FFA/CO after public hearings and consideration of public comments. The public participation requirements of CERCLA are considered to be equivalent to those required by NEPA.

Separate NEPA documentation is not required for selection, documentation, and implementation of CERCLA actions. This is a result of a Secretarial Memorandum issued on June 13, 1994, and entitled "National Environmental Policy Act Policy Statement." Section 2.E. states, in part," . . . the Department of Energy hereafter will rely on the CERCLA process for review of actions to be taken under CERCLA and will address NEPA values and public involvement procedures . . ." The section then explains the methodology to be followed to ensure that CERCLA documents fully incorporate NEPA values.

Comprehensive Records of Decision (ROD) will be agreed on for each WAG. At the end of FY 2000, Comprehensive Records of Decision had been signed for:

WAG 1, Test Area North, 1999
WAG 2, Test Reactor Area, 1997
WAG 3, Idaho Nuclear Technology and Engineering Center (INTEC), 2000
WAG 4, Central Facility Area, 2000
WAG 5, PBF/ARA, 2000
WAG 8, Naval Reactors Facility, 1998
WAG 9, Argonne-West, 1998

Each of these WAGs is under active remediation. A Comprehensive ROD is scheduled for signature on the area between the facilities in FY 2002, and on WAG 7, the Radioactive Waste Management Complex in FY 2003. The soils within the tank farm area at INTEC were separated from the other contaminated areas in WAG 3. The decision on how to remediate these soils is being coordinated with the High Level Waste EIS that will determine the approach and schedule for remediation of the tanks themselves. The final approach to groundwater protection will probably be determined after the decisions are made for both the RWMC and the tank farm since these areas represent the greatest threat to the aquifer.

The details of each ROD and all the characterization and analysis leading to the ROD are available in the CERCLA Administrative Record. This extensive set of documents can be viewed online at http://ar.inel.gov.

It is also available in hard copy in the INEEL Environmental Restoration Program office.

In general, remediations address three different contaminated media at the INEEL:

(1) The soils,
(2) The interbeds and perched water in the vadose zone, and
(3) The groundwater.

The program can be thought of as projects centered around the facility areas or as projects designed to remediate different media. Since the Administrative Record provides detail by the facility area, this section will summarize the program by media to provide a better understanding of the legacy issues.

2.2.1 Soil Remediation

Soils across the INEEL were contaminated by organic solvents, PCBs, RCRA listed metals and radioactive metals through spills, leaking transfer lines, shallow land burial waste disposal practices, septic system drain fields and liquid waste disposal ponds. Soils have been remediated in all of the INEEL WAGs. Remediation approaches have been:

(1) Removal to off-site commercial facilities for small amounts of mobile contaminants.
(2) Consolidation in the Idaho CERCLA Disposal Facility being built near INTEC for larger volumes of radioactively contaminated soils that meet the acceptance criteria
(3) Capping of disposal ponds and drainfields.
(4) Consolidation in the low-level waste cell at RWMC for soils and debris with low-level radioactive contamination.
(5) Phytoremediation using plants to remove cesium from soil. The harvested plants are then disposed of either in a low-level waste landfill or in a municipal landfill.
(6) Fencing and monitoring for sites with radioactive contaminants which will decay below levels of concern within the period of Federal control of the INEEL (a period assumed to be 100 years from the signing of the FFA/CO.)

All of the approaches that leave contamination in place include Institutional Control Plans formally agreed on in the RODs. All remediations are reviewed on a five-year schedule for effectiveness and continued protectiveness.

2.2.2 Vadose Zone

At RWMC and INTEC, surface releases of contamination have moved through the soils and are present in sufficient quantities in the interbeds at the 110 ft and 240 ft level to require specific remedial actions. At RWMC, the contaminants of concern are volatile organic compounds that were buried with the TRU wastes. These compounds are in the gaseous phase and are actively being removed through vapor extraction. At INTEC, the contaminants of concern are in solution in water perched under the facility above the 240 ft interbed. The remediation approach at INTEC is to dry out the vadose zone and trap the contaminants in place. The process water percolation pond and surface drainage through the tank farm soils were determined to be the major sources of water infiltration. Closure of the percolation pond by 2003 and changing surface drainage patterns are the current solution. If these are not sufficient to affect drying of the vadose zone, lining of the Big Lost River channel next to INTEC will be considered.

2.2.3 Groundwater

The groundwater beneath the INEEL was directly contaminated by injection wells used for waste disposal at TAN and INTEC. The resulting plume at TAN is primarily TCE with low levels of strontium and cesium. The area around the injection well is being remediated through bioremediation. The medial zone is being remediated by a pump and treat. The distal zone of the plume is being remediated through monitored natural attenuation.

Three separate contaminants from the INTEC injection well are being tracked: Iodine-129, Cesium and tritium. None of these contaminants is expected to reach the boundaries of the site at levels above drinking water standards. No active remediation approach is currently required.

Groundwater is monitored for nitrates in WAG 4 and for chromium in WAG 2.

Approximately 30 contaminants have been monitored in the groundwater beneath the Soil Disposal Area (SDA). This monitoring indicates that the groundwater beneath the SDA has been contaminated by several organic compounds that were buried in the SDA. More specifically, carbon tetrachloride, methylene chloride, and 1,1,1-trichloroethane have been detected in monitoring wells around the SDA at concentrations that equal or exceed drinking water standards. None of the contaminants beneath the SDA is expected to reach the boundary of the INEEL at concentrations that exceed these standards.

A more complete description of groundwater contamination that has been detected beneath the SDA can be found in Section 4.3 of DOE/ID-10569 (DOE, 1998, "Interim Risk Assessment and Contaminant Screening for the Waste Area Group 7 Remedial Investigation," DOE/ID-10569, August 1998).

2.2.4 Stewardship & Institutional Controls

The primary focus of stewardship in the INEEL's Environmental Restoration (ER) program is to ensure the remedies put in place through the CERCLA process remain protective of human health and the environment. To this end, institutional control plans are developed for each remediation project, in accordance with the CERCLA Records of Decision. These plans describe activities to control access to areas of residual contamination, conduct monitoring and surveillance of the remediated site, maintain any engineered controls such as landfill caps or containment structures, establish any appropriate land use restrictions, and retain and distribute relevant information about the contamination and cleanup efforts, as well as other types of activities. The ER program also provides for 5-year reviews of the remedies, in accordance with CERCLA.

The ER program is currently developing a strategy to consolidate stewardship responsibilities and activities under one plan as remediation activities at each individual WAG reach completion. Following the first 5-year remedy review for each WAG, the monitoring and surveillance activities for that WAG will be turned over to the WAG 10 team (the sitewide WAG). Eventually, this will result in one consolidated ER monitoring program for the INEEL. Further incorporation of other stewardship activities identified in other programs, such as Waste Management, High Level Waste, Infrastructure, and Spent Nuclear Fuel, into one management structure is anticipated to occur as planning is refined. Eventually, the final suite of stewardship responsibilities for the entire INEEL will be managed under one comprehensive program.

3.0 HIGH LEVEL WASTE

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs Current)	Environmental Impact of Operational Changes
I	***Projects analyzed in the 1995 EIS***			
1	**C-2.7 High-Level Tank Farm Replacement - Upgrade Phase (Ongoing Project):** Planning for this project was addressed as an ongoing project, and project-specific NEPA analysis, although summarized in the 1995 EIS, was performed separately in EA-0831 (06/93) with a FONSI issued (06/01/95). Planning for this ongoing project is to design, construct, and start up modifications to the existing INTEC high-level waste tank farm ancillary systems. These modifications would (a) provide compliance with the Notice of Noncompliance Consent Order (NCO) [compliance date is December 31, 1995], (b) provide compliance with the Notice of Violation Consent Order (VCO) [compliance date is December 31, 1996], and (c) resolve other maintenance and ALARA issues. Detailed upgrade requirements and actions are the following: 1)	**This project is to be implemented.** The principal objective was to achieve compliant secondary containment for numerous valve boxes associated with the High-Level Waste liquid tank farm. Since the ROD was released the tank farm valve box and secondary containment upgrade was completed in December of 1995.	Since release of the ROD, there have been no operational differences.	Impacts are no different than previously analyzed

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs Current)	Environmental Impact of Operational Changes
	Two valve boxes require secondary containment improvement. 2) Five valve boxes require a second form of leak detection. 3) Twenty-five valve boxes require replacement valves because of ALARA and other maintenance considerations. 4) Six valve boxes must have their tops raised to grade to accommodate the new valve systems and to allow the secondary containment improvements in two of the boxes. 5) The tile-encased pipe from Building CPP-641 to valve box C-29 must be replaced because of incompatibility of the secondary containment. 6) Tile-encased pipes at Building CPP-604 must be replaced because of incompatibility of the secondary containment. 7) The pressure/vacuum relief pipe from all eleven tanks must be replaced to resolve radiation safety and ALARA considerations. Project design was completed during the period 1991-1993. The construction contract was awarded in 1993.			

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs Current)	Environmental Impact of Operational Changes
	Construction activities began in 1993 and will conclude in 1996.			
2	**C-4.3.1 Tank Farm Heel Removal Project:** Pursuant to a Federal Facilities Compliance agreement among the EPA, the DOE, and the State of Idaho, use of five tanks must cease by March 2009, and of the remaining six tanks by June 2015. A RCRA closure of these eleven 300,000-gallon storage tanks and their ancillary systems located at the INTEC would be required following the cease-use provision. Planning for this project requires: (a) design, procurement, and installation of equipment and necessary tank system modifications to remove the 5,000-to 20,000-gallon heel (liquid and solids) from the storage tanks and transfer it to another tank or to the New Waste Calcining Facility (NWCF); and (b) support for subsequent closure. Construction and operational activities to accomplish this project were planned for the period 2000 - 2015.	**This project is to be implemented as a result of the ROD.** Since the release of the original ROD, planning has been impacted by the release of the HLW Draft EIS, EIS-0287D (12/99), and two modifications to the Notice of Non-compliance Consent Order (NON CO). In addition, this project has been incorporated into the Tank Farm Facility (TFF) RCRA closure program. Equipment to wash the solids and remove them with the existing or new jets is currently underway. The amended NON CO requires the pillar and panel tanks to cease use in 2003 and the rest of the tank farm in 2012. The TFF closure activities are scheduled to start in 2004 and complete in 2016.	Current planning requires the INEEL to end use of the first set of tanks six years earlier than originally planned, and the second set of tanks three years earlier than planned. However, construction and operational activities will take place during approximately the same time frame.	Impacts are no different than previously analyzed

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs Current)	Environmental Impact of Operational Changes
3	**C-4.3.2 Waste Immobilization Facility:** Planning for this project provides the processes and facilities to immobilize INTEC radioactive wastes (sodium-bearing liquid and solid calcine) into a form(s) suitable for permanent disposal at the geologic repository. The liquid sodium-bearing wastes are stored in the eleven 300,000-gal HLW tanks at the INTEC. The solid calcine material containing the encapsulated HLW residue is contained in the six partially filled calcine storage bins. Eight treatment options are analyzed utilizing four technologies and producing: 1) glass and grout, or 2) glass-ceramic waste forms. Planning and design activities would take place over the period 1996-2001. Construction would take place over the period 2002-2006. Operation of the resultant facility would be over the period 2008-2043. The waste form would be a mixed waste subject to RCRA and the FFCAct. The project is also subject to the terms of the	**The decision of this project was deferred** for a future determination, i.e., this project was not selected in the ROD, and there is no plan to move forward on this project. Since the release of the original ROD, planning has been impacted by the release of the HLW & FD Draft EIS, EIS-0287D (12/99). The project remains under active consideration. However, work will proceed only upon selection of the appropriate option in the HLW & FD ROD.	Since release of the ROD, there have been no operational differences.	This project was not selected for implementation in the ROD.

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs Current)	Environmental Impact of Operational Changes
	Court Order of 12/22/93 (and amended in 06/28/93), and the Notice of Noncompliance Consent Order (04/03/92), and its modification of 03/17/94. Should the Department go forward with this project, additional NEPA review would be performed. The project would be constructed at INTEC.			
4	**C-4.3.3 High-Level Tank Farm New Tanks:** Planning for this project provides sufficient replacement storage capacity for high-level liquid waste should the Department determine the need for such capacity. Additional capacity comprises four 500,000-gal stainless-steel tanks residing within an appropriate secondary containment barrier. This project was previously analyzed in EA-0831 and a FONSI issued only for the upgrades discussed in item I.1 (Project C-2.7). Although this project was supported in the original Notice of Noncompliance issued by the EPA on 01/28/90, the project has been	**This project was not selected in the ROD.** It was not included within the preferred alternative, and there is no plan to move forward on this project. Currently within the HLW program there is no ongoing effort to augment the tank farm with new tanks. The program will stop sending liquid to the tank farm tanks in 2005. All newly generated waste evaporated bottoms will be stored in RCRA compliant tankage in CPP-604.	Since release of the ROD, there have been no operational differences.	This project was not selected for implementation in the ROD.

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs Current)	Environmental Impact of Operational Changes
	in suspense since the cessation of fuel reprocessing was implemented in 04/92. This EIS anticipated planning and design activities through the period 1995-1996, with construction during the period 1996-2000, and operations beginning in 2001. The project would be constructed at INTEC.			
5	**C-4.3.4 New Calcine Storage:** Planning for this project would provide the eighth Calcined Solids Storage Facility (or, storage bin set) to provide additional storage for calcine solids produced by the operation of the New Waste Calcining Facility (NWCF). This new storage capacity (63,000 cu ft) would be required to allow the continued processing of liquid wastes in the NWCF until the final waste form is established and implemented. This EIS anticipated planning and design activities through the period 2001-2004, with construction during the period 2004-2006. The project would be constructed at INTEC.	**This project was not selected in the ROD.** It was not included within the preferred alternative, and there is no plan to move forward on this project. Since release of the original ROD, planning has been impacted by promulgation of the MACT Rule (2000), and two modifications to the Non-compliance Consent Order (NON CO). Original planning required operation of the NWCF until the vitrification plant was on line and the additional bin set was needed. However, the EPA promulgated the MACT Rule. The MACT Rule, as incorporated into the NON CO, would require the NWCF to undergo extensive and costly modifications without	Since release of the ROD, there have been no operational differences.	This project was not selected for implementation in the ROD.

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs Current)	Environmental Impact of Operational Changes
		certainty in attaining the necessary operational parameters. Currently, the NWCF is not operating and the need for additional space is not required.		
6	**C-4.3.5 Radioactive Scrap/Waste Facility:** Planning for this project provides an upgrade to an existing Argonne National Laboratory-West (ANL-W) dry spent fuel storage facility to allow interim storage of high-level waste (HLW). The augmented facility, the Radioactive Scrap/Waste Facility (RSWF, ANL-771), would be the recipient of HLW from the spent nuclear fuel treatment operations of the Fuel Conditioning Facility. Construction activities include relocating steel cylindrical in-ground liners fabricated during the 1960-1978 time period into new cathodically protected steel liners installed in non-corrosive sand. The upgrades would occur within the existing facility fence. Upgrades would be complete and the facility operational during 1997.	**The decision of this project was deferred** for a future determination, i.e., this project was not selected in the ROD. Since release of the ROD, planning has been impacted by the release of two other documents: 1) EA-1148 (05/96) and 2) EIS-0306 (07/00). The upgrades were carried out as described in the 1995 EIS, and were completed in 1998.	The project was completed as described in the 1995 EIS and ROD. There are no differences in operations	Impacts are no different than previously analyzed

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs Current)	Environmental Impact of Operational Changes
7	**C-4.10.1 Calcine Transfer Project (Bin Set #1):** Planning for this project would provide the necessary facilities and equipment for the safe retrieval and transport of 8,000 cu ft of HLW calcine from existing storage at Bin Set #1 to a fully qualified second generation storage bin. Alterations would include erection of a containment structure, penetrations of the existing structure (vault), and pneumatic retrieval equipment. Planning and design activities would take place during the period 1994-1999. Construction activities would take place during the period 1999-2004, and transfer operations would take place during the period 2006-2007.	**This project is to be implemented as a result of the ROD.** Since the release of the original ROD, planning has been impacted by the release of the HLW Draft EIS, EIS-0287D (12/99). This project remains under consideration, however there is no activity.	Since release of the ROD, there have been no operational differences.	The impacts are a result of the project not being completed
II	***Balance of the Program in the 1995 EIS***			
	Since the HLW & FD EIS will significantly change the HLW program, it was not deemed necessary to perform this analysis.			
III		***Other Parts of the Program***		

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs Current)	Environmental Impact of Operational Changes
		not Analyzed in the 1995 EIS		
	Not Applicable			
IV		***Planned Major Projects***		
	Not Applicable			

4.0 INFRASTRUCTURE

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
I	**Projects Analyzed in the 1995 EIS**			
1	**C-2.11 Health Physics Instrument Laboratory (HPIL):** This project will provide the design, construction, and operation of a replacement facility to accommodate the Health Physics Instrument Lab at the INEEL. The project plans construction and operation of a technologically up-to-date replacement facility that will safely provide portable health physics monitoring instrumentation and direct reading dosimetry procurement, calibration, and maintenance, along with research and development support services to the INEEL and others.	The HPIL project is selected in the ROD as a planned project. Currently, the HPIL Line Item Construction Project is approved and funded. Construction began in the September 2000 and is scheduled to be completed in March 2003. Planned to be operational by May 2003. An EA was completed for this project titled, "HPIL Replacement of the Idaho National Engineering and Environmental Laboratory – (DOE/EA-1034), May 1995".	From a proposed and planned status in 1995, HPIL has moved into construction initiation in FY-2000.	Impacts are no different than previously analyzed
2	**C-2.12 Radiological and Environmental Sciences Laboratory Replacement (RESL):** This project was planned to provide for the design, construction, and	The RESL replacement project is selected in the ROD as a planned project. The ROD stated that further analysis might be needed. Final decisions will be made pending	No change. This project is still in the proposal/planning stage as a LICP for FY-2004.	Impacts are no different than previously analyzed

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	operation of replacement test, office, and storage facilities with the capability to support environmental surveillance programs, oversee certain DOE contractor activities nationwide, and provide services as a DOE standardization laboratory. NEPA documentation for the project was essentially completed.	further project definition, funding priorities, and further reviews under NEPA. Currently, there has been no change in status from 1995.		
3	**C-4.9.1 Industrial/Commercial Landfill Expansion:** This project was proposed to provide an additional 225 acres of land for INEEL industrial solid waste disposal through the year 2025 as a minimum.	This project was selected in the ROD as a planned project. The landfill expansion was approved and public notification of the decision was performed in May 1999. Some expansion has taken place.	Landfill expansion has been analyzed and approved. The decision was made to proceed. Incremental increases have taken place to approximately 22 acres.	Impacts are no different than previously analyzed
4	**C-4.9.2 Gravel Pit Expansions:** This proposed project in 1995 was planned to expand existing gravel borrow pit operations to provide gravel and fill material for future road and other construction at the INEEL from 1995 to June 2005. Use considerations were for gravel and fill material in support of new construction projects. Existing pits include	This project was selected in the ROD as a planned project. The INEEL Road Rehabilitation Project (LICP) is ongoing and used gravel from the Borax Pit. Various projects at TRA have used gravel from the nearby Monroe Blvd pit. Portions of both the Borax Pit and the TAN T-28 pit were graded, sloped, and seeded. Future gravel use is planned to be taken from the	The current gravel sources are identified in the 1995 EIS. There is no change.	The New Silt/Clay Source Development EA provided for impacts greater than previously analyzed

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	a total of eight as follows: TAN pit, Lincoln Blvd pit, NRF pit, TRA/CPP pit, CFA pit, BWR pit, RWMC pit, RWMC Spreading Area B pit.	CFA pit and the Monroe Blvd. (TRA) pit. Removal of silt and clay from Spreading Area B has concluded, with seeding and reseeding being performed. Two additional areas for replacing Spreading Area B are being explored. New Silt/Clay Source Development and Use at Idaho National Engineering and Environmental Laboratory DOE/EA -1083 was completed for new silt/clay source development.		
5	**C-4.9.3 Central Facilities Area Clean Laundry and Respirator Facility:** This proposed project was planned to either resume operations, decontaminate and decommission the facility, or to decontaminate and reuse the building for another purpose.	This project was selected in the ROD as a planned project, however decisions regarding this project will be made in the future pending further project definition, funding priorities and any further appropriate review under NEPA. Currently the building is being decontaminated to prepare for either demolition or retrofit for another purpose.	Building is being decontaminated to prepare for future use options. Definite plans for future use have not been finalized.	Impacts are no different than previously analyzed
II	***Balance of the Program in the 1995 EIS***			
1	**Replacing site wide capital equipment (GPCE):** The General Purpose Capital Equipment (GPCE) program, annually prioritizes and	The GPCE program is funded approximately $7M per year to purchase priority general-purpose equipment needs.	No change	Impacts are no different than previously analyzed

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	procures site wide multi-program equipment needs. Equipment needed for specific program requirements is purchased through the individual program.			
2	**Environmental Monitoring & Quality Assurance:** DOE has responsibility to provide environmental monitoring and ensure that quality control and quality assurance programs are in place.	Monitoring results are given in the discussion for each environmental discipline. The scope of both of these programs is ongoing and has not appreciably changed.	The environmental monitoring program has added monitoring wells as needed; there has been no significant change. The Quality Assurance program has advanced significantly with the implementation of the Price Anderson Rule and NRC QA requirements.	Impacts are no different than previously analyzed
3	**Buildings and Facilities:** The INEEL consists of a number of current facilities, buildings, roads, and utilities in support of program operations.	The INEEL consists of 533 buildings representing 5,018,635 square feet. The buildings are categorized as laboratories, service buildings, office/administrative buildings, production/plant space, storage facilities, and reactors. The overall condition of INEEL buildings is listed as good, with 71% of the square footage considered in fair to good condition. INEEL buildings range in age from new to 58 years old, with an average age of 24 years. (For more details see the "Infrastructure Long-	The number of buildings and building square footage on the site has increased since the 1995 EIS as accounted for in the project specific analysis. Where facilities have been built that were not included in the 1995 EIS, specific NEPA analysis was performed.	Impacts are no different than previously analyzed

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
		Range Plan", August 2000 INEEL/EXT-2000-01052).		
III		***Other parts of the program not analyzed in the 1995 EIS***		
1	The scope of the 1995 EIS did not cover all aspects of the Infrastructure program. The items that would fall into this category for the Infrastructure Program are outside the scope of this review.			
IV		***New Planned Major Projects***		
1	Not Addressed	<u>Planned Line Item Construction Projects are as follows</u>: Sitewide INEEL Information Network, Subsurface Geoscience Laboratory, INEEL Infrastructure Renovation, INTEC Cathodic Protection System Expansion, INTEC Consolidated Laboratory Facility, Flood Control Upgrades, and INTEC Fire Alarm Life Safety Upgrade. NEPA determinations will be completed for each project.	No change	

5.0 SPENT NUCLEAR FUEL

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
I	**Projects Analyzed in the 1995 EIS**			
1	**C-2.1 Test Area North Pool Fuel Transfer (Ongoing Project):** Planning for this project was addressed as an ongoing project, and project-specific NEPA analysis, although summarized in the 1995 EIS, was performed separately. Planning for this ongoing project supports two subprojects and requires transfer of: 1) TMI-2 core debris from the TAN-607 basin to newly constructed retrievable interim dry storage located at TAN or INTEC; and 2) LOFT and DOE-owned Commercial SNF from the TAN-607 basin to established dry storage at TAN. TMI debris was to be dewatered, dried with a heated system and stored at either location. LOFT and Commercial SNF would be washed, drip-dried and stored at TAN-791. If a new facility were built at INTEC, construction was	Since release of the original ROD, planning has been impacted by the release of nine other documents: 1) the Idaho Settlement Agreement (10/95); 2) Amended ROD (02/96); 3) EA-1050 (05/96); 4) EA-1217 (08/97); 5) ISFSI Final EIS NUREG 1626 (03/98); 6) NRC License (03/99); 7) the LCPP for PBS ID-SNF-103 (11/99); 8) the FY01 DWP (09/00); and 9) Letter of Instruction, DOE-ID to BBWI (07/00). The newly constructed, NRC-licensed Independent Spent Fuel Storage Installation (ISFSI) located at INTEC began operations 03/99 for receipt of TMI debris. The facility including the pad and security fence occupies less than 0.6 acres on a two-acre exclusion zone. The 29th and final TMI shipment was completed 04/20/01. Milestone completion was confirmed in a letter to the State (INTEC-SNF-01-027,	The dry storage of TMI debris has been determined to be in a newly constructed NRC-licensed ISFSI. This is within original planning except that NRC-licensing of an ISFSI was not considered under the original ROD. Operation of the new facility and transfer of the TMI debris from TAN-607 commenced in 03/99, just over one year later than considered under the original ROD. However, the period of transfers was reduced by one year. The size of the facility was reduced by 0.2 acres, and the number of transfers was reduced by 20. All epoxied materials have been transferred to the LOFT and commercial SNF subproject. While separate management and the potential for treatment of epoxied SNF and TMI debris was not considered under this project, item I.9 of this summary (project C-4.1.8)	The site has a smaller footprint and received fewer shipments of TMI debris than planned.

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	planned during the period of 1995-1996. The 1995 EIS provided a Project Data Sheet that analyzed new construction only at INTEC. Operations were scheduled to start in 1997 with transfers through 2000. The new TMI pad was analyzed to occupy 0.8 acres and receive 49 transfers.	04/20/01). Under the approved scope of the FY01 DWP, planning has begun for storage of LOFT and Commercial SNF at the established dry storage pad, TAN-791. Under the terms of the LCPP, epoxied SNF and epoxied TMI debris will be packaged and stored separately at TAN-607 until it undergoes final disposition prior to shipment to the geologic repository.	was designed to show treatment capability for all SNF types including epoxied fuels.	
2	**C-4.1.1 Expended Core Facility Dry Cell Project:** This project requires construction of the Expended Core Facility Dry Cell Project for the management of naval SNF at the NRF. The purpose of this project is to provide a more efficient facility for: 1) fuel examination activities, and 2) preparation of naval SNF for shipment to INTEC for interim storage. The construction was planned to take place during the period 05/96 - 05/98 with operational startup 08/98. A total of 728 shipments to INTEC were analyzed.	This project is to be implemented as a result of the ROD. Since release of the original ROD, planning has been impacted by the release of three other documents: 1) The Navy Container System EIS EIS-0251 (11/96); 2) ROD-1 62FR1095 (01/08/97); and 3) ROD-2 62FR23770 (05/01/97). The Navy completed construction of the original ECF expansion described in the FEIS. However, as described in the Naval SNF Container System FEIS and associated RODs, the modification of the ECF was revised to incorporate the changes needed to	The additional facilities needed to fully implement the decisions reached as a result of the Naval SNF Container System FEIS are under construction. Operational use of these facilities has been rescheduled to support efficient construction and testing of the integrated system. With the suspension of SNF transfers to INTEC for storage after FY02, the Navy expects an estimated 515 transfers, a reduction of from 60 to 213 total transfers for the period under consideration (NR:IBO-01/062; 04/05/01).	Slightly negative impacts to land use and positive impacts to transportation

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
		implement dry storage and eventual shipment of naval SNF to the geological repository.		
3	**C-4.1.2 Increased Rack Capacity for CPP-666:** Planning for this project requires replacing storage racks and reracking SNF in pools 1, 5 and 6 at CPP-666 for the purpose of increasing storage capacity. This project was scheduled for the period 1994-1999.	This project is to be implemented as a result of the ROD. However, since release of the original ROD, planning has been impacted by the release of two other documents: 1) the Idaho Settlement Agreement (10/95); and 2) the Amended ROD (02/96). With reduced storage needs, reracking was required and achieved only for Pool 1. Additional reracking could proceed if necessary.	Since release of the ROD, only Pool 1 was reracked. Pools 5 and 6 were not reracked.	Small positive impacts
4	**C-4.1.3 Additional Increased Rack Capacity (CPP-666):** Planning for this project requires replacing storage racks and reracking SNF in pools 2, 3 and 4 at CPP-666 for the purpose of increasing storage capacity. This project was scheduled for the period 1995-1997.	The decision on this project was deferred for a future determination, i.e., this project was not selected in the ROD, and there is no plan to move forward on this project.	Since release of the ROD, there have been no operational differences.	Small positive impacts
5	**C-4.1.4 Dry Fuel Storage Facility, Fuel Receiving, Canning/Characterization, and Shipping:** Planning for this project requires	**This project is to be implemented as a result of the ROD.** The ROD anticipated operation in 2004. Since release of the ROD, the	Management of the subject SNF (to be repackaged and stored) will be in a newly constructed NRC-licensed ISFSI. This is within original	Small positive impacts

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	construction of a one or two facility project for managing the majority of DOE-owned SNF: a) Fuel Receiving, Canning/Characterization, and Shipping Facility; b) Dry Fuel Storage Facility. The project would provide capability to receive, characterize, treat (if necessary), repackage and dry store SNF until shipment to the geological repository could begin. Construction was planned during the period 1999-2008, with operational start-up in 2008. The facility would occupy or disturb approximately 15 acres.	project has been redefined from a traditional LICP to be built and operated by the M&O to a privatized procurement to be built, NRC-licensed, and operated by a separate contractor. The NRC will perform additional NEPA analysis for the facility. The contract was awarded on 05/19/00. The project will be a single facility under construction from 07/03-06/05 and operational in 06/30/05. The facility will occupy or disturb no more than 7.8 acres. The current contract calls for reduced SNF handling and storage expectations. In addition, the Amended ROD reduces the expected fuel receipts by 807 shipments, thereby reducing the necessary storage capacity. However, long-term planning requires facility expansion and restores management of most SNF allowed under the Amended ROD.	planning except that neither NRC-licensing of an ISFSI, nor privatized construction and operation was considered under the original ROD. Operation of this new facility is expected to begin three years earlier than planned, but with a much shorter constuction time reduced from nine to three years. The size of the facility or the disturbance will be reduced by 7.2 acres. The amount of SNF stored at this location is likely to be reduced. A labor agreement (no-layoff due to impacts from the privatized project) was negotiated with the local SNF operators union (Labor Agreement). This will have no NEPA impacts.	
6	**C-4.1.5 Fort St. Vrain Spent Nuclear Fuel Receipt and Storage:** Planning for this project requires transfer of Fort	**This project is to be implemented as a result of the ROD.** However, since release of the original ROD,	The 244 shipments to the INEEL of FSV SNF are delayed until the period 2024-2027, when they will be	Slightly positive impacts

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	St Vrain SNF from storage in Colorado to the INEEL for long term interim storage. The project was planned for the transfer of 244 shipments of SNF to CPP-603/IFSF during the period 1996-1997.	planning has been impacted by the release of four other documents: 1) the Idaho Settlement Agreement (10/95); 2) the Amended ROD (02/96); 3) the NRC license; and 4) the NRC EA and FONSI for license transferral. As a result of the Amended ROD, FSV transfers to the INEEL (for the purpose of long-term interim storage) were entirely eliminated. Transfers to the INEEL, for the purpose of repackaging for shipment to the repository, will begin only when "a permanent repository or interim storage facility for spent fuel located outside of Idaho has opened and is accepting spent fuel from the INEL."	received and repackaged at INTEC for immediate shipment to the geologic repository. The SNF currently resides in a NRC-licensed ISFSI managed by DOE at FSV Co. NEPA analysis for continued SNF storage in Co. has been performed by the NRC.	
7	**C-4.1.6 Spent Fuel Processing:** This project was designed to restore INEEL's capability to process SNF in two phases. Phase 1 would have restarted the Fluorinel Dissolution Process (FDP) facility in CPP-666, and the Fuel Processing Building (CPP-601) to run from 1997-2000. The FDP would process zirconium fuels and CPP-601 would extract uranium and	This project was not selected in the ROD. It was not included within the preferred alternative, and there is no plan to move forward on this project.	Since release of the ROD, there have been no operational differences.	This project was not selected for implementation in the ROD.

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	make product. Phase 2 would then have shut down the FDP and CPP-601 to provide upgraded and new facility capabilities at the FDP and elsewhere at two to three times the previous throughput. The upgrades would include: 1) addition of an electrolytic dissolution process to permit processing of aluminum and stainless steel fuels; 2) completion of the suspended Fuel Processing Restoration (FPR) project (CPP-691) for increased uranium extraction capability; and 3) new capability for graphite fuel processing. Construction was planned during the period of 1999-2006.			
8	**C-4.1.7 Experimental Breeder Reactor-II Blanket Treatment:** This project would modify the Fuel Cycle Facility (FCF) at the ANL-W site to treat Experimental Breeder Reactor-II (EBR-II) Blanket SNF assemblies for safe storage. Treatment, known as electrometal-lurgical treatment (EMT) and developed for the recycling of	**The decision on this project was deferred** for a future determination, i.e., this project was not selected in the ROD. However, since release of the original ROD, planning has been impacted by the release of four other documents: 1) EA-1148 (05/96) and its FONSI; 2) the final EIS for management of sodium-bonded SNF (EIS-0306F, 07/00); 3) its ROD 65	Since release of the ROD, the scope of treatment is approximately the same (25 to 26 MTHM), but the time of treatment (2 to 13 years) has increased. With the release of the new project ROD (Item 3), there has been one operational difference from the analysis provided in Item 2. The project ROD and the Implementation Plan (Items	Impacts are no different than previously analyzed

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	EBR-II sodium-bonded (Na-Bonded) driver assemblies, would separate depleted uranium (DU) from radio-active waste and neutralize reactive sodium metal. The project would modify the FCF element chopper to handle larger assemblies, and add a high-throughput electrorefiner to handle the greater DU content of the blanket assemblies. Facility modification was planned for the period of 1995 -1996. Treatment of approximately 22 MTHM of EBR-II blanket fuel would take place during the period 1997-1998. [ANL-W anticipated continued reprocessing of driver assemblies (3 MTHM) until completion, but the EBR-II Reactor and the Integral Fast Reactor Program were terminated in 1994.]	FR 56565 (09/00); and 4) ANL-W Spent Fuel Treatment Plan (F0000-0061-ES-00, 10/00). Item 1 allowed a demonstration project for the use of EMT for the treatment of 1.6 MTHM of EBR-II blanket and driver SNF. Items 2 & 3 analyzed and selected EMT for the treatment of all remaining Na-bonded fuels with the exception of Fermi-1 blanket, or about 26 MTHM of SNF (43% of the total analyzed). Treatment for <u>all</u> Na-Bonded SNF (60 MTHM), evaluated as Alternative 1, required an operational period of 13 years. Item 4 implements the program for the same period for just 43% of the SNF. This requires a reduced work force from that anticipated in Item 2.	3&4) require a reduced work force over the case analyzed in the project EIS (Item 2). This work force is, however, commensurate with the planning of the 1995 EIS.	
9	**C-4.1.8 Electrometallurgical Process Demonstration:** This project is designed to allow the demonstration and testing of a new SNF management process. The process is electrometallurgical treatment (EMT) for	**The decision on this project was deferred** for a future determination, i.e., this project was not selected in the ROD, and there is no plan to move forward on this project.	Since release of the ROD, there have been no operational differences.	Impacts are no different than previously analyzed

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	conditioning SNF for energy recovery or ultimate disposal in the geologic repository. The demonstration project would treat any and all fuel from all naval and DOE types in any condition (unstable or failed), and require only modest expansion of capabilities at existing facilities. The demonstration would proceed at the Hot Fuel Examination Facility and Fuel Cycle Facility at ANL-W. The modifications were scheduled for the period of 1994-1996, with operations during the period 1996-2024.			
II	***Balance of the Program in the 1995 EIS***			
1	**Consolidation of Non-AL SNF at the INEEL:** Planning for this activity requires consolidation of non aluminum-clad SNF at the INEEL in the amount of 1,940 shipments from across the DOE complex, certain government facilities, as well as domestic and foreign research reactors to the INEEL. This will result in the INEEL having managed approximately 426 MTHM of	**This project is to be implemented as a result of the ROD.** However, since release of the original ROD, planning has been impacted by the release of the Amended ROD (02/96). The number of shipments planned for the INEEL were reduced by 807 to 1,133 shipments. FSV transfers for long-term interim storage at the INEEL were entirely eliminated, RL transfers were almost entirely eliminated,	Less SNF handling activities are required.	Positive impacts are due to a greatly reduced number of shipments

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	SNF during the period from 1995 to 2035.	and reductions were made to expected shipments from four other sources.		
2	**Transfer of aluminum-clad SNF located at the INEEL to SRS:** Planning for this activity requires making 114 shipments of aluminum-clad SNF from the INEEL to the Savannah River Site (SRS) during the period 1995-2035.	This project is to be implemented as a result of the ROD. However, since release of the original ROD, inclusion of this activity has also been incorporated into a LCPP.	Since release of the ROD, there have been no operational differences.	Impacts are no different than previously analyzed
3	**Continued interim storage of naval SNF at the INEEL:** Planning for this activity requires continuing the established program of naval SNF coming to the INEEL for examination at the ECF, with transfer and placement of the packaged SNF into interim storage at INTEC prior to shipment to the permanent geological repository. Analysis reviewed potential receipts of 728 transfers from the NRF to INTEC.	**This project is to be implemented as a result of the ROD.** Since release of the original ROD, planning has been impacted by the release of three other documents: 1) The Navy Container System EIS EIS-0251 (11/96); 2) ROD-1 62FR1095 (01/08/97); and 3) ROD-2 62FR23770 (05/01/97). Impacts are discussed elsewhere (see project I.2; C-4.1.1). This activity has been incorporated into a LCPP. These RODs determine the management system to be employed for naval SNF (dual-purpose canisters) and the location of this management (the ECF at the NRF). The ROD for the 1995 EIS anticipated 575 transfers from	Since release of the ROD, the location for interim storage of naval fuel has changed from INTEC to the NRF, thereby reducing the number of onsite round-trip shipments by 213 transfers from the original analysis, and by 60 transfers from the ROD.	Impacts are no different than previously analyzed

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
		the NRF to INTEC. Now, receipts of naval SNF into INTEC for storage will likely complete in FY02. INTEC will begin transferring naval SNF back to the ECF during FY03. Current plans anticipate no more than 515 total transfers during the relevant time period (NR:IBO-01/062; 04/05/01).		
4	**CPP-603 Basins Emptied of SNF:** Planning for this activity requires transfer of all SNF from wet storage at the CPP-603 basins to dry storage at CPP-603/IFSF and wet storage at CPP-666, as appropriate, by 12/31/00. The SNF movements for this activity were prescribed within a Court Order of 12/22/93, amending the Order of 06/28/93, Civil No. 91-0035-S-HLR, Civil No. 91-0054-S-HLR.	**This project is to be implemented.** Planning for this project was begun prior to the development of the scope of this EIS. Since release of the original Record of Decision (ROD), planning has been impacted by the release of three other documents: 1) the Idaho Settlement Agreement (10/95); 2) the LCPP for PBS ID-SNF-103 (11/99); and 3) the FY00 WP ID SNF-103 (09/99). The last SNF FHU was removed from the CPP-603 basins 04/28/00, eight months ahead of schedule. This activity is complete. Milestone completion was confirmed in a letter to the State (INTEC-SNF-00-022, 05/18/00).	Since release of the ROD, there have been no operational differences.	Impacts are no different than previously analyzed
5	**Consolidation of INEEL SNF storage at the INTEC:**	**This project is to be implemented.** Planning for	Since release of the ROD, there have been no	Impacts are no different than previously analyzed

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	Planning for this activity requires the INEEL to consolidate SNF storage from various locations at the INEEL to the INTEC as funding allows during the period 1995-2035.	this project was begun prior to the development of the scope of this EIS. Since release of the original Record of Decision (ROD), planning has been impacted by the release of four other documents: 1) the Idaho Settlement Agreement (10/95); 2) Amended ROD (02/96); 3) the LCPP for PBS ID-SNF-103 (11/99); and 4) the FY01 DWP (09/00). Consolidation is proceeding as planned. DOE-ID has been working toward the Idaho Settlement Agreement milestone for removal of all legacy SNF from the INEEL by 01/01/35. To meet this milestone, shipments to the geologic repository are currently planned to begin by 2015. Planners for the repository, however, are considering receiving shipments as early as 2010 (Draft Schedule, 12/21/99; see NSNF Program Support Web site: http://nsnfp.inel.gov/program/draftSS/).	operational differences.	
III		***Other parts of the program not analyzed in the 1995 EIS***		
	Not Applicable			

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
IV		***Planned major projects***		
	Not Applicable			

6.0 WASTE MANAGEMENT

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
I	**Projects Analyzed in the 1995 EIS**			
1	**C-2.8 Transuranic Storage Area Enclosure and Storage Project (Ongoing Project):** This project was previously evaluated (DOE 1992) and approved with a Finding of No Significant Impact (issued May 18, 1992). The Project consists of constructing and operating the Retrieval Enclosure, Waste Storage Facility (WSF) (which consists of multiple storage modules), support facilities (an operations control building) and associated upgrades to utilities (which consists of fire water, potable water, electrical power, communications, alarms, and sewage). This project summary describes two separate construction projects at the Radioactive Waste Management Complex (RWMC), (Transuranic Storage Area Retrieval Enclosure Project (TSA-RE) and the Storage Facility	This project is to be implemented as a result of the ROD. All elements analyzed in the planned NEPA were constructed, with the final element completed in 1997. The *INEL Transuranic Program Strategy Value Engineering Results*, dated 8/96, recommended retrieval operations could be delayed by several years. The DOE-ID *Evaluation of Feasibility Studies for Private Sector Treatment of Alpha and TRU Mixed Wastes*, dated 5/95, recommended retrieval by a private sector contractor as an option. DOE-ID awarded a contract to a privatized contractor (for a project called the Advanced Mixed Waste Treatment Project, AMWTP; see item # **I**.4 C-4.4.1 below), which includes retrieval operations. Retrieval is proposed to commence in 2002 for a 6-year duration. The analysis of their retrieval	The Retrieval Enclosure construction was completed in 1997 vs. 1996 and placed in a standby mode for retrieval operations to be performed by the AMWTP vs. the M&O Contractor. Less storage modules were built than analyzed. The Settlement Agreement requires all TRU and alpha contaminated low-level waste to be out of Idaho by 12/31/2018. This results in decreased risks for the M&O Contractor due to decreased storage modules, and retrieval operations transferred to the AMWTP, see C-4.4.1.	Positive impacts are due to: less facilities being built than analyzed and the TSA-RE facility not performing the analyzed operations

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	Project). Construction was proposed for 1993 -1996. The proposed retrieval operation, at an approximate rate of 5200 cubic meters per year, would have an approximate duration of 10 years. It was proposed the storage modules would be in service from 1994 - 2025.	method is contained in the AMWTP EIS (DOE/EIS-0290). All of the storage modules analyzed in the earlier NEPA action were not constructed, and there are no plans to construct any in the future. It is anticipated that some of the waste retrieved out of the TSA-RE facility by the AMWTP will not meet their WAC. This waste to be turned over to DOE-ID for further action.		
2	**C-2.9 Waste Characterization Facility (Ongoing Project):** This planned project would provide the design, construction, and operation of the Waste Characterization Facility (WCF) at the RWMC. This project would provide facilities to open containers of contact-handled transuranic waste, reclassified low-level waste, and mixed low-level waste; obtain and examine samples; and repackage the characterized waste in an environment designed to contain alpha-type radiation. Construction was proposed from 1995 - 1997 with	This project is to be implemented as a result of the ROD. The DOE-ID *Evaluation of Feasibility Studies for Private Sector Treatment of Alpha and TRU Mixed Wastes*, dated 5/95, included waste characterization to be performed by the AMWTP. Since a contract for the AMWTP was awarded by DOE-ID, see item # I.4 C-4.4.1 below, which includes characterization, the WCF was designed but not constructed. The visual examination portion of the characterization required for past and future shipments (until 3100 cubic meters project is complete) of TRU waste to	Through the completion of the 3100 cubic meter project scheduled for 12/31/2002, the visual examination portion of the characterization will be performed at ANL-W vs. RWMC. The waste is transported between RWMC and ANL-W for the visual examination portion of the characterization, and then transported back to RWMC for shipment preparation out of Idaho. The balance of the 65,000 cubic meters will be performed at the AMWTP, scheduled to commence in 2003. The AMWTP is located at RWMC.	Positive impacts are due to avoidance. The negative traffic and transportation impact is due to overland transportation of wastes to ANL-W and back to RWMC for characterization.

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	characterization operations proposed from 1998 - 2023.	the Waste Isolation Pilot Plant (WIPP) was/is being performed at the WIPP Waste Characterization Area located in the Hot Fuel Examination Facility at ANL-W. The waste is currently transported via an unpaved road in a flat bed truck w/out TRUPACTS for characterization, then back to the RWMC for loading to ship to WIPP. Initially, the waste was transported to ANL-W in TRUPACTS via U. S. Route 20.		
3	**C-2.10 Waste Handling Facility:** This project included construction of a 7,000 square feet Building for sorting, consolidating and repackaging municipal, hazardous, and radioactive waste. The project was planned to be located on the north side of the existing ANL-W site. Construction was proposed from 1996 - 1997 with operations proposed from 1997 - 2017.	The decision on this project was deferred in the ROD for a future determination. The project was never implemented and there are no plans for its implementation. The Contaminated Equipment Storage Facility, an existing facility at ANL-W, was modified to accommodate the radioactive waste sorting and repackaging functions originally planned for the Waste Handling Facility. This facility modification was categorically excluded from further NEPA review by DOE-CH in 1998.	The sorting, consolidating and repackaging of municipal, hazardous, and radioactive waste continues at ANL-W in various existing facilities. The functions are carried out in much the same manner as they were at the time of the ROD.	The positive impacts reflect impacts that didn't occur due to avoidance
4	**C-4.4.1 Private Sector Alpha-Contaminated Mixed Low-**	This project was planned in the ROD, however the decision on	This project will be located on the INEEL at RWMC vs. an off	The positive impacts are due to locating the facility inside

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	Level Waste Treatment: This project would provide for the processing of alpha-contaminated mixed low-level wastes, transuranic waste, and possibly small amounts of low-level waste and mixed low-level waste by the private sector. The expected throughput volumes would be approximately 2,000 cubic meters per year of alpha-contaminated low-level waste and 4,000 cubic meters per year of transuranic waste, for an approximate total throughput of 36,000 cubic meters. The most likely bulk volume treatment processes would include a combination of thermal treatments involving desorption and high-temperature oxidation/combustion of organic, followed by stabilization of ash and solid residues. In this EIS the basis was that this project would be located outside the INEEL. Construction was proposed 1997 - 2000, with a proposed operational period of 2000 - 2005.	this project was deferred for a future determination. A DOE-ID contract was issued to British Nuclear Fuels, Inc. to retrieve, sort, characterize and treat the 65,000 cubic meters of alpha-contaminated LLW, TRU wastes, and MLLW under a privatized project titled the AMWTP. This project will be located at the RWMC in the TSA. An EIS (DOE/EIS-0290), dated 1/99, was performed on this project with a ROD issued April 1999. The EIS analyzed an additional 120,000 cubic meters of TRU, alpha-contaminated LLW and MLLW for treatment from DOE onsite and offsite generators. Technologies analyzed in the various alternatives included: super compaction, macro encapsulation, incineration, micro encapsulation and vitrification. The incinerator analyzed in the EIS was placed on hold by the Secretary of Energy in March 2000 and directed the formation of a "Blue Ribbon Panel" to assess and recommend new technology alternatives to	site location, thereby eliminating the roundtrip shipments between the INEEL and the privatized facility. Retrieval operations will be performed by the AMWTP vs. the Management & Operating contractor. Up to 185,000 cubic meters could be treated vs. the approximately 36,000 cubic meters initially analyzed. Under the current plan, alternative treatment methods will be utilized in-lieu of incineration.	the RWMC facility fence and the facility will no longer includes an incinerator. The increased negative impacts are due to facility operations which relate to operations reassigned from the M&O contractor in activity WM C-2.8.

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
		incineration; the report is due in Dec. 2000. Construction began in 2000, with retrieval operations proposed to commence in 2002, and treatment operations proposed to commence in 2003.		
5	**C-4.4.2 Radioactive Waste Management Complex Modifications to Support Private Sector Treatment of Alpha-Contaminated Mixed Low-Level Waste:** This project would provide modifications to the RWMC to support the transport of alpha-contaminated MLLW and TRU waste to a privately owned and operated waste treatment facility. If such a facility were chosen for implementation, additional waste retrieval, venting, transportation and examination facilities would be required to be operational by October 2000, to support both sending the waste offsite for treatment and receiving it back onsite after treatment. The proposed construction would be 1995 - 2000 and operations 2000 - 2005.	This project was planned in the ROD, however the decision on this project was deferred for a future determination. Since the ROD was issued the award of the Advanced Mixed Waste Treatment Project was made, which has the project located at the RWMC. As a result, these facilities are not required.	The modifications were not required as the privatized facility is located on the INEEL at RWMC, where the waste is currently stored.	These facility modifications were not required to be built due to the location of the AMWTP, see WM C-4.4.1
6	**C-4.4.3 Idaho Waste**	This project was planned in the	Was not implemented as	This facility was not required to

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	Processing Facility: This project, operated by the M&O, would treat and process both alpha-contaminated and transuranic-contaminated wastes to meet applicable requirements for land disposal. INEEL generated MLLW and LLW may also be treated. The design throughput would be 4,000 to 6,500 cubic meters per year. This proposed project is assumed to be outside of major facility areas. The proposed construction would be 2004 - 2008 and operations 2008 - TBD.	ROD, however the decision on this project was deferred for a future determination. Since the ROD was issued, the award of the AMWTP (see item I.4 C-4.4.1 above) was made, which negates the need for this project, as the same wastes would be treated at both facilities. Therefore, this project did not proceed.	planned. The Privatized option was selected for implementation. None of the impacts analyzed will occur.	be built due to the AMWTF.
7	**C-4.4.4 Shipping/Transfer Station:** This project would provide for the design, construction, and operation of a Shipping/Transfer Station. All alpha-contaminated LLW, LLW, and MLLW would be transported from this facility to treatment, storage, and disposal facilities. In addition, an expansion of the existing Stored Waste Examination Pilot Plant facility would be performed to identify alpha-contaminated LLW for transport. The proposed	This Project was not selected for implementation in the ROD.	This project is not proceeding, as it was not selected for implementation in the ROD. None of the impacts analyzed will occur.	This project was not selected for implementation in the ROD.

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	construction is 2002 - 2004, with operations 2004 - 2030.			
8	**C-4.5.1 Waste Experimental Reduction Facility Incineration:** This project will provide RCRA compliant treatment capability for DOE MLLW and to reduce the volume of LLW before disposal. The proposed construction is 1996 - 1997, with operations 1996 - 2015.	This project is to be implemented as a result of the ROD. This facility was restarted in 1995 and it treated onsite LLW and MLLW, and offsite MLLW. In Sept. 1999 the U. S. EPA promulgated revised standards for hazardous waste incinerators and other sources to reflect the performance of Maximum Achievable Control Technology (MACT) as specified in the Clean Air Act. In Sept 2000, DOE-ID announced that this facility would not be upgraded to meet MACT and would therefore be shutdown in FY 2001. In October 2000, the IDEQ denied the Part B permit application for the WERF incinerator and revoked interim status for the unit. As a result, the incinerator ceased operations in November 2000.	Incineration campaigns will not be performed at the INEEL with this facility as planned. The last campaign was performed in 2000. None of the analyzed impacts from incineration will occur.	Operations impacts are no different than previously analyzed. A recent decision to stop incineration will have a net positive effect
9	**C-4.5.3 Mixed Low-Level Waste Treatment Facility:** This project would be to provide the design, construction, and operation for a new facility to treat LLW and	This project was not selected for implementation in the ROD.	This project is not proceeding, as it was not selected for implementation in the ROD. None of the impacts analyzed will occur.	This project was not selected for implementation in the ROD.

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	MLLW. The facility would include several treatment processes including: incineration, thermal desorption, stabilization, decontamination, macro encapsulation, chemical precipitation, neutralization and amalgamation. The facility would be located outside of a major facility. The proposed construction would occur 2006 - 2008 with operation 2010 - 2035.			
10	**C-4.5.4 Mixed/Low-Level Waste Disposal Facility:** This project would provide design, construction, and operations of a new permanent radioactive waste disposal facility. The facility would be designed and permitted to accept LLW, treated MLLW, and alpha-contaminated LLW's. The facility would be located outside of a major facility. The proposed construction would occur 2002 - 2004, with operations 2004 - 2044.	This project was planned in the ROD, however the decision on this project was deferred for a future determination. Subsequently, the ROD for the DOE WM PEIS: Treatment and Disposal of Low-Level Waste and Mixed Low-Level Waste (DOE/EIS-0200-F), dated 2/00, did not identify the INEEL as a long-term disposal site for the INEEL or the DOE complex. The Nevada Test Site and Hanford were listed as DOE's long-term disposal sites. Therefore, this project will not proceed.	This planned disposal facility will not be implemented. None of the impacts analyzed will occur.	This project was not completed avoiding a number of negative impacts primarily to groundwater.
11	**C-4.6.4 Nonincinerable Mixed Waste Treatment:**	This project was selected to be implemented in the ROD.	A majority of the onsite impacts from this project will	The impacts are less because a majority of the treatment

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	This project would provide treatment of mixed wastes, which are not suitable for incineration, to meet LDR (Land Disposal Restriction) standards. The treatment processes would be located at the Waste Engineering Development Facility, located near the PBF. These U.S. EPA-approved treatment processes include ion exchange, stabilization, macro encapsulation, gamma-ray degradation treatment for polychlorinated biphenyl's, neutralization, and amalgamation. The proposed construction would occur 1994 – 1996, with operation 1996 - 2006.	Upon further review it was decided not to proceed with this project. However, MLLW treatment units for stabilization, macro encapsulation and sizing were constructed and permitted at WROC. The MLLW stabilization unit and the sizing unit were operated at the INEEL, but the macro encapsulation treatment process is not planned to be utilized at the INEEL. The INEEL intends to transition to other DOE or commercial facilities for treatment of MLLW with subsequent disposal at a permitted subtitle C disposal facility. While we plan to utilize offsite treatment facilities, DOE and commercial, on the lead, mercury and PCB waste streams; which were the lead decontamination, amalgamation, and gamma-ray degradation treatment technologies analyzed in the EIS.	not occur as several of the treatment processes are/will be performed at non-INEEL facilities.	processes will not be performed onsite
12	**C-4.6.6 Remote Mixed Waste Treatment Facility:** This project was to construct and operate a shielded, remotely operated facility to sort,	This project was planned in the ROD, however the decision on this project was deferred for a future determination. The scope of the project remains	The project has not been designed or constructed yet. The current proposal is to initiate construction in 2004, and operate the facility from	Impacts are no different than previously analyzed

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	characterize, treat, and repackage highly radioactive (Remote-Handled) waste stored at ANL-W. Construction was proposed for 1997 - 2000, with operations proposed for 2000 - 2020.	focused on making Remote-Handled radioactive waste stored at ANL-W ready for shipment and disposal. The project is now named the Remote Treatment Facility and is the subject of an Environmental Assessment currently in progress.	2007 to 2018.	
13	**C-4.6.7 Sodium Processing Project:** This project was to include the construction and operation of a facility to chemically convert radioactive metallic sodium waste to a dry sodium carbonate powder. The process would render the 180,000 gallons of waste sodium stored at ANL-W to be nonreactive and nonhazardous. Construction was proposed from 1995 - 1996 with operations proposed from 1997 - 1999.	This project was selected for implementation in the ROD. The project was constructed from 1996 to 1998 and began operation in December of 1998. The SPF is currently operating.	The waste product generated from the treatment of metallic sodium was changed from sodium carbonate powder to solid sodium hydroxide. The new waste product is also non-hazardous and is disposed of as low-level waste as described in the 1995 EIS. The total volume of low-level radioactive waste product produced was underestimated in the 1995 EIS. This difference (30 cubic meters per year vs. 220) is in volume only. The total radionuclide content of the waste product is the same as that analyzed in the 1995 EIS. The increase in the volume of low-level waste produced did not cause an expansion of the low-level waste disposal facility (the Radioactive Waste	Negative impact is due to slightly increased transportation

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
			Management Complex). The increased volume did not cause the construction of a new disposal facility, nor did it preclude the disposal of low-level waste by other DOE programs and facilities.	
14	**C-4.7.1 Greater-Than-Class-C Dedicated Storage:** This project would provide for the DOE receipt and storage of greater-than-Class-C low-level waste sealed radiation sources from the commercial sector. This facility would provide for the consolidated management and storage of the greater-than-Class-C low-level waste at one centralized storage location until a disposal facility is developed. The evaluation was based on a receipt scenario of 30,000 sealed sources over a 30-year period. The design basis includes a repackaging operation and storage in casks on a concrete pad. The proposed construction is 1996 - 1998, with operations 1998 - 2028.	A determination was made in the ROD that the INEEL will continue to plan and develop for this project. The current opinion/plan is that this project will not proceed here at the INEEL. On the contrary, there are actions being taken to keep this NRC-regulated commercial waste on the licensee’s property.	This project will not be built so the transportation of 30,000 sealed sources for interim storage and the repackaging will not occur.	This project was not required
15	**C-4.8.1 Hazardous Waste Treatment, Storage, and Disposal Facilities:** This	This project, analyzed under Alternative D (Maximum Treatment, Storage, and	This project is not proceeding, as it was not selected for implementation in the ROD.	This project was not selected for implementation in the ROD.

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	proposed project would provide facilities to treat, store, and dispose of RCRA regulated hazardous wastes generated onsite. The facility would be outside of a major facility. Construction is proposed to occur 2005 - 2008, with operations 2008 - 2032.	Disposal) was not selected as the preferred alternative in the ROD. Therefore, this project was not listed in the ROD to proceed. We continue to have temporary storage for hazardous waste and it is shipped off-site for hazardous waste disposal.	None of the impacts analyzed will occur.	
16	**C-4.10.2 Plasma Hearth Project:** This project included the field scale testing of the Plasma Hearth equipment on actual mixed low-level radioactive waste. The project was planned to be demonstrated in the TREAT reactor high bay area at ANL-W. Construction is proposed to occur 1995 – 1996, with operations 1996 – 2000.	The decision on this project was deferred in the ROD for a future determination. The project did not progress beyond the nonradioactive bench-scale demonstration phase. The nonradioactive bench-scale phase was categorically excluded from further NEPA review by DOE-CH in November of 1995. The project was terminated in 1998. The equipment has been dismantled.	The project created less air emissions and effluents than originally planned since no actual radioactive waste was used in the demonstration.	Use of nonradioactive surrogates reduced the potential impact.
II	Balance of the Program in the 1995 EIS			
1	**Transuranic Waste:** Approximately 65,000 cubic meters of CH-TRU, alpha contaminated MLLW/LLW (managed as TRU), and RH-TRU, is in retrievable storage at the RWMC. Although there	The WIPP is open for the disposal of CH-TRU. The INEEL started shipments in 1999. The path forward for the waste managed as TRU consists of the following four components:	The strategy for disposing of the CH-TRU was finalized with the opening of WIPP. In addition, the strategy for treating the alpha-contaminated waste to RCRA LDR standards, TSCA	Impacts are no different than previously analyzed

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	is still no facility for disposal of CH-TRU, approximately 39,000 cubic meters, is managed assuming that it will be retrieved from storage, repackaged, certified to meet disposition facility requirements, and transported to WIPP for final disposition. The plan is to initiate disposition operations in 1998. A strategy for disposing the approximately 26,000 cubic meters of alpha contaminated MLLW/LLW has yet to be established. In addition, the strategy for disposing of a small quantity of RH-TRU needs to be developed.	1) 3100 cubic meters - The 3100 cubic meters is working to certify and ship 3100 cubic meters of CH-TRU out of Idaho by 12/31/02, per the Settlement Agreement. To accomplish this, additional examination, gas generation test, TRUPACT II loading capability and multi-shift operations is planned. Low activity waste that is managed as TRU may be combined in Standard Waste Boxes with high activity waste that is managed as TRU such that the Standard Waste Box can be certified as TRU waste. These Standard Waste Boxes will then be transported in TRUPACT-IIs and disposed of at WIPP. 2) AMWTP - The AMWTP will retrieve, sort, characterize and treat the remaining CH-TRU, which meets their WAC, and ship out of Idaho by 12/31/2018, per the Settlement Agreement. Similar operations will be performed on the alpha-contaminated MLLW/LLW that is managed as TRU, in order to certify the final waste form as TRU waste. The final waste	requirements and to meet WIPP's Waste Acceptance Criteria was finalized. The final strategy for the RH-TRU and the AMWTP WAC noncompliant CH-TRU needs to be developed in preparation for disposal at WIPP. Disposition operations commenced in 1999 vs. 1998 as planned. The analysis on the stored RH-TRU is adequate. No other RH-TRU analysis was performed, but it will be required in the future prior to finalizing the strategy. . The Settlement Agreement changed the planned TRU strategy by initiating shipments earlier as well as shorter shipment duration. The changes: requiring 3100 cubic meters of TRU out of Idaho by 12/2003, while the pre-settlement plan had all wastes going through the treatment facility (AMWTP C-4.4.1 or IWPF C-4.4.3); and the duration of shipments will be completed approximately seven years earlier than that planned in the 1995 EIS.	

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
		form can then be shipped to WIPP for disposal. The AMWTP, see C-4.4.1, has an EIS (DOE/EIS-0290) which covers all operations. 3) RH-TRU & AMWTP WAC-noncompliant CH-TRU waste. The current plan is to develop capabilities to retrieve (RH-TRU only), treat, characterize, certify and dispose of the RH-TRU and AMWTP WAC-noncompliant stored wastes. The planned disposition is at WIPP with completion by 12/31/2018.4) An additional source of TRU may result from the alternative action selected in the ROD from the ongoing Idaho High-Level Waste & Facilities Disposition EIS DOE/ID-0287D. Any resulting TRU will be analyzed in that EIS.		
2	**Low-Level Waste**: A majority, approximately 60%, of the LLW is treated prior to disposal. Solid waste treatment consists of incineration (either onsite at WERF or at an offsite commercial facility),	Contact-handled (CH) and remote-handled (RH) low level waste (LLW) is generated at the INEEL. Approximately 67% of the solid CH LLW generated at the INEEL is direct disposed in the Pits 17-20 within the Subsurface Disposal Area	Since release of the ROD the LLW operations have remained the same with the following exceptions: incineration is no longer performed; on-site disposal is planned through 2020 vs. 2006 for CH and 2009 for RH;	Positive impacts from stopping incineration, negative impacts from less robust waste forms and longer onsite disposal

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	compaction or size reduction (at WERF). Most liquid waste is concentrated at INTEC. The condensed vapor for the evaporator is processed by the Liquid Effluent Treatment and Disposal Facility (then pumped to the tank farm) and the gaseous effluent vented out the high-efficiency particulate air filtered stack. Some small volumes of liquids are also solidified at WERF and disposed at RWMC. All of ANL-W's low-level liquid waste is processed at the Radioactive Liquid Waste Treatment Facility with the volume-reduced sludge transported to RWMC. Small volumes are discharged to the double-lined pond at the TRA. Potential LLW from storm runoff at TAN is handled through an ion exchange system. The solid LLW is disposed of through shallow land burial at the RWMC in pits and concrete-lined soil disposal vaults in the SDA. As of 1991, the available disposal capacity was 37,000 cubic meters with an additional	(SDA) of the Radioactive Waste Management Complex (RWMC). The RH LLW is disposed in vertical concrete vaults located within the same pits. Approximately 33% of the solid CH LLW generated at the INEEL is volume-reduced (through compaction and sizing) at the Waste Reduction Operations Complex (WROC). Very limited liquid LLW stabilization and/or treatment capabilities exist at the INEEL, with the exception of some capabilities at ANL-W for liquid LLW generated in their facilities. Incineration is no longer a form of treatment, it last occurred in 2/98. Current planning indicates continued CH and RH disposal of solid LLW at the RWMC through 2020. Approximately 50,000 cubic meters of disposal space remain in Pits 17-20. No additional space is available. It is proposed that three additional sets of concrete vaults will be constructed to satisfy RH LLW projected receipts through 2020. To	and we plan to commence commercial treatment in 2004.	

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	67,000 cubic meters of expansion capacity was potentially available.	implement the WM Programmatic ROD, shipment of solid CH LLW to NTS and Hanford in limited quantities will begin in late 2001. These shipments will be LLW that does not satisfy the waste acceptance criteria of the RWMC. LLW volume reduction capabilities at WROC will be phased out beginning in 2001. Private sector contracts for solid and liquid LLW volume reduction and stabilization, as appropriate, will be implemented in late 2001. An additional source of LLW may result from the alternative action selected in the ROD from the ongoing Idaho High-Level Waste & Facilities Disposition EIS (DOE-ID-0287D). Any resulting LLW will be analyzed in that EIS.		
3	**Mixed Low-Level Waste:** The beta-gamma MLLW is being stored while various treatability studies are being performed. Eleven hundred cubic meters of MLLW is currently stored onsite in permitted storage	Onsite and offsite MLLW was treated at the WERF incinerator from 1995 - 2000. DOE-ID notified the EPA that the incinerator at WERF will not be upgraded to meet the MACT rule and will therefore be	The objective to treat MLLW prior to disposal has not changed. A method of treatment did change with the closure of the WERF incinerator so alternative on-site treatments will be	Positive impacts from stopping incineration, negative impacts from transportation for offsite treatment.

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	facilities, with a capacity of 1,800 cubic meters. The storage facilities are: Mixed Waste Storage Facility; portable storage units at the Power Burst Facility area; Hazardous Chemical/Radioactive Waste Facility at INTEC; the Radioactive Sodium Storage Facility, Building 703 and the Radioactive Scrap and Waste Facility at ANL-W. A small amount of waste is being treated through ongoing treatability studies onsite and offsite. Existing treatment facilities include WERF incinerator and stabilization and the WEDF stabilization system, all on standby. Additional treatment facilities include a portable waste treatment unit, debris treatment, and high-efficiency particulate air filter leach system at INTEC. Treatment is required prior to disposal due to the RCRA hazardous wastes components. The RWMC is the designated site for treated waste, which meets the waste acceptance criteria.	shutdown. The onsite/offsite waste scheduled for incineration will be reclassified for alternative treatment at WROC (sorting/sizing/segregation, and stabilization) and commercial facilities prior to disposal at commercial facilities. The treatment facilities at INTEC and ANL-W remain in operation, including: debris treatment, and high-efficiency particulate air filter leach system. Other DOE and commercial treatment and disposal facilities will be utilized on MLLW which cannot be treated at the INEEL, including lead, mercury, and polychlorinated biphenyls. It should be noted that the permitted storage capacity is far greater than 1800 m3. Storage of the MLLW at CPP-1617 (INTEC), WERF Waste Storage Building (WWSB), Mixed Waste Storage Facility (MWSF/Portable Storage Unit) is planned until treatment and disposal can be conducted. The assumption is that the backlog of MLLW in storage	performed and other DOE and commercial facilities will be used. Additional storage facilities that were analyzed were included at CPP-1617, TAN 647, WWSB, and MWSF. The 1995 EIS included a 10-year plan for MLLW, while the current programmatic plan is through FY2049.	

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	Waste which cannot meet the acceptance criteria will be stored until a suitable facility is available. DOE requires all DOE generated waste, treated to meet LDR, must be disposed at DOE facilities. Commercial disposal may be used on a case-by-case basis.	prior to 2006 will have been significantly reduced/eliminated and the ongoing MLLW activities will revolve around the treatment, storage and disposal of newly generated MLLW. Therefore, the current technical approach will be focused on developing and maintaining appropriate contracts with commercial/off-site facilities, covering disposal and treatment as required to meet the waste acceptance criteria and for cost effectiveness.		
4	**Greater-Than-Class-C Low-Level Waste:** Greater-than-Class-C low-level waste is being stored until it can be disposed of in a deep geologic repository, unless the NRC approves disposal elsewhere. The RWMC stores approximately 25 cubic meters of greater-than-Class-C-waste.	The 25 m3 of GTCC waste identified in the 95 EIS was removed from the GTCC category based on an INEEL contractor legal department opinion that the waste was improperly categorized as commercial waste due to the circumstances surrounding INEEL's assignment for management of the two waste streams. Consequently, the current inventory of GTCC at INEEL is 0. A new activity in the planning stage involves DOE/HQ's EM-22 and the U.S. Air Force. They are currently preparing an	No change from what was analyzed.	Impacts are no different than previously analyzed

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
		Environmental Assessment to select a DOE storage site for 10 Radioisotopic Thermoelectric Generators, which contain large Strontium-90 sources. The EA also calls for the site to be able to accept an additional 40 RTG's in the future. RTG's are their own Type B shipping containers and can be stored outdoors. The INEEL is one of nine sites being evaluated. The EA is titled "Joint U.S. Department of Energy (DOE) and U.S. Air Force (USAF) Environmental Assessment (EA) for the Removal, Transportation and Storage of Radioisotope Thermoelectric Generators (RTG's)" and the number is DOE/EA-1351.		
5	**Special-Case-Waste:** The special-case-waste, 200 cubic meters, is being stored at various INEEL major facility areas until characterization, treatment or disposal options are identified and implemented. A reclassification, following characterization, into a major	DOE Order 435.1, which is the current Waste Management Order which was issued in 1999, does not use the terminology Special-Case-Waste; it is now termed "Waste with No Identified Path to Disposal" (NPD). Considerable characterization efforts since 1995 has led to reclassification	No change.	Impacts are no different than previously analyzed

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	waste type is planned for some of these wastes. Actions associated with this special-case waste are evaluated on a case-by-case basis, and therefore the EIS does not specifically assess impacts related to such actions.	of significant quantities of previous classified SCW to other waste streams (e.g. TRU waste). Using the 1995 criteria, today's inventory would be approximately 6 cubic meters. There is no change in how the NPD is managed and the end objective to get it into a major waste type, if possible. A process is in place to work with the generators prior to their operation to minimize the generation of NPD.		
6	**Hazardous Waste:** Hazardous waste generated at the INEEL is recycled, reused or reprocessed, where possible. The hazardous waste is held at designated accumulation points for less than 90 days than transported to the Hazardous Waste Storage Facility, a RCRA Part B-permitted facility located at the Central Facilities Area. From this facility the waste is prepared for shipment to an offsite treatment and disposal facility. Highly reactive or unstable materials are addressed on a case-by-case basis and is either stored,	The recycled, reused or reprocessed of hazardous waste continues. INEEL will continue to utilize commercial permitted facilities for the treatment and disposal of hazardous waste. The primary storage facility (operated under interim status) for accumulated hazardous waste is at CPP-1619 Hazardous Waste Storage Facility at INTEC until shipment to the commercial facility is performed. Additional permitted storage facilities are: WERF Waste Storage Building (WWSB), the Mixed Waste Storage Facility (MWSF) and the Mixed Waste Storage	The reactive HW is sent off-site to permitted facilities.	Impacts are no different than previously analyzed

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	burned or detonated at the Reactive Storage and Treatment Area (RSTA) near the Auxiliary Reactor Area.	Facility Portable Storage Units (MWSF-PSU), and Special Manufacturing Complex Hazardous Waste Storage Area. It is planned that these additional facilities will be shut down as follows: MWSF and the MWSF-PSU end of FY 2004 (RCRA closure initiated in FY 2005) and the WERF Waste Storage Building (WWSB) end of FY 2005 (RCRA closure initiated in FY 2006). The RSTA was closed under a RCRA closure plan. Now our reactives are sent to permitted facilities offsite.		
7	**Industrial Waste:** The site generated industrial waste is disposed of at the Central Facilities Landfill and the in town facilities disposal at the Bonneville County Landfill. An active recycling program has been started to reduce the amount of INEEL industrial waste. It is planned the recycling program will be expanded to include asphalt and metals and to convert scrap wood into mulch. The goal is to reduce the amount of industrial commercial waste	The Industrial waste operations are consistent with what was discussed in the EIS. The INEEL did operate a Cuber which reused some industrial waste to produce cubes to supplement the coal in the INTEC coal fired power plant. The Cuber is no longer in operation.	No change in operations.	Impacts are no different than previously analyzed

Item No.	1995 EIS Section Number and Scope of Program	Scope of Program As It Exists Today	Major Differences in Operations (1995 vs. Current)	Environmental Impact of Operational Changes
	through an intensive program of waste avoidance, recycling, and segregation.			
III		***Other parts of the program not analyzed in the 1995 EIS***		
	All portions of the WM program were addressed in the 1995 EIS.			
IV		**Proposed Major Projects**		
	None.			

Table 6-1.1 Waste Disposal Volumes

	Volumes of Disposed INEEL Wastes (m^3)								Average Yearly Disposal Rate	1995 EIS Projected Yearly Disposal Rates
Waste type (disposal location)	**CY-95**	**CY-96**	**CY-97**	**CY-98**	**CY-99**	**CY-00**	**Total**			
LLW/Treated MLLW (RWMC SDA)	1159	726	1564	4218	4210	4622	16499		2750	3942[a,b]
MLLW (Offsite)	3	20	21	37	50	1080	1211		202	0[b]
Hazardous (Offsite)	33	934	254	146	896	828	3091		515	1201
Industrial (CFA LandFill)	56782	45175	53971	41053	50812	41410	289203		48201	58,298
TRU (WIPP)	0	0	0	0	26	122	148		25	2500[c]
MTRU (WIPP)	0	0	0	0	0	55	55		9	0[d]

a These numbers are after treatment disposal volumes b The 1995 EIS projected all MLLW to be disposed at the INEEL. Because the MLLW Disposal Facility was not built, listed MLLW cannot be disposed at the INEEL. With the shutdown of the WERF incinerator, the INEEL has limited MLLW treatment capability.

c The 1995 EIS projected TRU shipments of untreated wastes from 1998 - 2002 at this rate. Treated waste volumes would begin shipment after 2005.

d At the time of the 1995 EIS, it was anticipated that all mixed TRU waste would receive treatment prior to shipment.

LLW CY95, CY96 compiled from RWMIS database.
LLW CY97 compiled from IWTS/RWMIS databases.
LLW CY98, CY99, CY00 compiled from IWTS database.
MLLW all CYs compiled from IWTS database.
HAZ all CYs compiled from IWTS database.
INDUST all CYs compiled from INWMIS database.
TRU/MTRU all CYs compiled from TRIPS database.
EIS Projections from EDF-94-Waste-0104, “Waste Generation, Storage, and Treatment Volumes”, March 1995 (AR-RF-1173)

IWTS = Integrated Waste Tracking System
RWMIS = Radioactive Waste Management System
TRIPS = Transuranic Reporting, Inventory, and Processing System
INWMIS = INEEL Nonradiological Waste Management Information System

Appendix 6-2 EVALUATION OF THE PROGRAM CHANGE ANALYSIS DOCUMENTS

This is the tool that was used to analyze each specific program activity. This was used to focus the discussion on the changes that have taken place and the changes in potential environmental impacts.

1. Overview of the Applicable NEPA Analysis

See Appendix 6-1.

2. Scope of the Program as Described in the 1995 EIS

Brief summary of the program, major facilities analyzed, major activities analyzed

3. Scope of the Program as it Exists Today

Brief summary of the program, major facilities and activities. This should make reference to the latest programmatic planning documents. Life Cycle plans, Field Work Proposals, etc. should be used as reference material for this section.

4. Major Changes Between 1995 and Current Operations

Discuss the "major" facility and program changes over the last five years. Attention should be paid to **programmatic/project/ROD** decisions that were made in the 95 EIS that were not carried out.

Don't focus just on WM; include all programs. Include a discussion of the changes in the waste generation profiles for HW, HLW, LLW, TRU, MLLW, and Industrial Waste. Do this on a qualitative basis. A quantitative discussion of the waste projections and the amounts disposed, stored, and treated will be included as an appendix to this section.

5. Environmental Impacts of these Changes

Group discussion on the projected environmental impacts of each change. Complete the Program/Environmental Discipline table for each project and program element.

6. Decision Tree Results

See Decision Tree for Supplement Analysis on 1995 SNF & INEL EIS. If needed.

7. Evaluation of the Adequacy of the Existing NEPA Documentation

- Is the existing NEPA analysis for the program complete for current operations?
- Is the existing NEPA analysis for the program complete for any operations through 2005?
- Is the existing NEPA analysis for the program complete for any operations past 2005?

8. Administrative Record

What documents are necessary for the Administrative Record to support and/or refute the information for this analysis?

Appendix 6-3 PROGRAM / ENVIRONMENTAL DISCIPLINE TABLE

Changes in Programmatic Environmental Impacts by Discipline

This table provides an indication of the environmental impact of the changes in each program and project given in the 1995 EIS. The project numbers are the ones that are given in the 1995 EIS. Each activity with appreciable changes in environmental impacts would receive an indication of whether that change was positive (less environmental impact) or negative (greater environmental impact) compared to the impact analyzed in the 1995 EIS. A qualitative approach is used with the following symbols 🡅 indicating a positive impact to the environment, blank for a neutral impact, and 🡇 indicating a negative impact to the environment. The statements in the Environmental Impact Summary column are the source of the summary statements given in Appendix 6-1.

Environmental Discipline ➔ Project and Program Elements 🡇	Land Use	Socioeconomics	Cultural Resources	Aesthetic and Scenic Resources	Geology	Air Resources	Water Resources	Ecology	Noise	Traffic and Transportation	Health and Safety	INEL Services	Facility Accidents	Cumulative Impacts	Unavoidable Adverse Environmental Affects	Short term/ Long Term Use	Irreversible and Irretrievable Commitments	Mitigation	Environmental Justice	Environmental Impact Summary
DECONTAMINATION AND DECOMMISSIONING																				
D&D C-2.5 Auxiliary Reactor Area II																				Impacts are no different than previously analyzed
D&D C-2.6 Boiling Water Reactor Experiment V																				Impacts are no different than previously analyzed
D&D C-4.2.1 Central Liquid Waste Processing Facility																				Impacts are no different than previously analyzed
D&D C-4.2.2 Engineering Test Reactor																				Impacts may be different than previously analyzed due to ground water impacts.

Environmental Discipline → Project and Program Elements ↓	Land Use	Socioeconomics	Cultural Resources	Aesthetic and Scenic Resources	Geology	Air Resources	Water Resources	Ecology	Noise	Traffic and Transportation	Health and Safety	INEL Services	Facility Accidents	Cumulative Impacts	Unavoidable Adverse Environmental Affects	Short term/ Long Term Use	Irreversible and Irretrievable Commitments	Mitigation	Environmental Justice	**Environmental Impact Summary**
D&D C-4.2.3 Materials Test Reactor																				Impacts may be different than previously analyzed due to ground water impacts.
D&D C-4.2.4 Fuel Processing Complex																				Impacts may be different than previously analyzed due to ground water impacts.
D&D C-4.2.5 Fuel Receipt and Storage Facility																				Impacts may be different than previously analyzed due to ground water impacts.
D&D C-4.2.6 Headend Processing Plant																				Impacts may be different than previously analyzed due to ground water impacts.
D&D C-4.2.7 Waste Calcine Facility	↓						↓			↑	↑		↑	↓						The implemented D&D strategy was not addressed in the 1995 EIS. Entombment of the facility resulted in less radiological exposure but also left radiological wastes in the ground.
D&D Program																				Impacts are no different than previously analyzed

Environmental Discipline → Project and Program Elements ↓	Land Use	Socioeconomics	Cultural Resources	Aesthetic and Scenic Resources	Geology	Air Resources	Water Resources	Ecology	Noise	Traffic and Transportation	Health and Safety	INEL Services	Facility Accidents	Cumulative Impacts	Unavoidable Adverse Environmental Affects	Short term/ Long Term Use	Irreversible and Irretrievable Commitments	Mitigation	Environmental Justice	**Environmental Impact Summary**
ENVIRONMENTAL RESTORATION																				
ER C-2.2 Remediation of Groundwater Contamination						↑	↑				↑	↑		↑		↑				Alternate ground water cleanup methods have resulted in positive impacts
ER C-2.3 Pit 9 Retrieval						↑	↓				↑	↑	↑	↑		↓				The impacts are due to the project being partially completed.
ER C-2.4 Vadose Zone Remediation																				Impacts are no different than previously analyzed
ER Program Element– Soil Remediation	↑				↑		↑				↑			↑						The ER program will cleanup environmental contamination and leave the environment in an approved long-term status
ER Program Element– Vadose Zone					↑		↑				↑			↑						The ER program will cleanup environmental contamination and leave the environment in an approved long-term status

Environmental Discipline → Project and Program Elements ↓	Land Use	Socioeconomics	Cultural Resources	Aesthetic and Scenic Resources	Geology	Air Resources	Water Resources	Ecology	Noise	Traffic and Transportation	Health and Safety	INEL Services	Facility Accidents	Cumulative Impacts	Unavoidable Adverse Environmental Affects	Short term/ Long Term Use	Irreversible and Irretrievable Commitments	Mitigation	Environmental Justice	**Environmental Impact Summary**
ER Program Element– Groundwater					↑		↑				↑			↑						The ER program will cleanup environmental contamination and leave the environment in an approved long-term status
ER Program Element– Stewardship and Institutional Controls																				Impacts are no different than previously analyzed
HIGH-LEVEL WASTE																				
HLW C-2.7 High-Level Tank Farm Replacement – Upgrade Phase																				Impacts are no different than previously analyzed
HLW C-4.3.1 Tank Farm Heel Removal Project																				Impacts are no different than previously analyzed
HLW C-4.3.2 Waste Immobilization Facility																				This project was not selected for implementation in the ROD.
HLW C-4.3.3 High-Level Tank Farm New Tanks																				This project was not selected for implementation in the ROD.
HLW C-4.3.4 New Calcine Storage																				This project was not selected for implementation in the ROD.

Environmental Discipline → / Project and Program Elements ↓	Land Use	Socioeconomics	Cultural Resources	Aesthetic and Scenic Resources	Geology	Air Resources	Water Resources	Ecology	Noise	Traffic and Transportation	Health and Safety	INEL Services	Facility Accidents	Cumulative Impacts	Unavoidable Adverse Environmental Affects	Short term/ Long Term Use	Irreversible and Irretrievable Commitments	Mitigation	Environmental Justice	**Environmental Impact Summary**
HLW C-4.3.5 Radioactive Scrap/Waste Facility																				Impacts are no different than previously analyzed
HLW C-4.10.1 Calcine Transfer Project (Bin Set 1)	↑						↓			↑	↑		↑	↑						The impacts are a result of the project not being completed
INFRASTRUCTURE																				
INF C-2.11 Health Physics Instrument Laboratory																				Impacts are no different than previously analyzed
INF C-2.12 Radiological and Environmental Sciences Laboratory Replacement																				Impacts are no different than previously analyzed
INF C-4.9.1 Industrial/Commercial Landfill Expansion																				Impacts are no different than previously analyzed
INF C-4.9.2 Gravel Pit Expansions	↓							↓						↓						The New Silt/Clay Source Development EA provided for impacts greater than previously analyzed
INF C-4.9.3 Central Facilities Area Clean Laundry and Respirator Facility																				Impacts are no different than previously analyzed

Environmental Discipline → Project and Program Elements ↓	Land Use	Socioeconomics	Cultural Resources	Aesthetic and Scenic Resources	Geology	Air Resources	Water Resources	Ecology	Noise	Traffic and Transportation	Health and Safety	INEL Services	Facility Accidents	Cumulative Impacts	Unavoidable Adverse Environmental Affects	Short term/ Long Term Use	Irreversible and Irretrievable Commitments	Mitigation	Environmental Justice	**Environmental Impact Summary**
INF Program – Replacing Site-wide Capital Equipment (GPCE)																				Impacts are no different than previously analyzed
INF Program – Environmental Monitoring and QA																				Impacts are no different than previously analyzed
INF Program – Buildings and Facilities																				Impacts are no different than previously analyzed
SPENT NUCLEAR FUEL																				
SNF C-2.1 Test Area North Pool Fuel Transfer	↑									↑										The site has a smaller footprint and received fewer shipments of TMI debris than planned.
SNF C-4.1.1 Expended Core Facility Dry Cell Project	↓									↑										Slightly negative impacts to land use and positive impacts to transportation
SNF C-4.1.2 Increased Rack Capacity for CPP-666										↑	↑	↑	↑	↑						Small positive impacts
SNF C-4.1.3 Additional Increased Rack Capacity										↑	↑	↑	↑	↑						Small positive impacts
SNF C-4.1.4 Dry Fuel Storage Facility; Fuel Receiving, Canning/Characterization, and Shipping	↑									↑										Small positive impacts

Environmental Discipline ➔ Project and Program Elements ➔	Land Use	Socioeconomics	Cultural Resources	Aesthetic and Scenic Resources	Geology	Air Resources	Water Resources	Ecology	Noise	Traffic and Transportation	Health and Safety	INEL Services	Facility Accidents	Cumulative Impacts	Unavoidable Adverse Environmental Affects	Short term/ Long Term Use	Irreversible and Irretrievable Commitments	Mitigation	Environmental Justice	**Environmental Impact Summary**
SNF C-4.1.5 Fort ST. Vrain Spent Nuclear Fuel Receipt and Storage											↑	↑	↑	↑						Slightly positive impacts
SNF C-4.1.6 Spent Fuel Processing																				This project was not selected for implementation in the ROD.
SNF C-4.1.7 Experimental Breeder Reactor-II Blanket Treatment																				Impacts are no different than previously analyzed
SNF C-4.1.8 Electrometallurgical Process Demonstration																				Impacts are no different than previously analyzed
SNF Program – Consolidation of Non-AL SNF at the INEEL										↑	↑	↑	↑	↑						Positive impacts are due to a greatly reduced number of shipments
SNF Program – Transfer of aluminum-clad SNF located at the INEEL to SRS																				Impacts are no different than previously analyzed
SNF Program – Continued Interim Storage of Naval SNF at the INEEL																				Impacts are no different than previously analyzed
SNF Program – CPP-603 Basins Emptied of SNF																				Impacts are no different than previously analyzed

Environmental Discipline ➔ Project and Program Elements ↓	Land Use	Socioeconomics	Cultural Resources	Aesthetic and Scenic Resources	Geology	Air Resources	Water Resources	Ecology	Noise	Traffic and Transportation	Health and Safety	INEL Services	Facility Accidents	Cumulative Impacts	Unavoidable Adverse Environmental Affects	Short term/ Long Term Use	Irreversible and Irretrievable Commitments	Mitigation	Environmental Justice	**Environmental Impact Summary**
SNF Program – Consolidation of INEEL SNF Storage at the INTEC																				Impacts are no different than previously analyzed
WASTE MANAGEMENT																				
WM C-2.8 Transuranic Storage Area Enclosure and Storage Project	↑			↑							↑	↑	↑	↑						Positive impacts are due to: less facilities being built than analyzed and the TSA-RE facility not performing the analyzed operations
WM C-2.9 Waste Characterization Facility	↑			↑		↑	↑			↓	↑	↑	↑	↑						Positive impacts are due to avoidance. The negative traffic and transportation impact is due to overland transportation of wastes to ANL-W and back to RWMC for characterization

Environmental Discipline → Project and Program Elements ↓	Land Use	Socioeconomics	Cultural Resources	Aesthetic and Scenic Resources	Geology	Air Resources	Water Resources	Ecology	Noise	Traffic and Transportation	Health and Safety	INEL Services	Facility Accidents	Cumulative Impacts	Unavoidable Adverse Environmental Affects	Short term/ Long Term Use	Irreversible and Irretrievable Commitments	Mitigation	Environmental Justice	**Environmental Impact Summary**
WM C-2.10 Waste Handling Facility	↑			↑																The positive impacts reflect impacts that didn't occur due to avoidance
WM C-4.4.1 Private Sector Alpha-Contaminated Mixed Low-Level Waste Treatment				↑		↑		↑	↑	↑	↓	↓	↓	↑						The positive impacts are due to locating the facility inside the RWMC facility fence and the facility no longer includes an incinerator. The negative impacts are due to facility operations which relate to operations reassigned from the M&O contractor in activity WM C-2.8
WM C-4.4.2 Radioactive Waste Management Complex Modifications to Support Private Sector Treatment of Alpha-Contaminated Mixed Low-Level Waste	↑					↑				↑	↑	↑	↑	↑						These facility modifications were not required to be built due to the location of the AMWTP, see WM C-4.4.1
WM C-4.4.3 Idaho Waste Processing Facility	↑	↓	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑						This facility was not required to be built due to the AMWTF.

Environmental Discipline ➔ Project and Program Elements ↓	Land Use	Socioeconomics	Cultural Resources	Aesthetic and Scenic Resources	Geology	Air Resources	Water Resources	Ecology	Noise	Traffic and Transportation	Health and Safety	INEL Services	Facility Accidents	Cumulative Impacts	Unavoidable Adverse Environmental Affects	Short term/ Long Term Use	Irreversible and Irretrievable Commitments	Mitigation	Environmental Justice	**Environmental Impact Summary**
WM C-4.4.4 Shipping/Transfer Station																				This project was not selected for implementation in the ROD.
WM C-4.5.1 Waste Experimental Reduction Facility Incineration						↑					↑	↑	↑	↑						Operations impacts are no different than previously analyzed. A recent decision to stop incineration will have a net positive effect
WM C-4.5.3 Mixed Low-Level Waste Treatment Facility																				This project was not selected for implementation in the ROD.
WM C-4.5.4 Mixed Low-Level Waste Disposal Facility	↑		↑	↑	↑	↑	↑	↑			↑	↑	↑	↑						This project was not completed avoiding a number of negative impacts primarily to groundwater.
WM C-4.6.4 Nonincinerable Mixed Waste Treatment						↑					↑	↑	↑	↑						The impacts are less because a majority of the treatment processes will not be performed onsite
WM C-4.6.6 Remote Mixed Waste Treatment Facility																				Impacts are no different than previously analyzed

Environmental Discipline → Project and Program Elements ↓	Land Use	Socioeconomics	Cultural Resources	Aesthetic and Scenic Resources	Geology	Air Resources	Water Resources	Ecology	Noise	Traffic and Transportation	Health and Safety	INEL Services	Facility Accidents	Cumulative Impacts	Unavoidable Adverse Environmental Affects	Short term/ Long Term Use	Irreversible and Irretrievable Commitments	Mitigation	Environmental Justice	**Environmental Impact Summary**
WM C-4.6.7 Sodium Processing Project										↓										Negative impact is due to slightly increased transportation
WM C-4.7.1 Greater-Than-Class-C Dedicated Storage	↑									↑	↑		↑	↑						This project was not required
WM C-4.8.1 Hazardous Waste Treatment, Storage, and Disposal Facilities																				This project was not selected in the ROD
WM C-4.10.2 Plasma Hearth Process Project						↑					↑		↑	↑						Use of nonradioactive surrogates reduced the potential impact.
WM Program – Transuranic Waste																				Impacts are no different than previously analyzed
WM Program – Low-Level Waste						↑	↓					↑		↑						Positive impacts from stopping incineration, negative impacts from less robust waste forms and longer onsite disposal
WM Program – Mixed Low-Level Waste						↑				↓		↑	↑	↑						Positive impacts from stopping incineration, negative impacts from transportation for offsite treatment.
WM Program – Greater-Than-Class C Low-Level Waste																				Impacts are no different than previously analyzed

Environmental Discipline → Project and Program Elements ↓	Land Use	Socioeconomics	Cultural Resources	Aesthetic and Scenic Resources	Geology	Air Resources	Water Resources	Ecology	Noise	Traffic and Transportation	Health and Safety	INEL Services	Facility Accidents	Cumulative Impacts	Unavoidable Adverse Environmental Affects	Short term/ Long Term Use	Irreversible and Irretrievable Commitments	Mitigation	Environmental Justice	**Environmental Impact Summary**
WM Program – Special Case Waste																				Impacts are no different than previously analyzed
WM Program – Hazardous Waste																				Impacts are no different than previously analyzed
WM Program – Industrial Waste																				Impacts are no different than previously analyzed

APPENDIX 8 – 1 ENVIRONMENTAL DISCIPLINE CHANGE ANALYSIS DOCUMENTS

Environmental Discipline Change Analysis

A major focus of the Supplement Analysis is the change analysis for the different environmental disciplines addressed by the 1995 EIS. The change analysis is a disciplined approach to determining what has changed over the last five years in each of the disciplines. These changes were then evaluated to determine whether the environmental disciplines changes have resulted in potential environmental impacts different than previously reported or whether those changes are expected to produce impacts different than previously reported.

The first step in this analysis is a review of the scope of the specific environmental discipline as covered by the 1995 EIS. The second is a review of the specific changes that have taken place in that environmental discipline. Areas of change may have included review methodology, assumptions, analytical methods, data adequacy, accident scenarios, accident probabilities, cumulative impacts, changes in the regulatory environment, and other NEPA analyses that have been completed. The third step is a summary of the major changes and an evaluation of whether additional analysis is required.

Existing analytical data was used where it was available. No new data collection activities were undertaken as a part of this project. The recommendations for additional analysis are based on the professional judgment of the subject matter expert. Each environmental discipline evaluation was subjected to review by the team of subject matter experts, program representatives, NEPA analysts, and project personnel to ensure that each evaluation is thorough and consistent not only between environmental disciplines but also with the program change analysis.

Appendix 8-2 contains the procedure for conducting the environmental discipline evaluations.

Table of Contents

8-1.1 Adverse Environmental Impacts Which Cannot Be Avoided

Scope of 1995 Analysis

The 1995 EIS analyses in section 5.16 accounted for those environmental impacts that potential mitigation measures could not reduce or avoid. The five disciplines that were determined to have unavoidable adverse environmental impacts were: cultural resources, aesthetic and scenic resources, air resources, water resources, and ecology.

Changes in the Environmental Discipline

The methodology used in the 1995 EIS was to review the cumulative impacts and the project specific impacts for potential adverse effects that could not be reduced or avoided by using mitigation measures. This same methodology was used for this SA. The major assumption used was that if the adverse impact could be mitigated then it was determined to not be in this category.

Regulatory changes that have been implemented since 1995 have in general resulted in a reduction in potential adverse impacts. Consequently the amount of adverse effects that cannot be avoided has not increased.

For the five disciplines above that were previously determined to have unavoidable adverse impacts, changes have taken place in the following areas.

Cultural Resources: There have not been any significant changes from the 1995 EIS.

Aesthetic and Scenic Resources: The primary change has been that the New Waste Calcining Facility at INTEC has suspended operations pending the results of the HLW & FD EIS. This has resulted in a positive change to the aesthetic environment.

Air Resource: Most of the air emissions have been less than what was previously analyzed resulting in less adverse impact. For the few pollutants that exceeded the analysis, the impacts have been shown to be minimal.

Water Resources: A great deal of analysis has been completed for the area of ground water contamination. As a result, much more is known concerning the adverse impacts to the environment. Additional analysis is still needed in order to completely understand the impacts from ongoing D&D decisions on ground water contamination.

Ecology: The effects of wildfire on the sage grouse population will be analyzed in the Wildland Fire EA. This analysis is required in order to fully understand these impacts. This analysis will include impacts to the high desert steppe from the 1995 – 2001 wildland fires.

Summary of Major Impacts

Of the projects analyzed in the 1995 EIS, some are no longer operating and of the planned projects some have not occurred. In general, adverse environmental effects that cannot be avoided are less than projected in the1995 EIS. However, additional analysis is still required for both cultural resources and ecology to understand these impacts through completion of the Wildland Fire EA.

The analysis in the 1995 EIS was adequate for DOE decisions announced in the ROD. Future DOE decisions on major federal actions on the INEEL, or decisions deferred in the ROD, will require additional analysis for this discipline.

8-1.2 Aesthetic and Scenic Resources

Scope of 1995 Analysis

Section 4.5 of Volume 2 Part A of the 1995 EIS describes the visual character of the INEEL in 1995 and the surrounding scenic areas including the Craters of the Moon National Monument and the Black Canyon Wilderness Study Area. Section 5.5 of Volume 2 Part A of the 1995 EIS describes the effects of the alternatives on the visual character of the INEEL and those surrounding scenic areas. Also discussed was the fact that the Middle Butte area located in the southern portion of the INEEL is seen by the Shoshone-Bannock Tribes to be an important Native American resource. Impacts to visual quality due to air pollution are covered under Air Resources. The 1995 EIS analysis used the extent of the modification to an area to determine significant visual resource degradation due to structures. The definition of the degree of acceptable modification considers the nature, density, and extent of sensitive visual resources. The assumption used in the 1995 EIS when evaluating this resource area was that the construction of new facilities and modification of existing infrastructure and decontamination and decommissioning projects that occur within an established area boundary would have low visual impact.

Changes in the Environmental Discipline

1. Methodology-No changes

2. Assumptions-No changes

3. Analytical Methods-N/A

4. Data Adequacy- N/A

5. Accident Scenarios-N/A

6. Accident Probabilities-N/A

7. Cumulative Impacts-N/A

8. Changes in Regulatory Requirements-N/A

9. Other NEPA Analysis for INEEL Operations- Additional NEPA analyses for aesthetic and scenic concerns have been completed in the Advanced Mixed Waste Treatment Project EIS; Treatment and Management of Sodium-Bonded Spent Nuclear Fuel EIS; the Final Programmatic Environmental Impact Statement for Accomplishing Expanded Civilian Nuclear Energy Research and Development and Isotope Production Missions in the United States, including the Role of the Fast Flux Test Facility; and the High-Level Waste and Facilities Disposition EIS.

A qualitative analysis was performed to determine if there were any changes affecting aesthetic and scenic resources. Changes in the land status around the INEEL and construction and demolition activities since 1995 were reviewed to determine changes to the visual quality of the INEEL. The results are as follows:

On November 9, 2000, President Clinton signed a Presidential Proclamation that expanded the boundaries of Craters of the Moon National Monument. The expansion adds 661,000 acres to the existing 54,000-acre monument. Even though the boundaries of the monument were expanded, the boundaries of the wilderness areas were not. As such, no new air quality restrictions related to visual quality were implemented which would have required a review of the visual impact from INEEL operations.

The Black Canyon Wilderness Study Area located at the northeast boundary of the INEEL has not been designated a wilderness area and is still a “study area.” This is no change from the status evaluated in the 1995 EIS.

All construction projects are located in or adjacent to existing area boundaries (except the new INTEC percolation ponds which are west of INTEC) and are similar in size and characteristics to existing structures. In addition, decontamination and decommissioning projects would only reduce visual impacts.

New major construction projects at the INEEL since 1994.

<u>CFA</u>
Transportation Complex
Fire Station
Medical Facility
Office buildings

<u>INTEC</u>
Independent Spent Fuel Storage Installation
INEEL CERCLA Disposal Facility

<u>RWMC</u>
8 Waste Storage Buildings
Transuranic Storage Area Retrieval Enclosure
Operations Control Building
Office buildings
Advanced Mixed Waste Treatment Facility

<u>TRA</u>
Radiological Waste Building
Million gallon firewater tank

<u>TAN</u>
Chlorination Treatment Building

Summary of Major Impacts

A qualitative analysis was performed to determine if there were any changes affecting aesthetic and scenic resources. Changes in the land status around the INEEL and construction and demolition activities since 1995 were reviewed to determine changes to the visual quality of the INEEL. There are no air quality or visibility issues that are changing the charcater of the landscape.

The analysis in the 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

References:

President of the United States Proclamation 7373 of November 9, 2000, Boundary Enlargement of the Craters of the Moon National Monument, 65 FR 69221

8-1.3 Air Resources

Scope of 1995 Analysis

The 1995 EIS analyzed two scenarios - baseline and cumulative air quality impacts to (1) the National Ambient Air Quality Standards (NAAQS), (2) Prevention of Significant Deterioration (PSD) increments, (3) visibility impairment, and (4) radiological dose. Section 4.7 describes the baseline air emissions that were analyzed and section 5.7 describes the bounding air emissions from the selection of each of the alternatives.

The baseline case analyzed actual and potential emissions from existing INEEL site facilities and those foreseeable facilities anticipated to be operational before June 1, 1995. The foreseeable facilities included: compacting and sizing operations at WERF, Fuel Cycle Facility (FCF) at ANL-W, and operation of the portable water treatment unit at PBF. Baseline radiological impacts are based on 1991 emission estimates, with the exception of the NWCF, which are based on 1993 emissions and scaled up to reflect maximum operations. Baseline air pollutant impacts are based on 1991 air emissions data for the criteria air pollutants and on 1989 emissions data for the toxic air pollutants.

The cumulative scenario included the baseline case plus emissions from (1) construction and operation of new facilities, (2) demolition activities associated with the decontamination and decommissioning of existing facilities, (3) environmental restoration activities, and (4) mobile sources, such as vehicular traffic and heavy equipment operation within the INEEL.

Changes in the Environmental Discipline

1. Methodology

The methodology remains the same with the Annual Air Emissions Inventory and the NESHAPS Annual Report for Radionuclides as the basis for all emissions.

2. Assumptions

The major assumptions in the air analysis center on the sources that were analyzed in both the baseline and cumulative scenario. Sources such as the NWCF, WERF incinerator, and Coal Fired Steam Generating Facility (CFSGF) were significant baseline sources in 1995 and are currently not operating. Pit 9, the Idaho Waste Processing Facility (today's AMWTF), Fort St. Vrain SNF receipt, and the Waste Immobilization Facility were some of the facilities with significant emissions that are no longer under consideration or have been significantly modified, as in the case of AMWTP.

3. Analytical methods

For non-radiological emissions, the environmental impacts discussed above (PSD, NAAQS, visibility) were determined using ISC-2 and VISCREEN models. While both were accepted regulatory models they are limited to impacts within 50 km of the source(s). Today, ISC-3 and VISCREEN are unacceptable to the National Park Service and regulatory agencies typically will accept - ICS-3 and VISCREEN modeling for impacts within 50 km and CALPUFF for beyond 50 km. CALPUFF is a multipurpose model that considers impacts out several hundred kilometers, including regional haze (visibility with sulfur dioxide) and deposition analyses. CALPUFF was used for the HLW & FD EIS and the CPP-606 boilers air permit. This model was executed in screening mode with meteorological data recommended by the National Park Service. Radiological dose calculations used GENII. GENII is still an acceptable model for dose calculations.

4. Data Adequacy

The 1995 analysis for radionuclide emissions was based on 1991-93 emission data. The analysis for air pollutant emissions was based on 1991 emission data for the criteria air pollutants and on 1989 data for the toxic air pollutants.

The 1999 National Emissions Standards for Hazardous Air Pollutants (NESHAPS) report shows radionuclide emissions that are within the total emissions bounds of the 1995 EIS. The 1999 Air Emissions Inventory shows air emissions that exceed the emissions described in the 1995 EIS for some of the Toxic Air Pollutants and one of the criteria air pollutants. In some cases, these emissions exceed the sum of the baseline and the Alt. B emissions estimates as shown in tables 8-1.3.1 and 8-1.3.2.

4.1 Background – Tables 5-7.2 and 5-7.3 in the 1995 EIS show the effect of implementing the proposed alternative. The document does not state that these impacts are increases over the baseline impacts. A cursory review shows that the baseline data was not included in the alternative B emissions estimates.

Further research showed that the Technical Resource Document (TRD) for Air Resources, Section 6, states that the alternatives analysis was indeed separate from the baseline but that the baseline impacts were added to determine cumulative impacts. This eliminated the primary concern of whether the health and safety impacts that were described in the document included the baseline plus the alternatives impacts for the analysis that was performed. However, the EIS does not state that this is a cumulative analysis. It is only in the research of the TRD that this information was found. This could lead to decision makers not understanding that the alternatives analysis emissions must be added to the baseline in order to understand the bounding emissions, although the health and safety discussion did address the cumulative health impacts.

The baseline data found in table 4-7.2 in the 1995 EIS gives impacts that were based on 1989 (Toxic Air Pollutants) data and 1991 (Air Pollutants) data. It is apparent from a review of the data in comparison with the 1999 emissions data that either all sources of air emissions are not included in the baseline air emissions data or there has been a significant increase in the estimation of air impacts in recent years. Analysis showed that the biggest contributor not included in the baseline air impacts for toxic air pollutants was the NWCF. The NWCF was not operating in 1989 and so the Toxic Air Pollutants baseline data does not include NWCF emissions. (The second NWCF campaign went from Sept. 1987 – Dec 1988. The third NWCF campaign ran from Dec. 1990 – Nov. 1993.) This means that the Toxic Air Pollutants baseline data was not conservative for nitric acid emissions in the 1995 EIS.

The 1999 Air Emissions Inventory was compared with the Title V Air Permit to ensure that the permitted limits are in accordance with the actual reported air emissions. Sources of the major pollutants were compared between the documents. While the documents did not always report the same quantity of emissions, the differences were explainable. The Title V Air Permit does not report emissions from insignificant sources of pollutants. And in some cases, these are included in the 1999 Air Emissions Inventory.

4.2 Analysis of Air Pollutant Emissions

4.2.1. As shown in table 8-1.3.1 and table 8-1.3.2, the 1995 EIS does not appear to be bounding for chloroform, carbon tetrachloride, beryllium, VOCs, or nitric acid. For the Health and Safety impacts for these pollutants, see the Health and Safety portion of this appendix.

4.2.1.1. Nitric Acid - Even though the 1995 EIS underestimated the amount of nitric acid from INTEC, the amount that was analyzed adequately bounds the NWCF emissions. The health and safety impacts for the alternatives were based on the permitted emissions limits with a maximum concentration of 770 $\mu g/m^3$ at INTEC (table 4.7-3) and a maximum yearly emission of 97,000 kg/year (table 4.7-2). The primary source of nitric acid emissions is the NWCF. The 1995 EIS estimated nitric acid emissions of 1690 kg/year. The 1999 air emissions inventory showed nitric acid emission of 23,587 kg. Of this amount, virtually all of the emissions came from NWCF operations. Less than 0.05 kg came from other sources.

It appears that the NOX terms in the1995 EIS may have included the nitric acid emissions. From a modeling standpoint, the nitric acid is modeled and treated as NOX to determine environmental and health impacts. As a result the modeled impacts are bounding for nitric acid emissions.

Because NWCF operations have been suspended pending further analysis and potential additions to the emissions control system, the nitric acid emissions are no longer present from INEEL operations. Future operation of the NWCF including Maximum Achievable Control Technology (MACT) upgrades is one alternative being evaluated as a part of the HLW & FD EIS.

4.2.1.2. Carbon tetrachloride, Chloroform – Since the 1995 EIS was completed, additional analysis has been done to more completely understand the air emissions from the TRU stacks at RWMC. This additional analysis showed that the 1995 EIS underestimated emissions of carbon tetrachloride and chloroform. The estimates that were used in the 1995 EIS were based on the best available information at the time.

From Sept. 3, 1995 to Sept. 15, 1996, organic air emissions monitoring was conducted in the waste storage modules to determine actual emissions from the stored transuranic waste. This work resulted in a much more thorough understanding of the emissions from the wastes which has been reflected in the Air Emission Inventory (AEI) report. One item that was noted in a review of reference #6 is that temperature fluctuations resulted in a widely varying emissions fluctuation. When the weather is hot, the emissions are as much as an order of magnitude greater than when the weather is cold. The 1999 Air Emissions Inventory is conservative for these two pollutants because the emissions that were used were taken from the hottest (and thus the greatest emissions time) for the year. The report shows that an average emission rate over the course of the year results in projected emissions of 614 kg/year (vs. 2468 kg/year reported in the 1999 AEI) for carbon tetrachloride and 14.88 kg/year (vs. 33.48 kg/year reported in the 1999 AEI) for chloroform. This is less than was reported in the 1999 AEI. However, these emissions are still greater than the emissions analyzed in the 1995 EIS.

To help put these emissions into perspective, the purpose for the monitoring in the waste storage modules was to determine if these sources needed to be included as a separate emissions source in the Title V Air Permit for the INEEL. The definition of a significant source of pollutants from a permitting standpoint is one that emits greater than one ton of pollutants per stack. The transuranic waste is stored in five different buildings each with it's own stack. As a result, these do not require permitting because they are considered an insignificant source. So while the emissions of these pollutants were greater than was previously analyzed, the State of Idaho does not consider these to be a significant source of pollutants.

4.2.1.3. Beryllium – All of the beryllium emissions on the site are generated as a result of burning fossil fuels (coal, fuel oil, and diesel). As a part of the HLW & FD EIS, a review was done on the emissions from the burning of fossil fuels. This resulted in revised emissions estimates. As a result, the emissions of beryllium were discovered to have been previously underestimated.

4.2.1.4. VOCs – An analysis of the VOCs emitted on the INEEL show that they come from every major facility on the site.

Prior to 1997, only permitted sources of VOCs were reported. In 1997 and subsequent years, efforts were made to try to start to understand the actual emissions from the entire site, including non-permitted sources. These non-permitted sources are small emission generators and are not considered by the state of Idaho to require reporting. In order to fully understand the environmental impacts from INEEL emissions, efforts were made to try to estimate these emissions. Now the Air Emissions Inventory includes small engines (less than 100 hp), grouped sources, specific subcontractor sources that were previously excluded, and other insignificant non-permitted sources. Also, prior to 1999, there was a deminimus level for air emissions in which any source that generated less than five pounds of pollutants was not included. Now all of these sources are included in the Air Emissions Inventory. As a result, the reported air emissions of VOCs have more than doubled. This is not a reflection of additional emissions sources but better accounting of the actual emissions on the site.

4.2.2. Additional Information on the NWCF and VVE Facilities - Recent analytical work in determining actual emissions from INEEL operations has been completed for the New Waste Calcine Facility (NWCF) and the Vapor Vacuum Extraction (VVE) units at RWMC. Both of these facilities have increased emissions over what was previously projected in the 1995 EIS. While the NWCF is currently shut down, the emissions shown in the 1999 Air Emissions Inventory are known to be inaccurate for NWCF emissions. Future operation of the NWCF is contingent upon the decisions from the HLW & FD EIS, which includes the updated air emissions data.

The VVE units at the RWMC have greater emissions than were previously analyzed as shown in reference #5 for some pollutants. While not considered a source that would require permitting (see above discussion) or that would result in significant health impacts, the 1995 EIS does not consider these increased emissions. Typically, air emissions from Environmental Restoration projects are not included in the Air Emissions Inventory nor are they permitted emissions per Idaho state regulations. The increased emissions from the VVE units include chloroform (which is discussed above) and hydrochloric acid, which was not previously considered for the VVE units. Adding the new emissions data for HCl from the VVE units to the 1999 AEI data shows that HCl emissions are greater than was previously analyzed. Table 8-1.3.4 shows the revised emissions data for the VVE units.

4.3 Analysis of Radionuclide Emissions

A comparison of the actual emissions as reported in the National Emissions Standards for Hazardous Air Pollutants (NESHAPs) 1999 annual report with the estimated emissions in the1995 EIS shows some differences. The 1995 EIS only listed nine specific radionuclides, plutonium and uranium were show as a combination of all of the isotopes of each element, and a value was estimated for all remaining radionuclides. The NESHAPs report has a list of 143 specific radionuclides, plutonium and uranium are also shown as a combination of all isotopes of each element, gross alpha, gross beta/gamma, and gross beta are also shown. The value for "all other isotopes" given in the 1995 EIS is less than the total curies of all other isotopes that is given in the 1999 NESHAPs report. However, given the difference in detail between the two reports, it is understandable that there would be discrepancies. The total curie emissions in the 1995 EIS is still greater than all emissions reported in the 1999 NESHAPs report. To determine whether the radionuclide analysis is outside the bounds established by the 1995 EIS, it is important to look at the projected doses coming from the radionuclides and compare those with the actual dose from 1999 emissions.

For CY 1999, airborne radionuclide emissions from the INEEL operations were calculated to result in a maximum individual dose to a member of the public of 7.92E-03 mrem (7.92E-08 Sievert). The highest dose estimated for the maximally exposed individual in the 1995 EIS is associated with Alternative D. This dose (0.79 mrem per year), when added to the baseline dose of 0.05 mrem per year, results in a total maximum estimated dose to a member of the public of 0.84 mrem. This is well above the actual dose received by a member of the public showing that the 1995 EIS does provide a bounding analysis for radioactive air emissions sources.

5. Accident Scenarios

No Change.

6. Accident Probabilities

No Change.

7. Cumulative Impacts

The air analyses support the Aesthetic and Scenic Resources and Health and Safety disciplines.

8. Changes in Regulatory Requirements

There have been few, if any changes in regulatory requirements with the exception of visibility. Prior visibility analyses were based on impacts within close proximity of a source. Today, regulatory agencies consider visibility on a regional scale. The continued use of CALPUFF in a screening mode with limited meteorological data will likely meet with resistance from the Park Service and regulatory agencies in future NEPA actions and air permitting.

9. Other NEPA Analysis

The HLW & FD EIS is the only NEPA analysis that would provide some coverage for this environmental discipline for the broader regional impact. The HLW & FD EIS tiered off the 1995 EIS with the intent of reducing the amount of new analyses. However, new analyses were conducted with CALPUFF for the two HLW processing options all in a screening mode.

Summary of Major Impacts

The maximum emissions from radiological sources are bounded by the analysis in the 1995 EIS. For air pollutants, the maximum emission scenario for cumulative emissions from baseline and preferred alternative sources remains bounding for most pollutants, as there are fewer sources operating today. There are five pollutants that exceeded the baseline established in the 1995 EIS. A review of the health effects of these pollutants show that they are well below established emissions standards. Because it can be readily shown that there are no adverse health effects associated with these pollutants, additional analysis is not required for these pollutants.

The existing analysis does not show any adverse impacts from air emissions at 50 km. It is not anticipated that there will be any adverse impacts from air emissions at 200 km. However, due to stakeholder concerns, analysis in the HLW & FD EIS has been completed out to 200 km for some sectors. The methodology has changed such that now regional impacts can be considered using new models. Limited use of new models (CALPUFF in a screening mode) in the HLW & FD EIS and the CPP-606 Prevention of Significant Deterioration permit provide some mitigative influence on the changes in the discipline. Additional analyses using the latest emissions data and a full compliment of meteorological data are warranted to address stakeholder concerns and to assist DOE in identifying the need for and location of additional regional monitors.

The analysis in the 1995 EIS was adequate for DOE decisions announced in the ROD. Future DOE decisions on major federal actions on the INEEL, or decisions deferred in the ROD, will require additional analysis for this discipline. Additional analysis is recommended to address stakeholder concerns regarding air quality beyond 50 km.

Table 8-1.3.1 Criteria Air Pollutant Emissions (kg per year)

	1995 EIS Alt. B Estimate	1995 EIS Actuals + Projected Increases	1995 EIS Permitted Maximums	Amount Analyzed[a]	1999 Actual Emissions
Carbon monoxide	102,800	301,300	2,200,000	2,302,800	272,000
Nitrogen dioxide	1,908,704	744,400	3,000,000	4,908,704	526,000
Sulfur dioxide	95,133	202,100	1,700,000	1,795,133	19,200
Particulate matter	75,067	302,400	900,000	975,067	45,400
Volatile organic compounds	14,239			14,239	36,400
Lead	208	11	68	276	2.6
	1995 EIS Table 5-7.2	1995 EIS Table 4-7.2	1995 EIS Table 4-7.2		1999 Air Emissions Report

a – Column 5 is the sum of column 2 and the greater of column 3 or column 4.

Table 8-1.3.2 Toxic Air Pollutant (kg per year)

	1995 EIS Alt. B Estimate	1995 EIS Actuals + Projected Increases	1995 EIS Maximums	Amount Analyzed[a]	1999 Air Emissions Inventory – Actual Emissions	Revised VVE Emissions[b]	Total INEEL Emissions
Acetaldehyde		31	180	180	3.63		3.63
Ammonia	1.6	1600	6500	6501.6			
Arsenic	0.49	4.2	24	24.49	1.72		1.72
Asbestos	0.44			0.44			
Benzene	190	370	530	720	25		25
1,3-Butadiene		220	390	390	0.12		0.12
Beryllium	0.18			0.18	0.59		0.59
Cadmium compounds	1.3			1.3	0.67		0.67
Carbon tetrachloride	240	28	28	268	2,468		2,468
Chlorine (Cl_2)						154	154
Chloroform	9.6	1.95	1.9	11.5	33.48	18.2	51.68
Chromium compounds	6.9	3.12/0.4	38/26	44.9/32.9	1.37		1.37
Cyclopentane		350	350	350			
Dichloromethane		620	1100	1100	1.45		1.45
Formaldehyde	2000	960	3300	5300	54.43		54.43
Hydrazine		8.3	8.3	8.3			
Hydrochloric acid	16,000	1500	1500	17500	6,350	15,600	21,950
Hydrofluoric acid	1100			1100	907.19		907.19
Mercury	440	200	200	640	34.52		34.52
Methylene chloride	2000			2000	24.09		24.09
Napthalene		16	16	16	4.35		4.35
Nickel	43	270	1000	1043	1.22		1.22
Nitric acid	190	1500	97,000	97190	23,587		23,587
Polychlorinated biphenyl	3			3			

Perchloroethylene	12			12	0.73		0.73
Phosphorus		56	210	210			
Propionaldehyde		62	110	110	0.91		0.91
Styrene		4.7	4.7	4.7	0.061		0.061
Sulfuric acid	65			65			
Tetrachloroethylene		980	980	980	4.01E-04		4.01E-04
Toluene		580	580	580	33.97		33.97
1,1,1-Trichloroethane						5.96	5.96
Trichloroethylene	55	4.68	4.5	59.68	15.88		15.88
Trichloro-trifluoroethane	4			4			
Trimethylbenzene		87	87	87			
References	Table 5-7.2	Table 4-7.2	Table 4-7.2		1999 Air Emissions Report	VVE Report	

a – Column 5 is the sum of column 2 and the greater of column 3 or column 4.
b – The data that is included here is the portion of the emissions that are greater than were included in the 1995 EIS.

Table 8-1.3.3 Radiological Air Emissions Sources (curies)

Radionuclide	1995 EIS Estimate	1999 NESHAPS Emissions Report				
		Contin-uously Measured Sources - Table II-8	Point Sources - Table II-9	Non-point sources - Table II-10	Total Emissions	All Isotopes not specified in the 1995 EIS
Ac-227			1.46E-11		1.46E-11	1.46E-11
Ac-228			2.05E-11		2.05E-11	2.05E-11
Ag-108d			1.40E-17		1.40E-17	1.40E-17
Ag-108m				1.60E-07	1.60E-07	1.60E-07
Ag-108md			1.03E-12		1.03E-12	1.03E-12
Ag-110m			0.00E+00	2.40E-07	2.40E-07	2.40E-07
Am-241	2.10E-02	8.22E-09	9.76E-07	2.20E-09	9.87E-07	
Am-243			3.87E-10		3.87E-10	3.87E-10
Ar-41			1.22E+03		1.22E+03	1.22E+03
Ba-139			0.00E+00		0.00E+00	0.00E+00
Ba-140			5.89E-11	5.60E-08	5.61E-08	5.61E-08
Be-7			6.60E-12		6.60E-12	6.60E-12
Bi-207d			1.00E-15		1.00E-15	1.00E-15
Bi-210			7.27E-13		7.27E-13	7.27E-13
Bi-212			1.45E-11		1.45E-11	1.45E-11
Bi-214			1.23E-11		1.23E-11	1.23E-11
Bk-249d			5.00E-12		5.00E-12	5.00E-12
C-14		3.98E-03	6.42E-01	9.70E-02	7.43E-01	7.43E-01
Cd-113md			0.00E+00		0.00E+00	0.00E+00
Ce-141			8.52E-11		8.52E-11	8.52E-11
Ce-144			4.59E-13	9.09E-07	9.09E-07	9.09E-07
Cf-249d			5.23E-12		5.23E-12	5.23E-12
Cm242			2.42E-13		2.42E-13	2.42E-13
Cm-243			0.00E+00		0.00E+00	0.00E+00
Cm-244			2.00E-09		2.00E-09	2.00E-09
Cm-248			2.10E-12		2.10E-12	2.10E-12
Co-57			1.00E-13		1.00E-13	1.00E-13
Co-58			4.49E-11	7.20E-07	7.20E-07	7.20E-07
Co-60	7.30E-02	1.06E-07	1.84E-04	7.76E-04	9.60E-04	
Cr-51			2.47E-03	6.00E-05	2.53E-03	2.53E-03
Cs-134	3.80E-01	2.10E-07	2.05E-05	1.94E-06	2.27E-05	
Cs-137				2.33E-04	2.33E-04	2.33E-04
Cs-137/Ba-137m			8.81E-04		8.81E-04	8.81E-04
Cs-138			2.10E-02		2.10E-02	2.10E-02
Eu-152			3.76E-06	2.81E-05	3.19E-05	3.19E-05
Eu-154			1.99E-06	3.51E-05	3.71E-05	3.71E-05
Eu-155			1.74E-07	1.50E-05	1.52E-05	1.52E-05
Fe-55			7.78E-05		7.78E-05	7.78E-05
Fe-59			3.15E-09		3.15E-09	3.15E-09

Radionuclide	1995 EIS Estimate	1999 NESHAPS Emissions Report				
		Contin-uously Measured Sources - Table II-8	Point Sources - Table II-9	Non-point sources - Table II-10	Total Emissions	All Isotopes not specified in the 1995 EIS
Gd-153d			0.00E+00		0.00E+00	0.00E+00
Gross Alpha			6.17E-06		6.17E-06	6.17E-06
Gross Beta/Gamma			1.22E-04		1.22E-04	1.22E-04
Gross Beta			0.00E+00		0.00E+00	0.00E+00
H-3	4.10E+03	7.53E+01	1.70E+02	1.46E+02	3.91E+02	
Hf-175			7.00E-05	7.40E-07	7.07E-05	7.07E-05
Hf-181			6.54E-07	1.00E-05	1.07E-05	1.07E-05
Hg-203			2.31E-05		2.31E-05	2.31E-05
I-125			3.27E-10		3.27E-10	3.27E-10
I-128d			0.00E+00		0.00E+00	0.00E+00
I-129	1.90E-01	2.61E-03	1.60E-07	3.80E-08	2.61E-03	
I-131			8.93E-04	1.20E-03	2.09E-03	2.09E-03
I-132			1.47E-03		1.47E-03	1.47E-03
I-133			2.91E-03	2.00E-05	2.93E-03	2.93E-03
I-134			2.22E-03		2.22E-03	2.22E-03
I-135			1.24E-01		1.24E-01	1.24E-01
Ir-192			7.29E-07		7.29E-07	7.29E-07
Ir-194			1.75E-07		1.75E-07	1.75E-07
K-40			3.96E-11		3.96E-11	3.96E-11
Kr-85	2.10E+04	1.96E+03	4.70E-02		1.96E+03	
Kr-85m			0.00E+00		0.00E+00	0.00E+00
Kr-88			0.00E+00		0.00E+00	0.00E+00
La-140			3.17E-06	3.30E-08	3.20E-06	3.20E-06
Mn-54			2.12E-06	1.30E-06	3.42E-06	3.42E-06
Mn-56			0.00E+00		0.00E+00	0.00E+00
Mo-99			9.49E-15	1.20E-07	1.20E-07	1.20E-07
Na-22			5.20E-13		5.20E-13	5.20E-13
Na-24			5.49E-04	1.70E-05	5.66E-04	5.66E-04
Nb-94			3.00E-10		3.00E-10	3.00E-10
Nb-95			1.43E-11	3.41E-07	3.41E-07	3.41E-07
Ni-59			9.15E-12		9.15E-12	9.15E-12
Ni-63			5.36E-06		5.36E-06	5.36E-06
Np-237			3.96E-11	1.60E-08	1.60E-08	1.60E-08
Np-239			7.07E-06	6.90E-08	7.14E-06	7.14E-06
Os-191			1.74E-07		1.74E-07	1.74E-07
P-32			0.00E+00		0.00E+00	0.00E+00
Pa-231			4.61E-11		4.61E-11	4.61E-11
Pa-233			3.92E-11		3.92E-11	3.92E-11
Pa-234/Pa-234m			2.70E-07		2.70E-07	2.70E-07
Pb-210			7.33E-13		7.33E-13	7.33E-13

Radionuclide	1995 EIS Estimate	1999 NESHAPS Emissions Report				
		Contin-uously Measured Sources - Table II-8	Point Sources - Table II-9	Non-point sources - Table II-10	Total Emissions	All Isotopes not specified in the 1995 EIS
Pb-212			4.06E-11		4.06E-11	4.06E-11
Pb-214			1.29E-11		1.29E-11	1.29E-11
Plutonium Isotopes	5.80E-02	2.38E-06		1.70E-08	2.40E-06	
Pm-147			3.03E-09		3.03E-09	3.03E-09
Po-210			5.33E-13		5.33E-13	5.33E-13
Po-214			1.23E-11		1.23E-11	1.23E-11
Po-216			7.59E-13		7.59E-13	7.59E-13
Po-218			1.22E-11		1.22E-11	1.22E-11
Pr-144			1.83E-13		1.83E-13	1.83E-13
Pu-236			1.68E-10		1.68E-10	1.68E-10
Pu-238			2.22E-07	1.52E-08	2.37E-07	2.37E-07
Pu-239			2.34E-06		2.34E-06	2.34E-06
Pu-239/40				4.19E-09	4.19E-09	4.19E-09
Pu-240			2.80E-08	1.90E-09	2.99E-08	2.99E-08
Pu-241			5.17E-10		5.17E-10	5.17E-10
Pu-242			4.50E-07		4.50E-07	4.50E-07
Ra-226			1.26E-11		1.26E-11	1.26E-11
Rb-88			4.21E-01		4.21E-01	4.21E-01
Re-186d			7.34E-10		7.34E-10	7.34E-10
Re-188				5.10E-09	5.10E-09	5.10E-09
Re-188d			3.06E-04		3.06E-04	3.06E-04
Rh-106				7.20E-08	7.20E-08	7.20E-08
Rn-219			1.46E-11		1.46E-11	1.46E-11
Ru-103			2.23E-12	5.90E-08	5.90E-08	5.90E-08
Ru-106				7.20E-08	7.20E-08	7.20E-08
Ru-106/Rh-106			5.75E-14		5.75E-14	5.75E-14
Sb-122				3.80E-07	3.80E-07	3.80E-07
Sb-122d			2.68E-06		2.68E-06	2.68E-06
Sb-124			1.79E-12	3.60E-06	3.60E-06	3.60E-06
Sb-125				2.71E-07	2.71E-07	2.71E-07
Sb-125/Te-125m	2.90E-02	4.90E-06	7.21E-05		7.70E-05	
Sb-127				1.50E-08	1.50E-08	1.50E-08
Sc-46				5.40E-08	5.40E-08	5.40E-08
Sm-151			1.69E-14		1.69E-14	1.69E-14
Sm-153			1.78E-08		1.78E-08	1.78E-08
Sn-113			1.75E-13		1.75E-13	1.75E-13
Sr-85d			3.13E-08		3.13E-08	3.13E-08
Sr-89			2.28E-07	3.00E-06	3.23E-06	3.23E-06
Sr-90				8.34E-06	8.34E-06	8.34E-06

Radionuclide	1995 EIS Estimate	1999 NESHAPS Emissions Report				
		Contin-uously Measured Sources - Table II-8	Point Sources - Table II-9	Non-point sources - Table II-10	Total Emissions	All Isotopes not specified in the 1995 EIS
Sr-90/Y-90	4.20E-01	1.20E-04	5.99E-04		7.19E-04	
Ta-182				4.70E-07	4.70E-07	4.70E-07
Tc-99			3.79E-12		3.79E-12	3.79E-12
Tc-99m			1.12E-03		1.12E-03	1.12E-03
Te-132				7.70E-09	7.70E-09	7.70E-09
Th-229			0.00E+00		0.00E+00	0.00E+00
Th-230			5.57E-10		5.57E-10	5.57E-10
Th-231			2.91E-11		2.91E-11	2.91E-11
Th-232			4.27E-11		4.27E-11	4.27E-11
Th-234			2.70E-07		2.70E-07	2.70E-07
ThTL-232				5.10E-09	5.10E-09	5.10E-09
U-232			3.13E-05		3.13E-05	3.13E-05
U-233			2.01E-09		2.01E-09	2.01E-09
U-234			3.47E-08	8.50E-08	1.20E-07	1.20E-07
U-235			1.33E-10	1.32E-07	1.33E-07	1.33E-07
U-236			4.74E-13		4.74E-13	4.74E-13
U-238			2.71E-07	5.61E-08	3.27E-07	3.27E-07
Uranium Isotopes	3.10E-03	1.09E-09		2.40E-08	2.51E-08	
W-187			1.35E-05		1.35E-05	1.35E-05
Xe-131m	1.80E+02	8.82E-14			8.82E-14	
Xe-133			1.05E+01	5.00E-05	1.05E+01	1.05E+01
Xe-135			1.56E+01		1.56E+01	1.56E+01
Xe-135m			0.00E+00		0.00E+00	0.00E+00
Xe-138			0.00E+00		0.00E+00	0.00E+00
Y-90				7.00E-07	7.00E-07	7.00E-07
Y-90m			0.00E+00		0.00E+00	0.00E+00
Y-91m			0.00E+00		0.00E+00	0.00E+00
Zn-65			2.11E-08	5.20E-06	5.22E-06	5.22E-06
Zr-95			3.65E-11	1.70E-06	1.70E-06	1.70E-06
Totals	2.53E+04	2.04E+03	1.42E+03	1.46E+02	3.60E+03	
All other Isotopes	6.20E-01	3.36E+00				1.25E+03

Table 8-1.3.4 Revised Vapor Vacuum Extraction Unit Emissions Data

Pollutant	1995 EIS Emissions Estimate (kg/year)	Revised Emissions Estimate (kg/year)
Carbon Tetrachloride	230	118
Chloroform	7.6	25.8
Perchloroethylene	8.8	3.77
Trichloroethylene	40	24.9
1,1,1-trichloroethane		5.96
HCl		15,600
Cl_2		154

References:

1. 1999 INEEL National Emission Standards for Hazardous Air Pollutants- Radionuclides, Annual Report, June 2000, DOE/ID-10342 (99)

2. Technical Resource Document for Air Resources Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs, DOE/ID-10497, March 1995

3. E-mail note from Steven Zohner, WERF, NWCF, and Coal-Fired Plant emissions from 1999 Air Emissions Inventory

4. Air Emissions Inventory for the Idaho National Engineering and Environmental Laboratory – 1999 Emission Report, DOE/ID-10788, May 2000

5. Operable Unit 7-08 Air Dispersion Modeling and Health Effects from Thermal and Catalytic Oxidation Unit Emissions at the Radioactive Waste Management Complex, EDF-1901, June 25, 2001

6. Routine Organic Air Emissions at the Radioactive Waste Management Complex Waste Storage Facilities Fiscal Year 1996 Report INEL/96-0377, January 1997, K. J. Galloway, J. G. Jolley.

8-1.4 Cultural Resources

Scope of the 1995 Analysis:

The cultural resources of the INEEL are described in Section 4.4 of the Affected Environment Chapter of the 1995 EIS. Section 4.4 is divided into descriptions of prehistoric and historic cultural resources on the INEEL. The impacts to cultural resources of the INEEL from implementing spent nuclear fuel management and environmental restoration and waste management alternatives are analyzed in Section 5.4 of the Environmental Consequences Chapter of the EIS.

Changes in the Environmental Discipline:

1. Methodology.

No change. The methodology for identifying, evaluating, and mitigating impacts to cultural resources has been established through the National Historic Preservation Act (NHPA), the Historic Sites Act, the Archaeological Resources Protection Act (ARPA), the Native American Graves Protection and Repatriation Act (NAGPRA), and the American Indian Religious Freedom Act (AIRFA). These laws and their implementing regulations are still in effect and remain unchanged, with the exception of 36 CFR Part 800, Protection of Historic Properties (new final rule effective January 11, 2001), which implement the NHPA. Both direct and indirect impacts to INEEL cultural resources due to the proposed actions listed in the 1995 EIS are anticipated to remain unchanged, provided that there is no additional construction or demolition of buildings or any additional ground disturbing activities that effect previously undisturbed ground. The program addresses cultural resources in a broader sense of the term to include cultural values and perspectives. Any change to the scope of the 1995 SNF EIS would require additional analysis to determine direct and indirect effects to cultural resources on the INEEL. Cultural resources analysis is routinely completed for every action that may affect cultural resources on the INEEL.

2. Assumptions.

Any archaeological surveys that were performed more than ten years ago will be re-evaluated by the contractor’s Cultural Resources Management Office for adequacy. In addition, the entire PBF and ARA areas (WAG-5) are sensitive areas to the Shoshone-Bannock Tribes because of unanticipated discoveries of early Native American remains that were discovered since the preparation of the 1995 EIS. There is a strong likelihood that any ground disturbing activities in these areas could produce inadvertent discoveries of human remains. Inadvertent discoveries are subject to INEEL stop-work authority and have the potential to trigger requirements under the Native American Graves Protection and Repatriation Act (NAGPRA). The National Park Service has informally requested that DOE-ID nominate the entire INEEL as a Historic District for inclusion in the National Register of Historic Places. If that were to happen, the decision would need to be reviewed for any impacts on the 1995 EIS.

3 Analytical Methods. No change.

4. Data Adequacy.

A.) In September 1997, The Arrowrock Group Inc. of Boise, ID prepared "The INEEL - A Historic Context and Assessment Narrative and Inventory." The document was revised in July 1998. This document provides an assessment of 516 buildings on the INEEL. According to the document, 217 of the 516 buildings surveyed are potentially eligible for inclusion in the National Register of Historic Places. This document has a direct bearing on the data in Table 5.4-1 on page 5.4-3 of Vol. 2. For instance, the buildings listed under Decontamination and Decommissioning Projects (TRA-654, TRA-603, CPP-601, CPP-603, CPP-640 and CPP-633) are either individually eligible for the National Register or are contributing properties to the National Register.

B.) The 1992 Working Agreement between DOE-ID and the Shoshone-Bannock Tribes (page 4.4.2 of Vol. 2) was replaced in 1998 and again in 2000 with an Agreement -in-Principle between DOE-ID and the Shoshone-Bannock Tribes.

C.) The INEEL Cultural Resource Management Plan (CRMP) is in final draft and will be completed in 2001 (page 4.4.3 of Vol. 2). This is also true for the Programmatic Agreement between DOE-ID the Idaho State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP), which is Appendix F of the CRMP.

5. Accident Scenarios. N/A

6. Accident Probabilities. N/A.

7. Cumulative Impacts. No change.

8. Changes in Regulatory.

The 1992 amendments to the National Historic Preservation Act (NHPA) were promulgated in May 1999, 36 CFR Part 800, Protection of Historic Properties. The new regulations removed much of the responsibility of the Advisory Council on Historic Preservation (ACHP) in the NHPA Section 106 process and placed more responsibility and involvement with the State Historic Preservation Officers. It also gave Native American Tribes more of a role in the overall Section 106 process.

9. Other NEPA Analysis for INEEL operations.

See Cultural Resources sections (4.4 and 5.4) of the Idaho High-Level Waste and Facilities Disposition EIS, December 1999.

Summary of Major Impacts:

Impacts to cultural resources resulting from actions analyzed in the 1995 EIS have been less than expected because there have been fewer acres of land disturbed. However, the 1995 EIS did not anticipate or address the effects of wildfires on cultural resources. Impacts related to wildfires are addressed in the Idaho HLW & FD EIS and are being addressed in more detail in the Wildland Fire Environmental Assessment.

The analysis in the 1995 EIS was adequate for DOE decisions announced in the ROD. Future DOE decisions on major federal actions on the INEEL, or decisions deferred in the ROD, will require additional analysis for this discipline. The Wildland Fire EA being prepared will address the outstanding cultural impacts. No analysis beyond that being performed by the Wildland Fire EA is required.

References:

1. Arrowrock Group, “The Idaho National Environmental and Engineering Laboratory A Historical Context and Assessment Narrative and Inventory”, INEEL/EXT-97-01021, rev. 3, July 31, 1998

2. Miller, Susanne J., “Idaho National Engineering Laboratory Management Plan for Cultural Resources (Final Draft), DOE/ID-10361, Rev. 1, July 1995

3. Agreement -in-Principle between the Shoshone-Bannock Tribes and the United States Department of Energy, dated 9/27/00

8-1.5 Cumulative Impacts and Impacts from Connected or Similar Actions

Scope of 1995 Analysis

"Cumulative Impacts and Impacts from Connected or Similar Actions" relating to the INEEL and surrounding region are analyzed in Volume 2, Part A, Section 5.15 of the 1995 EIS. The Cumulative impacts analyses address Land Use, Socioeconomics, Cultural Resources, Air Resources, Water Resources, Ecological Resources, Transportation, Health and Safety, and Waste Management.

Changes in the Environmental Discipline

1. Methodology

The methodology used to analyze cumulative impacts in the 1995 EIS was to summarize the impacts identified in the separate sections of the Environmental Consequences Chapter (Chapter 5). For example the cumulative impacts analysis repeats the impacts identified in Chapter 5 for Air Resources and Health and Safety. The Health and Safety section of the Cumulative Impacts analysis combines the radiological and non-radiological effects from the atmospheric, groundwater, and biotic pathways. Impacts to both workers and the public were identified. The analysis also compares the sources of radioactive airborne materials on the INEEL with other regional sources, such as phosphate processing operations in Pocatello. Transportation impacts from direct exposure (from the transport of radioactive materials) and traffic accidents were also analyzed.

The 1995 EIS cumulative impact analysis is based on a projection of radiologic and chemical exposures resulting from the alternatives compared to the no action baseline. Each of the alternatives is composed of a set of actions that are the sources of the impacts and risks.

The assessment of whether the 1995 analysis remains adequate is based on a comparison with program reviews and analyses prepared for each of the disciplines analyzed for the Supplement Analysis. The adequacy assessment is also based on a comparison with the cumulative impacts analysis in the 1999 Idaho HLW EIS. The cumulative impacts analysis in the Idaho HLW EIS incorporates the "I Think" computer model to integrate impacts from various sources to identify potential synergistic or additive incremental effects under several "what if" alternative scenarios.

<u>Consideration of direct, indirect, interconnected and synergistic effects in the SA Cumulative Impacts review</u>

Air emissions may be inhaled over time by an individual or a population and have a cumulative impact on health. Air emissions may also result in the deposition of chemicals or radioactive contaminants in soil and water. Soil contaminants may be re-suspended by wind erosion, inhaled and re-distributed repeatedly. These contaminants may in-turn be picked up by vegetation and ingested by herbivores and concentrated up the food chain. Soil contaminants may also be picked up by water run-off or driven through the soil into the groundwater. Humans and animals may be affected by inhaling, ingesting or absorbing contaminants originating from emissions to the air pathway.

Leaks, spills and the disposal of chemical and radioactive contaminants from different locations can have a cumulative impact on water resources. Contaminants may converge from several sources to concentrate contaminates or be diluted and dispersed by the groundwater depending on local and regional hydrology. Contaminated groundwater may be withdrawn and used in many ways by individuals and populations. Use of contaminated groundwater for drinking, cooking, bathing, irrigation and watering livestock can result in cumulative impacts to health.

Contaminated soil or groundwater can affect land use and local economic conditions. As ground water emerges in springs and flows into rivers it may impact the ecology and cultural resource values.

Transportation of radioactive waste or material past an individual or population residing at a stationary location results in a certain exposure risk. Exposure to radioactivity and the corresponding health risks increase as the level of radioactivity or the number of shipments increase. The likelihood of traffic accidents increases with the number of shipments. Thus, transportation may contribute cumulatively to increasing risks to health and safety.

2. Assumptions

Assumptions used for the 1995 EIS cumulative impact analysis are not stated but the basis used for the analysis provides a clear means of comparison with current conditions.

3. Analytical Methods

The 1995 EIS cumulative impacts analysis was based on: a) on historical data; b) alternatives analyzed in the EIS; c) reasonably foreseeable actions; and d), actions that may be unrelated to federal actions or alternatives analyzed in the EIS but may contribute to cumulative environmental impacts.

The first part of the approach used in conducting the cumulative impacts review for the SA was to compare the actions selected for implementation in the 1995 EIS ROD with those actions that have actually been implemented or are still planned. Program reviews were used as the basis for this comparison. The second part was to compare the analysis of each discipline in the 1995 EIS with reviews of each discipline prepared for the SA. These were then compared to the cumulative impacts analyses in the Idaho HLW & FD EIS which contains the most recent comprehensive cumulative impacts analysis of the INEEL.

4. Data Adequacy

In general, data used in the 1995 EIS is adequate and presents a reasonable picture of cumulative environmental impacts of the INEEL and surrounding region. In general, impacts were overestimated because some facilities have been closed, some operations have been discontinued, and some anticipated actions have not been implemented.

Areas where data used in the 1995 EIS may have been incomplete or out of scope and were not used to analyze cumulative impacts are groundwater, flooding, reactor operations, and effects of wildland fires.

For the SA, data available for analyses of cumulative impacts to groundwater and of the cumulative impacts of flooding to facilities and operations remain incomplete for further decision-making. Data is adequate for all other comparisons.

5. Accident Scenarios

Accident impacts are not included in the cumulative impacts section because any impacts from a single accident on a co-located facility are already included in the existing accident analysis.

6. Accident Probabilities

Accident probabilities are not included in the cumulative impacts section because two separate accidents would have to take place at the same time. This scenario is beyond the range of probability considered in the 1995 EIS.

7. Cumulative and synergistic effects

Since the 1995 EIS was issued there have been no facilities constructed, operations initiated, or any unforeseen events that would tend to contribute any incremental increase to cumulative impacts over those analyzed or projected in the 1995 EIS. Overall, the potential for cumulative environmental impacts has been reduced on the INEEL and in the surrounding area. Some of the INEEL's major sources of air emissions have been shut down and some that were planned were not under construction as of October 2000 and are not likely to become operational before 2005. For example, the New Waste Calcine Facility, WERF, EBR-II and ICPP Coal Fired Steam Plant have been shut down; an incinerator is currently not planned as part of the AMWTP, and there are no current plans for thermal treatment associated with Pit 9 retrieval. These examples contributed incrementally to health impacts through the air pathway in the 1995 EIS cumulative impacts analysis. There are other examples such as acreage disturbed that will be less than expected with fewer corresponding impacts to biological and cultural resources, and there will be fewer spent nuclear shipments to the INEEL which reduces transportation associated risk. No impacts have been identified that would synergistically work together or combine to result in greater impacts in extent or intensity than those analyzed in the 1995 EIS.

8. Changes in Regulatory Requirements

There have been no changes in regulatory requirements that would affect the cumulative impact analyses in the 1995 EIS. However, the implementation of those requirements, such as permitting under the Clean Air Act, may have the effect of reducing emissions through requiring more stringent control technology. New required air modeling, such as CALPUF, provides additional data for more distant places but tends to corroborate existing data. DOE Order 435.1 requires the preparation of a "composite analysis" which is a comprehensive review of contaminant sources at a site. Completion of a composite analyses for INTEC and RWMC, combined into a final composite analysis for the INEEL will provide a much better basis for analyzing environmental impacts to groundwater and impacts of residual contaminants to land and biological resources than available during preparation of the 1995 EIS.

9. Other NEPA Analyses for INEEL Operations

Several EAs and EISs have been prepared that tier from the 1995 EIS which analyze existing or proposed INEEL facilities and operations. These are the Advanced Mixed Waste Treatment Project EIS, EIS for the Treatment and Management of Sodium-Bonded Spent Nuclear Fuel, Nuclear Infrastructure EIS, and Idaho High Level Waste and Facilities Disposition EIS. The Idaho HLW EIS also integrates the analysis of CERCLA and RCRA actions to comprehensively analyze impacts or environmental restoration and waste management. Each of these EISs analyzes the impacts of the actions within their scope as they contribute incrementally to INEEL cumulative environmental impacts. Except for reactor operations, all actions analyzed in these EISs were anticipated and addressed in the cumulative impacts section of the 1995 EIS.

Summary of Major Impacts

The 1995 EIS based its analysis on predictions, whereas the SA bases its comparison on a set of conditions, which for the most part are known. For example, a certain set of facilities have been built, or shut down, resulting in a known set of environmental impacts. In other cases, emissions and contaminants have been measured or are better known and can be compared with the 1995 analysis. Following the outline of the 1995 EIS cumulative impacts analysis the findings are as follows:

Land Use: Impacts to land use have been slightly greater than expected. The 1995 EIS anticipated about 537 acres of undisturbed land would be cleared or excavated for a range of proposed activities. About 705 acres have been cleared or will be before 2005 based recent decision documents.

Socioeconomics: The employment level projected in the 1995 EIS for 2000 was 8,316, while the actual employment for 2000 was 8,130. Socioeconomic impacts from INEEL employment are in line with the EIS analysis.

Cultural Resources: Impacts to cultural resources and historic properties resulting from actions analyzed in the 1995 EIS have been as about as expected. Slightly more acreage has been or will shortly be disturbed and but fewer historic structures effected. The 1995 EIS did not anticipate or address the effects of wildland fires or the impacts of fire fighting such as the un-surveyed grading of emergency firebreaks. Impacts related to wildfire are addressed in the Idaho HLW EIS and will be addressed in detail in the planned Wildland Fire EA. Soil erosion resulting from the fires may have exposed some cultural resource sites to weathering and erosion.

Air Resources: Primary INEEL emissions sources, WERF and NWCF, have been shut down, or placed in standby pending upcoming decisions on whether to install major new emission control systems. Transportation has been less than expected and some INEEL vehicles have been converted to natural gas so transportation related emissions have been less than expected. Air emissions are the most direct pathway to workers and the public and all INEEL air pollutants are emitted into a common airshed so the impacts to receptors within the airshed are cumulative. Because the most significant emissions sources analyzed in the 1995 EIS are no longer in operation, cumulative impacts overall and associated air pathway risks are less than anticipated in the 1995 EIS.

Water Resources: When the 1995 EIS was completed there was insufficient data to analyze cumulative impacts to groundwater from all contaminant sources across the INEEL. Even today, groundwater sampling and modeling have not been fully undertaken site-wide. Since the 1995 EIS was issued, some groundwater samples taken at the RWMC indicate possible but unconfirmed plutonium and americium contamination, presumably from buried waste. Some organic contaminants at CERCLA sites have been removed from ground water by bio and vapor extraction methods.

Cumulative risks associated with flooding or overland flow across the INEEL are imprecisely known. Several flood studies have been conducted though no floodplain elevation has been determined conclusive by the INEEL Natural Phenomena Committee. This situation is discussed further in the HLW & FD EIS.

Ecological Resources: Impacts to the ecology of the INEEL are primarily tied to acres of surface disturbance. Since the 1995 EIS, fewer acres have been cleared of native vegetation or converted to facility use than expected. Consequently, impacts resulting from the loss of habitat due to facility construction have been less than expected. Wildfires are anticipated naturally occurring events, however their biological effects on the INEEL have not been addressed in a NEPA document. All of the large wildfires on the INEEL have occurred since the 1995 EIS. The effects of these fires, such as the potential conversion of sagebrush steppe to annual grassland, grading firebreaks, soil loss, weed invasion, and the combined effects on site ecology have not been analyzed. Since the 1995 EIS, soils have been analyzed to detect radionuclides, heavy metals and chemical contaminants. The Idaho HLW EIS states both radioactive and chemical contaminants in INEEL soil samples are lower than screening levels.

Transportation: To date, there have been fewer shipments, of GTCC and TRU-waste than forecast in the 1995 EIS, and the associated risks have thus far been correspondingly lower. The number of shipments analyzed in the 1995 EIS may yet occur but will be compressed into a shorter period of time.

Health and Safety: The air and groundwater pathways are the primary sources of potential health effects for workers and the public from past, ongoing and future INEEL operations. The most significant air emissions sources analyzed in the 1995 EIS have been shut down or placed in stand-by so the potential for health effects from INEEL sources has been much reduced. Since the 1995 EIS there have been groundwater and site drinking water samples indicating contaminants different from or slightly exceeding those analyzed in the 1995 EIS but they remain below MCLs for drinking water and are not expected to have any effects on health. Though the 1995 EIS did not analyze reactor or hot cell operations on the INEEL, all waste streams including all discharges and emissions were included in the analysis (i.e. health and safety concerns from these sources were addressed). The Nuclear Infrastructure EIS indicates impacts to health and safety impacts from reactor operations are acceptable. As confirmed by subsequent NEPA documentation, there have been no actions implemented or conditions found to exist on the INEEL since the 1995 EIS was issued that would increase risks to health or safety from chemical or radioactive exposure. Since 1995 two industrial fatalities have occurred within the INEEL workforce (1996 and 1998) causing the fatality rate to increase slightly above that forecast in the 1995 EIS.

Waste Management: Since the 1995 EIS was issued, an additional 586,000 gallons of liquid managed as HLW at the INTEC Tank Farm has been converted to calcine. All backlogged LLW staged for treatment at WERF has been incinerated and the ash disposed. Approximately 295 of 65,000 cubic meters of stored TRU waste have been shipped to WIPP and 2,533 cubic yards of radioactively contaminated soil has been shipped off the INEEL for disposal. There have been no wastes shipped to the INEEL for disposal (some incidental wastes have been disposed) since the 1995 EIS was issued. Through treatment and off site disposal there has been a net reduction in risks associated with the waste forms and volumes existing on the INEEL when the 1995 EIS was issued.

Environmental Restoration: The environmental restoration program has not generated any waste for treatment or disposal not covered under the 1995 EIS and has not reduced or removed any major radioactive risks from the INEEL. Remediation of organic contaminant plumes by bio and vapor extraction methods has been more successful than expected.

Spent Nuclear Fuel: Most INEEL SNF has been removed from underwater storage in basins and placed in dry storage at INTEC as analyzed in the 1995 EIS. Though no SNF has been removed from the INEEL, consolidated dry storage reduces the risks associated with the potential loss of water shielding and leaking storage basins. The 1995 EIS does not analyze the storage of SNF beyond 2035.

Infrastructure: There has been a slight decrease in electrical and heating fuel demand. The Coal Fired Steam Generating Facility has been shut down and replaced entirely with oil boilers. The NWCF has been placed in standby and may not operate in the future which would eliminate the need for kerosene. There have been no facilities constructed, except small support structures, not identified and analyzed in the 1995 EIS. The work force population is very close to that analyzed in the 1995 EIS so requirements for supporting water supply and sanitary facilities have not changed from that analyzed in the 1995 EIS.

Conclusion: There has been a net reduction in risk potential and contributing additive sources and therefore a reduction in cumulative environmental impact risks from INEEL operations since the 1995 EIS was issued. The 1995 EIS adequately discloses and bounds operational cumulative impacts from all sources except for cumulative risk from flooding which may need to be updated based on a final flood plain determination. Long-term groundwater cumulative impacts from all sources are still under development.

The analysis in the 1995 EIS was adequate for DOE decisions announced in the ROD. Future DOE decisions on major federal actions on the INEEL, or decisions deferred in the ROD, will require additional analysis for this discipline.

8-1.6 Ecology

Scope of 1995 Analysis

The ecological resources of the INEEL (then INEL) are described in Section 4.9 of the Affected Environment Chapter of the 1995 EIS. Section 4.9 is divided into descriptions of INEEL flora, fauna, threatened, endangered and sensitive species, wetlands and radioecology. The impacts of implementing spent nuclear fuel management and environmental restoration and waste management alternatives on the ecology of the INEEL are analyzed in Section 5.9 of the Environmental Consequences chapter of the EIS.

Changes in the Environmental Discipline

1. Methodology

1995-Because existing major facility areas, such as RWMC, were expected to be most affected by the alternatives analyzed, the "biotic resources" in those areas were emphasized in the Sec. 4.9 description. Because some species are mobile, such as pronghorn, biotic resources for the entire INEEL were briefly described. The Sec. 5.9 analysis is qualitative, and focuses on potentially affected areas such as sites and facilities to be used, constructed, or remediated and surrounding habitat where effluents, emissions, light, or noise may be present.

2000-So far as planned DOE actions analyzed in the 1995 EIS are concerned, nothing has occurred which indicates the methodology used is inadequate or inaccurate. There have been no impacts or conditions resulting from actions analyzed in the EIS that exceeded the expected impacts. The methodology used is adequate and accurate. Unanticipated natural events, such as the wildland fires occurring on the INEEL since 1995, and DOE's response actions, such as grading fire breaks, potentially caused more extensive, more severe, and longer lasting impacts to the ecology of the INEEL than any action anticipated in the 1995 EIS.

2. Assumptions

1995-Assumptions were not stated but it was expected that locations analyzed in the EIS, such as landfill expansion, would take place adjacent to the existing landfill and that what became the AMWTP would be constructed on undisturbed land outside of existing major facilities.

2000-Impacts resulting from actions analyzed in the 1995 EIS, especially those related to land use and the clearing of undisturbed habitat, were overestimated by about 200 acres. For example, the AMWTP was constructed within the RWMC and there was no clearing of vegetation or related habitat loss.

3. Analytical Methods

1995-The method of analysis was based primarily on acres disturbed, 591 acres under the Ten Year Plan and 1,339 under the Maximum Treatment, Storage, and Disposal Alternative. Other impacts identified were those that would occur from vehicular traffic, the noise and emissions of generators, night-lights, artificial water sources, re-suspension of radionuclides and remediation of contaminated areas.

2000-As stated in number 2 above, the 1995 EIS overestimated the acreage that would be disturbed. Other than this, there have been no impacts resulting from planned DOE actions that were not accurately anticipated and analyzed in the 1995 EIS or subsequent NEPA documentation. Traffic, noise and emissions from generators, night-lights and artificial water sources, have not exceeded that analyzed in the EIS. The potential for re-suspension of radionuclides caused by wildfires since 1995 greatly exceeded that anticipated for planned DOE actions. The potential for re-suspension of radionuclides resulted from the exposure of large burned areas and newly graded firebreaks to high winds over a period of months. Samples of wind-blown dust from these areas, however, indicated no contaminants over background. DOE actions analyzed in the EIS and implemented by DOE have not contributed to the extent or intensity of wildfires.

4. Data Adequacy

1995-The data concerning the occurrence and distribution of flora and fauna, threatened, endangered and sensitive species and existence of wetlands was adequate. There was limited information on the deposition or accumulation of radionuclides and contaminants such as mercury in soils. Long-term monitoring data indicated no impacts to wildlife at the individual or population level.

2000-Sage Grouse populations have declined throughout Western U.S. and on the INEEL. There has also been extensive reduction of the sagebrush steppe vegetation type in Eastern Idaho and on the INEEL. Wolves designated as belonging to an experimental, non-essential population have been sighted on the INEEL. Though major changes have occurred as a result of fire and loss of Sage Grouse habitat, none of the change resulted from, or were affected by, the alternatives analyzed in the 1995 EIS. Because of these changes, the 1995 EIS is now inaccurate with regard to certain aspects of the data, but is not inadequate for identification of impacts within the scope of its analysis. Additional analysis is required to address the effects of wildland fire, fire fighting, and restoration to adequately describe the environment and analyze the potential effects of ground disturbing actions on INEEL ecology.

5. Accident Scenarios

No change. The impacts of accidents to the ecology of the INEEL and region were not analyzed in the 1995 EIS. It can be assumed, however, that a large, high consequence accident would create a larger "footprint." The largest footprint would be created by a low probability accident scenario analyzed in the HLW & FD EIS, an aircraft crash into the calcine bin sets at INTEC.

6. Accident Probabilities: No change.

7. Cumulative Impacts

1995-Cumulative impacts on Ecological Resources are analyzed in Section 5.15.6. This Section states that the types of cumulative impacts on ecological resources would be the same for all alternatives. That is, impacts would result primarily from land disturbance, which would cause lost productivity, reduced biodiversity, displacement from disturbed habitat, and habitat fragmentation.

2000-DOE planned actions and alternatives analyzed in the 1995 EIS that have been implemented have had little or no impact on aspects of the ecological environment considered in the 1995 EIS. Neither have any of the actions analyzed in the EIS had incremental impacts of a cumulative nature which have contributed to loss of productivity, reduced biodiversity, or habitat fragmentation. The EIS did not anticipate or consider the effects of wildfire and fire suppression. Since 1995, wildfire and the effects of response actions on the INEEL, such as constructing fire breaks, has had a much greater effect on habitat and ecological potential than planned DOE actions. Fire is natural and habitat recovery from fire through transitional stages is normal where the environment has not been altered. The presence of invasive plant species presents a risk of permanent conversion of vegetation and habitat type from sagebrush steppe to cheatgrass. A wildland fire environmental assessment was initiated in January 2001 to address this issue.

8. Changes in Regulatory Requirements

There have been no changes in regulations pertaining to ecological resources that would affect the environmental baseline or analysis of impacts. There has been one land use designation within the INEEL, the 73,263-acre "INEEL Sagebrush Steppe Ecosystem Reserve." The objective is to maintain the Reserve as sagebrush steppe and there are no DOE actions, either planned or ongoing, which would affect the Reserve or its ecological condition. The U.S. Fish and Wildlife Service has determined that a population of the Western Sage Grouse merits listing as threatened under the Endangered Species Act, but the Agency does not have the resources to conduct a full listing action. See 66 FR 22984, May 7, 2001. There may be petitions for listing populations in Southeast Idaho. If Sage Grouse were listed, it would affect land management and use on the INEEL. It is not expected that ongoing operations within fenced facility boundaries would be affected.

9. Other NEPA Analyses for INEEL Operations

Except for the New Borrow Source EA and scattered categorically excluded activities, none of the NEPA documents completed since 1995 propose or analyze ground disturbing actions that would occur outside facility boundaries. Nor do these documents identify air emissions or resulting depositions exceeding those analyzed in the 1995 EIS. All CERCLA actions, except for the new percolation ponds to be constructed near INTEC, and scattered well drilling and monitoring and sampling activities, would occur within facility boundaries or within waste area groups or operable units.

Summary of Major Impacts

The actions and alternatives analyzed in the 1995 EIS that have been implemented have had little or no impact on ecological resources. Also, it is expected that those actions and alternatives analyzed in the EIS, that are yet to be implemented, would have minimal impact on site ecology. The impacts of fire, fire suppression, and threat of permanent habitat conversion caused by non-native invasive plant species are the main sources of ecological impacts on the INEEL. No additional analysis with regard to planned DOE actions is required. The Wildland Fire EA under preparation is required to understand impacts on the Sagebrush Steppe ecosystem on the INEEL of fire, pre-fire suppression, vegetation management, and restoration actions.

The analysis in the 1995 EIS was adequate for DOE decisions announced in the ROD. Future DOE decisions on major federal actions on the INEEL, or decisions deferred in the ROD, will require additional analysis for this discipline. The Wildland Fire EA being prepared will address the outstanding ecological impacts. No analysis beyond that being performed by the Wildland Fire EA is required.

References:

1. FR (Federal Register), 2001, 66 FR 88, "50 CFR Part 17, Endangered and Threatened Wildlife and Plants; 12-Month Finding for a Petition To List the Washington Population of Western Sage Grouse (Centrocercus urophasianus phaios)", Department of the Interior, May 7, pg. 22984

2. Upper Snake Sage Grouse Local Working Group Working Charter

8-1.7 Environmental Justice

Scope of 1995 Analysis

Section 5.20 of Volume 2 Part A of the 1995 EIS assessed Environmental Justice as it relates to waste management and environmental restoration activities. The 1995 EIS used 1990 U. S. Bureau of Census data (USBC 1992). The census data was used to develop census tracts designed to encompass approximately 4,000 people per tract.

USBC classifications were used to define “minority”. For purposes of the analysis in the 1995 EIS, minority populations were defined as those census tracts within the zone of impact for which the percent minority population exceeds the average of all census tracts within the zone of impact or where the percent minority population exceeds 50 percent for any given census tract. Low-income populations were defined as a group of people and/or community experiencing common conditions of exposure or impact, in which 25 percent or more of the population is characterized as living in poverty. The 1990 USBC definition of poverty was used.

The primary assumption used in the 1995 EIS was to designate Argonne National Laboratory-West as the epicenter for the region of impact. The zone of impact was an 80-kilometer radius circle with its epicenter at Argonne National Laboratory-West. Because of the diversity of locations of current and proposed activities, that epicenter was used to conservatively identify the maximum number of minority and low-income populations.

Changes in the Environmental Discipline

1. Methodology-No change

2. Assumptions-No change

3. Analytical Methods-NA

4. Data Adequacy- The USBC data used is still valid until the new census information becomes available.

5. Accident Scenarios-N/A

6. Accident Probabilities-N/A

7. Cumulative Impacts-N/A

8. Changes in Regulatory Requirements-Executive Order 13045 “Protection of Children from Environmental Health Risks and Safety Risks” was signed on April 21, 1997. No guidance or regulations have been created to implement that Order.

9. Other NEPA Analysis for INEEL Operations- Additional NEPA analyses for Environmental Justice concerns have been completed in the Advanced Mixed Waste Treatment Project EIS; Treatment and Management of Sodium-Bonded Spent Nuclear Fuel EIS; the Final Programmatic Environmental Impact Statement for Accomplishing Expanded Civilian Nuclear Energy Research and Development and Isotope Production

Missions in the United States, including the Role of the Fast Flux Test Facility; and the High-Level Waste and Facilities Disposition EIS.

A qualitative analysis was performed to determine if there were any changes in the environmental justice discipline. The analysis included a review of the current INEEL activities and compared those to activities analyzed in the 1995 EIS. The methodology used in the 1995 EIS analysis is consistent with the Council on Environmental Quality guidance issued in 1997. That guidance is still in effect and DOE-HQ has not issued any final guidance changing those requirements or imposing additional requirements. The major assumption of having Argonne National Laboratory-West as the epicenter for the region of impact is reasonable and still valid for a site-wide analysis. The conditions, data, and methodology used in the1995 EIS are still valid and consistent with the requirements to evaluate and mitigate, if necessary, disproportionate high and adverse impacts to minority and low-income populations. The Census Bureau schedule indicates that the Demographic profile for Census Tracts (which includes demographic, social, economic, and housing characteristics) will be available sometime between March and May 2002. During the next Supplement Analysis of the 1995 EIS, the new data should be examined to determine if conditions have changed.

Summary of Major Impacts

A qualitative analysis was performed to determine if there were any changes in the environmental justice discipline. The analysis reviewed the current INEEL activities and compared those to activities analyzed in the 1995 EIS. The methodology used in the 1995 EIS analysis is consistent with the Council on Environmental Quality guidance issued in 1997. That guidance is still in effect and DOE-HQ has not issued any final guidance that has changed requirements or imposes additional requirements. The major assumption of having Argonne National Laboratory-West as the epicenter for the region of impact is reasonable and still valid for a site-wide analysis. The conditions, data, and methodology used for analysis in the 1995 EIS are still valid and consistent with the requirements to evaluate and mitigate, if necessary, disproportional high and adverse impacts to minority and low-income populations.

The analysis in the 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

References:

1. Council on Environmental Quality, Environmental Justice Guidance Under the National Environmental Policy Act, December 10, 1997.

2. USBC (US Bureau of Census) 1990 Census of Population and Housing, 1/1/1992

8-1.8 Facility Accidents

Scope of 1995 Analysis

The Facility Accident analysis that was presented in the 1995 EIS analyzed a series of events from various INEEL facilities for a number of different initiating events considering internal initiators, external initiators, and natural phenomena. These initiating events were categorized in three frequency categories, abnormal (greater than 10^{-3} events per year), design basis (10^{-3} – 10^{-6}), and beyond design basis (10^{-6} – 10^{-7}). A summary of the historical record of accidents at the INEEL was provided as well as comparisons in accident fatality rates between various industries, the DOE complex, and the INEEL. The accidents were screened to pick the bounding accidents in each of the three frequency categories. The bounding accidents for the INEEL with respect to impacts to the public were located at ANL-W for both radiological and hazardous chemical accidents. Bounding accidents are those that are associated with the highest consequence without regard to probability. The primary sections in the 1995 EIS that addressed potential facility accidents are section 5.14 and Appendix F-5.

Changes in the Environmental Discipline

1. Methodology

In the past five years, a number of nuclear safety analysis reports have been upgraded to meet current requirements. While additional analysis has been performed on virtually every nuclear facility at the INEEL, the additional analysis has not identified greater impacts for bounding accidents for a specific waste type or facility. The exception to that statement is for HLW facilities. The HLW & FD EIS analyzes a completely different set of operations alternatives resulting in postulated accidents not previously considered. This new analysis has resulted in new bounding accidents for the INEEL from the new proposed HLW operations.

The bounding accidents for the INEEL in the 1995 EIS were at ANL-W for both radiological and hazardous impacts (due primarily to the proximity of the ANL-W site to the INEEL site boundary.) Both the spent fuel and the source of chlorine at ANL-W have been reconfigured in the past five years to greatly reduce the hazard associated with these activities.

2. Assumptions

The assumptions that were used in the1995 EIS were conservative for the various parameters. Each safety analysis document uses slightly different assumptions for the analysis based on the specific accidents being analyzed. For a generic set of assumptions that are applicable to all potential facility accidents on the INEEL, the ones that are identified in the1995 EIS are still acceptable.

3. Analytical methods

The primary computer codes used in the1995 EIS for the accident analysis were Radiological Safety Analysis Computer Program (RSAC-5), Origen 2.1, Microshield 3.13, and EPIcode™. These are still respected codes in the accident analysis community. Though upgrades in some of the codes have taken place, a number of the safety analysis documents across the site still use some of these codes to determine impacts to receptors. Performing additional accident analysis simply to update the codes probably would not provide significantly different results.

4. Data Adequacy

The primary concerns with data adequacy are in the areas of source term and meteorological data. The facility accident analysis that was completed with the1995 EIS used bounding source terms for specific facilities. No facilities on the site are known to have modified their safety basis documents to allow for greater source terms than what was previously analyzed. The meteorological data is used to determine what the 50% and 95% meteorological conditions are that are used to transmit the dose from a release site to a receptor. The meteorological data is based on long-term weather patterns in southeast Idaho and is not likely to have been significantly affected by the weather in the previous five years.

5. Accident Scenarios

Table 8-1.8.1 below shows a summary of the bounding potential facility accidents that were taken from the primary safety analysis documents for INEEL facilities and from other NEPA analysis that has been completed. The primary change is that the HLW & FD EIS provides the bounding accident for the site from a radiological and hazardous impacts perspective. In the 1995 EIS, the bounding accidents were at the ANL-W facility. The primary reasons for this change are the new decisions to be made regarding the HLW program and the source term at ANL-W has been treated in the last five years to significantly reduce potential accident impacts.

The 1995 EIS showed bounding accident impacts from a Hot Fuel Examination Facility fuel handling accident of 5.0 rem to the maximally exposed offsite individual (MEI) and an ANL-W chlorine release with a MEI exposure of 35% of the Emergency Response Planning Guidelines (ERPG)-3 guidelines. This compares to the HLW & FD EIS bounding accidents of a seismically induced failure of degraded bin sets up to 9500 years into the future resulting in 83 rem to the MEI and a spill of 15,000 pounds per minute of liquid ammonia which would result in greater than ERPG-2 concentrations at 3600 meters. These new impacts (HLW & FD EIS) now present the bounding impacts for INEEL operations.

6. Accident Probabilities

Accident probabilities have changed in some cases for specific accident scenarios. The bounding accidents for the INEEL with maximum impacts to the public are still in the beyond design basis range (10^{-6} – 10^{-7}). Moving spent fuel from wet storage to dry storage eliminates the probability of contaminated water from a spent fuel pool leaking into the ground and contaminating the ground water. In this case, the probability of that accident is eliminated when the pools are emptied of SNF and drained. Also, the probability of a criticality accident is reduced in a dry environment.

7. Cumulative Impacts

The only place, where cumulative impacts are considered with respect to safety analysis, is where an accident at one facility could have adverse impacts on a second facility. The effects of accidents on co-located facilities are required to be analyzed in safety analysis documents and are reflected as a part of the bounding accident analysis. As a result, there are no cumulative impacts from accident analysis such as there are in the area of air resources or water resources. The possibility of two accidents happening at the same time from different causes is so small that they are not analyzed (accidents that have less than a possibility of 1 event in 10,000,000 years (1×10^{-7}) are not analyzed).

8. Changes in Regulatory

The primary change in the regulatory area is the incorporation of 10 CFR 830 Subpart B (Nuclear Safety Rule). This codifies the nuclear safety rules providing Price Anderson Amendment enforcement actions for noncompliance with nuclear safety requirements. The other major change is the development of the Authorization Agreements. The Authorization Agreements are between the DOE and the operating contractor. These documents identify all safety bases and regulatory requirements in a single document for each individual nuclear category 1 and category 2 facility. These provide the authorization to operate specific facilities and provide the boundaries of all operational parameters under which operations are authorized.

9. Other NEPA Analysis for INEEL Operations

Additional NEPA analysis for potential facility accident concerns have been completed in the Advanced Mixed Waste Treatment Project EIS; Treatment and Management of Sodium-Bonded Spend Nuclear Fuel EIS; the Final Programmatic Environmental Impact Statement for Accomplishing Expanded Civilian Nuclear Energy Research and Development and Isotope Production Missions in the United States including the Role of the Fast Flux Test Facility; and the High-Level Waste and Facilities Disposition EIS.

Summary of Major Impacts

The existing analysis is technically adequate. However, each of the five major NEPA analyses of this discipline used slightly different input assumptions, models, and codes and as a result arrives at what could appear to be contradictory results. It is difficult to be able to compare impacts across the site because the analysis results are reported in different formats, different receptor locations, and different units. Standardized facility accident analyses utilizing a common set of assumptions, input parameters, codes, and formats would greatly assist the public and DOE management to compare the bounding impacts for facility accidents across the entire site. The existing analysis has not been shown to be inadequate but the results are reported in ways that are inconsistent.

The 1995 EIS showed bounding accident impacts from a Hot Fuel Examination Facility fuel handling accident of 5.0 rem to the maximally exposed offsite individual (MEI) and an ANL-W chlorine release with a MEI exposure of 35% of the Emergency Response Planning Guidelines (ERPG)-3 guidelines. This compares to the HLW & FD EIS bounding accidents of a seismically induced failure of degraded bin sets up to 9500 years into the future resulting in 83 rem to the MEI and a spill of 15,000 pounds per minute of liquid ammonia which would result in greater than ERPG-2 concentrations at 3600 meters. These new impacts (HLW & FD EIS) now present the bounding impacts for INEEL operations. These changes do not warrant additional accident analysis.

The environmental impacts described in the 1995 EIS are not bounding for the INEEL, but the bounding impacts are described in the HLW & FD EIS. Additional analysis for this discipline is not required.

References:

1. Idaho High Level Waste and Facilities Disposition Draft Environmental Impact Statement DOE/EIS-0287D, December 1999

2. Advanced Mixed Waste Treatment Project EIS DOE/EIS-0290, January 1999

3. Final Programmatic Environmental Impact Statement for Accomplishing Expanded Civilian Nuclear Energy Research and Development and Isotope Production Missions in the United States including the Role of the Fast Flux Test Facility DOE/EIS-310, December 2000

4. Test Area North Safety Analysis Report – INEL-94/0163 Addendum 1, Rev. ID:2 June 2000

5. Advanced Test Reactor Upgraded Final Safety Analysis Report INEEL, SAR-153 Rev. 5, July 1, 1999

Table 8-1.8.1 Summary of Facility Accidents at the INEEL That Have the Potential for Off-Site Radiological Consequences

This table does not represent all of the events that have been analyzed but does represent the bounding events for INEEL operations. Blocks that are blank represent areas where information was not available. In many cases, additional analysis results were presented in the source documents but are not shown here. For the purposes of being able to compare analysis results, the following information is provided. Different terms are used in the source documents for the same receptor locations and in a number of cases the input assumptions may cause the results to not be comparable to other analyses. This is provided to allow the reader to have a basic understanding of the primary bounding accidents across the INEEL.

Accident	Frequency	TEDE at 100 m (rem)	Maximally Exposed Offsite Individual		Population to 50 miles		Noninvolved Worker		Meets Evaluation Guidelines
			Dose (rem)	Latent Cancer Fatality Probability	Dose (person-rem)	Latent Cancer Fatalities	Dose (rem)	Latent Cancer Fatality Probability	
Environmental Restoration									
No accidents were identified that would result in offsite consequences									
High Level Waste (bounding accidents from the HLW & FD EIS)[a]									
Seismic failure of a degraded bin set	Unlikely	Note 1	83	0.042	5.3×10^{5}	270	5.7×10^{6}	1.0	Yes
Calcine retrieval onsite transport equipment failure	Unlikely	Note 1	0.04	2.0×10^{-5}	470	0.23	2.7×10^{3}	1.4×10^{-3}	Yes
Flood induced failure of a bin set	Extremely Unlikely	Note 1	0.88	4.4×10^{-4}	5.7×10^{4}	29	59	0.059	Yes
External event results in a bin set release	Beyond Design Basis	Note 1	14	7.0×10^{-3}	1.2×10^{5}	61	930	0.94	Yes
External event results in a release from the borosilicate vitrification facility	Beyond Design Basis	Note 1	17	8.5×10^{-3}	1.5×10^{5}	76	1.2×10^{3}	1.0	Yes
Infrastructure									
ANL-W, ZPPR, Materials Storage Building, uranium burning event			0.4				1.0		Yes

Accident	Frequency	TEDE at 100 m (rem)	Maximally Exposed Offsite Individual		Population to 50 miles		Noninvolved Worker		Meets Evaluation Guidelines
			Dose (rem)	Latent Cancer Fatality Probability	Dose (person-rem)	Latent Cancer Fatalities	Dose (rem)	Latent Cancer Fatality Probability	
Spent Nuclear Fuel									
Earthquake[d]	1.0×10^{-3}		(g)						Yes
Inadvertent Criticality – TAN[d]	Extremely Unlikely	47	0.78						Yes
TMI-2 6-pack Module Drop[d]	9.1×10^{-3}	0.016 rad/hr at 75 meters	insigni-ficant		insigni-ficant		0.016 rad/hr at 75 meters		Yes
Exposure to high radiation fields[d]	7.6×10^{-7}		(g)						Yes
Mixed Waste Fire[d]	1.8×10^{-7}		(g)						Yes
Release of gaseous fission products[d]	5.6×10^{-3}		(g)						Yes
Underground Fuel Storage Facility – Fuel drop into dry well		1.6×10^{-4}	1.4×10^{-6}						Yes
Florinel Dissolution & Fuel Storage Facility - criticality		13.1							Yes
Irradiated Fuel Storage Facility – criticality		0.4	9.0×10^{-4}						Yes
Unirradiated Fuel Storage Facility – criticality		160	$1.4 \text{ X } 10^{-3}$						Yes
Test Reactor Area									
ATR Direct Damage Loss of Coolant Accident with 100% core melt[b]	Beyond Design Basis		0.60	3.0×10^{-4}	5.17×10^{4}	25.9	7.61	3.0×10^{-3}	Yes
ATR Direct Damage Loss of Coolant Accident with 100% core melt[e]	Beyond Design Basis		11[f]						Yes
Waste Management									
Fire in TRU waste in the TSA-RE[c]	Unlikely	2.1×10^{-2}	3.5			0.005			Yes
Incinerator Explosion	Unlikely	1.4×10^{-3}	0.24			1.8			Yes
Design Basis Seismic Event[c]	Unlikely	2.6	4.8×10^{-2}			0.98			Yes

Accident	Frequency	TEDE at 100 m (rem)	Maximally Exposed Offsite Individual		Population to 50 miles		Noninvolved Worker		Meets Evaluation Guidelines
			Dose (rem)	Latent Cancer Fatality Probability	Dose (person-rem)	Latent Cancer Fatalities	Dose (rem)	Latent Cancer Fatality Probability	
Type II module fire[c]	Extremely Unlikely	1.3×10^{-2}	2.2			0.05			Yes
Propane-fueled fires[c]	Extremely Unlikely	2.6	2.2			1.14			Yes

Note 1 - This information was not provided in the source document

A Idaho High Level Waste and Facilities Disposition Draft Environmental Impact Statement (HLW & FD EIS) – The accidents shown in this table are a representative sample of the accidents in this document. The accidents selected for inclusion here are the bounding accidents from the HLW & FD EIS Table 5.2-39.

B Final Programmatic Environmental Impact Statement for Accomplishing Expanded Civilian Nuclear Energy Research and Development and Isotope Production Missions in the United States including the Role of the Fast Flux Test Facility

C Advanced Mixed Waste Treatment Project EIS

D Test Area North Safety Analysis Report – INEL-94/0163 Addendum 1, Rev. ID:2 June 2000

E Advanced Test Reactor Upgraded Final Safety Analysis Report

F The dose from the ATR SAR and the NI PEIS are significantly different for the same accident. The difference is a result of a number of differences in the models used. The primary difference is that the ATR SAR modeled the accident using 95% meteorology and the NIPEIS used 50% meteorology.

G DOE Evaluation Guidelines are not exceeded for this accident

The following terms are used in some analyses to describe frequency of postulated events

Anticipated	1.0×10^{0} - 1.0×10^{-2} years
Unlikely	1.0×10^{-2} - 1.0×10^{-4} years
Extremely Unlikely	1.0×10^{-4} - 1.0×10^{-6} years
Beyond Design Basis	$<1.0 \times 10^{-6}$ years

Table 8-1.8.2 Summary of Facility Accidents at the INEEL That Have the Potential for Off-Site Chemical Consequences

This table does not represent all of the events that have been analyzed but does represent the bounding events for INEEL operations. Blocks that are blank represent areas where information was not available. In many cases, additional analysis results were presented in the source documents but are not shown here. For the purposes of being able to compare analysis results, the following information is provided. Different terms are used in the source documents for the same receptor locations and in a number of cases the input assumptions may cause the results to not be comparable to other analyses. This is provided to allow the reader to have a basic understanding of the primary bounding accidents across the INEEL.

Accident	Frequency	Ammonia	Sulfuric Acid				Meets Evaluation Guidelines
Environmental Restoration							
No accidents were identified that would result in offsite consequences							
High Level Waste (bounding accidents from the HLW & FD EIS)[a]							
Ammonia tank spill of 150 pounds per minute of liquid ammonia	Unlikely	Less than ERPG-2 at 3,600 meters					Yes
Ammonia tank spill of 1500 pounds per minute of liquid ammonia	Extremely Unlikely	Greater than ERPG-2 at 3,600 meters					Yes
Ammonia tank spill of 15,000 pounds per minute of liquid ammonia	Beyond Design Basis	Greater than ERPG-2 at 3,600 meters					Yes
Infrastructure							
ANL-W, EBR-II, Power Plant Building, sulfuric acid leak from a 2,000 gal Storage tank			ERPG-1 at 218 m	ERPG-2 at 65 m	ERPG-3 at tank		Yes

Accident	**Frequency**	**Asbestos ERPG-2 (2.5E-02)**	**Beryllium ERPG-2 (2.5E-02)**	**Cadmium ERPG-2 (4.0E+00)**	**Lead ERPG-2 (2.5E-01)**	**Mercury ERPG-2 (1.00E-01)**	**Meets Evaluation Guidelines**
Spent Nuclear Fuel							
No accidents were identified that would result in offsite consequences							
Test Reactor Area							
No accidents were identified that would result in offsite consequences							
Waste Management (AMWTP/RWMC)							
Fire in TRU waste in the TSA-RE[b]	Unlikely	1.3×10^{-2}	9.0×10^{-5}	8.9×10^{-6}	7.9×10^{-5}	2.6×10^{-6}	Yes
Incinerator Explosion[b]	Unlikely	0	0	8.9×10^{-6}	7.9×10^{-5}	2.6×10^{-6}	Yes
Design Basis Seismic Event[b]	Unlikely	3.5×10^{-4}	5.5×10^{-6}	9.6×10^{-5}	5.9×10^{-4}	3.3×10^{-6}	Yes
Type II module fire[b]	Extremely Unlikely	2.5×10^{-2}	7.4×10^{-5}	1.2×10^{-4}	3.3×10^{-3}	4.2×10^{-6}	Yes
Propane-fueled fires[b]	Extremely Unlikely	2.5×10^{-2}	7.4×10^{-5}	1.2×10^{-4}	3.3×10^{-3}	2.6×10^{-5}	Yes

A Idaho High Level Waste and Facilities Disposition Draft Environmental Impact Statement (HLW & FD EIS) – The accidents shown in this table are a representative sample of the accidents in this document. The accidents selected for inclusion here are the bounding accidents from the HLW & FD EIS.

B Advanced Mixed Waste Treatment Project EIS

8-1.9 Geology

Scope of the 1995 Analysis

The 1995 EIS geology analysis is contained in sections 4.6 and 5.6 and was based on three issues: seismic hazards, volcanic hazards, and gravel use. The primary document for the seismic hazard analysis was based on the draft Woodward-Clyde Federal Services 1993 probabilistic seismic hazard assessment (PSHA). The volcanic hazards were analyzed by the Volcanic Hazards Working Group (VWG, 1990). The details of the 1995 EIS seismic and volcanic hazards characterization are discussed or referenced in Appendix F-2 of the 1995 EIS. Geologic (seismic and volcanic in this case) hazards and gravel use were not significant criteria in the alternative selection process and Record of Decision.

The 1995 EIS acknowledged that additional site specific analysis would be needed to ensure that structures modified or built as a result of decisions based on this EIS would be designed according to DOE and INEEL architectural and engineering (A&E) standards.

Changes in the Environmental Discipline

1. Methodology

The 1995 EIS concluded that geologic hazards and gravel use impacts were not a discriminating factor in the analysis of alternatives or the Record of Decision. The geologic hazards assessments used to support site characterization are cited and referenced in Appendix F-2 of the 1995 EIS. A final version of the draft INEEL PSHA used in the 1995 EIS has been incorporated into the INEEL A&E standards. These standards provide seismic design accelerations for structures built on rock for seismic events with return periods of 2,500 and 10,000 years. High hazard facilities (such as the Advanced Test Reactor) are designed to survive a seismic event with a 10,000-year return period. Soil response curves (which incorporate site specific soil amplification effects) have been prepared for certain areas of the INTEC.

The methodology used in producing the PSHA and volcanic hazards assessment is prescribed in the DOE standards and included extensive peer of intermediate and final products. This work has been reviewed by the Defense Nuclear Facility Safety Board, the Nuclear Regulatory Commission, and the State of Idaho as well as highly regarded experts in the seismological community.

2. Assumptions

Assumptions regarding the key parameters in the PSHA analysis (source, path, and site characteristics) have undergone extensive review and seem to be robust. The INEEL recently applied for and obtained a Nuclear Regulatory Commission license for the Three Mile Island Unit 2 Independent Spent Fuel Storage Installation (TMI ISFSI). In the course of obtaining this license, assumptions regarding site effects (soil amplification) and local path effects (attenuation of seismic waves by alternating layers of basalts and sedimentary interbeds) were further reviewed and validated. Source magnitude, location, frequency, and flow geometry assumptions underlying INEEL Volcanic hazards analyses have undergone similar reviews.

3. Analytical methods

The PSHA methodology as used at the INEEL involved the probabilistic characterization of seismic source location, magnitude, and frequency (return period). This characterization is formulated using seismic records, paleoseismological field data, and the statistical representation of source location and magnitude, site, and path effects. Three main types of seismic sources were accounted for including; a Basin and Range type earthquake (Borah Peak), a volcanic eruption, and a randomly occurring (in space and time) Snake River Plain earthquake. Volcanic hazards were also analyzed in a probabilistic framework.

4. Data adequacy

The geologic data and analyses presented in the 1995 EIS are adequate for site characterization and impacts analysis purposes. The INEEL A & E standards provide seismic design criteria for facilities built on rock and portions of INTEC underlain by soil. Subsequent design work will require site-specific analyses for soil response effects and soil structure interaction. Soil amplification effects can be severe and should be taken into account when the cost of construction is evaluated for any new construction projects.

5. Accident Scenarios

Accident analyses using seismic and volcanic events as initiators are listed in Table F-5-5 in the 1995 EIS. All seismic initiators have the same beyond design basis (10E-6) probability.

6. Accident Probability

Seismic and volcanic initiating event probabilities are listed in Table F-5-5 in the 1995 EIS. The final INEEL PSHA indicates that these events are still beyond design basis.

7. Cumulative Impacts

There are no cumulative impacts from seismic and volcanic hazards.

8. Changes in Regulatory Environment

The NRC concurred with DOE–ID's recommendation to design the TMI – ISFSI according DOE risk based criteria as opposed to NRC maximum credible earthquake criteria. This has broad implication for the rational determination of seismic risk in DOE Safety Analysis Reports (SARs), which are based on NRC type characterization requirements. DOE 5480.28 (Natural Phenomena Hazard Mitigation (NPH)) that was in effect at the time of 1995 EIS has been replaced by 420.1 (Facility Safety). The standards supporting DOE NPH characterization standards have been revised, updated, and finalized. All 1995 EIS and subsequent seismic and volcanic hazards characterization work has been performed consistent with these standards.

9. Other NEPA Analysis for INEEL Operations

The 1995 EIS accurately described the impacts of gravel use with respect to the alternatives. A subsequent environmental assessment was prepared to analyze the impacts of excavation and use of silt and clay at the INEEL.

There are no major geologic risks and impacts identified in the 1995 EIS. Subsequent revisions, finalizations and challenges to volcanic and seismic hazards characterization documents and their conclusions indicate that the initial assessments of these hazards in the 1995 EIS are bounding and adequate.

Extensive external review has shown that assumptions regarding the key parameters in the PSHA analysis which forms the basis of the INEEL A & E standards (source, path, and site) characteristics are robust. INEEL Volcanic hazards analyses have undergone similar reviews.

The 1995 EIS acknowledged that additional site specific analysis would be needed to ensure that structures modified or built would be designed according to DOE and INEEL architectural and engineering (A&E) standards. Design work for facilities located on significant soil thicknesses will require site-specific analyses for soil amplification and soil structure interaction. Soil amplification effects can be severe and should be taken into account when the cost of construction is evaluated during a site selection process.

The risk assessments associated with the characterization of seismic and volcanic hazards are rational and will support the reasonable allocation of resources.

Summary of Major Impacts

There are no major environmental impacts related to the 1995 EIS Geology characterization. Subsequent revisions, finalizations and challenges to volcanic and seismic hazards characterization documents and their conclusions indicate that the initial assessments of these hazards in the 1995 EIS are robust and bounding analyses.

The analysis in the 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

References:

1. Woodward-Clyde Federal Services, "Site-Specific Probabilistic Seismic Hazard Analysis for the Idaho National Engineering Laboratory – Final Report", INEL-95/0536, dated May 1996

2. Volcanic Hazards Working Group, "Assessment of Potential Volcanic Hazards for New Production Reactor Site at the Idaho National Engineering Laboratory", NPR91-029-DHC, dated 10/31/90

8-1.10 Health and Safety

Scope of 1995 Analysis

The 1995 Health and Safety analysis was completed for the proposed alternatives involving radioactive and non-radioactive hazards at the INEEL. This analysis is found in the 1995 EIS in sections 4.12 and 5.12. The analysis was conducted using consensus standards on health effects for exposure to ionizing radiation including International Council on Radiation Protection (ICRP) and National Council on Radiation Protection (NCRP) guidance.

Worker Risk Analysis - Radiological Hazards

The methodology used to calculate latent health effects to members of the public and the INEEL workforce is consistent with the National Council on Radiation Protection and Measurements guidance as well as other Federal Agencies. Personnel Dosimetry Data on monitored individuals at the INEEL indicate a decline in individual and collective radiation exposures. These exposures include both direct radiation and the effects of radiation from air emissions. The following table illustrates overall trends in radiation exposures.

Table 8-1.10.1 INEEL Personnel Exposure Trends[a]

Year	Number of People Monitored	Number of People with Measurable Dose	Total Effective Dose Equivalent (TEDE) (person-rem)	Average TEDE (mrem)
1991	7,402	1,273	177.1	139
1992	6,967	1,223	104.7	86
1993	7,322	1,424	252.9	178
1994	6,006	1,659	236.7	143
1995	5,984	1,501	284	189
1996	5,753	1,299	164.1	126
1997	6,424	1,141	115.3	101
1998	5,075	743	64.9	87
1999	8,885	729	48.3	66
2000	10,161	1440	64.8	45

a INEEL Radiological Dosimetry Program

The table clearly illustrates a sustained downward trend (TEDE) since 1995 in occupational radiation exposure. This is explained by an increased awareness in the planning of radiological work, monetary incentives to reduce occupational exposures, the adoption of the integrated safety management program and a decrease in work scope. It should also be noted that no DOE or INEEL Administrative Control Limits were exceeded during this period.

Table 5.12-5 shows that for Alternative B, the annual average radiation dose was estimated to be 219 person-rem per year. A review of the above table shows one year (1995) that exceeded this estimate. However, the average annual dose from the previous six years is 123.6 person-rem. This is well below the estimated average of 219 person-rem.

Changes in Regulatory Environment - DOE regulations 10 CFR 835 “Occupational Radiation Protection” and 10 CFR 830 “Quality Assurance,” and 10 CFR 850 “Chronic Beryllium Disease Prevention Program,” were issued. A final DOE regulation on Facility Safety Analysis and

Technical Safety Requirements will go into effect FY2001. The cumulative effect of these regulations is to improve the overall safety posture at DOE facilities.

Other NEPA Analysis for INEEL Operations – The Secretary of the Department of Energy directed several changes to Safety and Health Programs, including the Integrated Safety Management Program, and a revision to DOE Order 5400.5 to implement the Secretary's moratorium on the release of materials with residual contamination.

Worker Risk Analysis – Non-Radiological Hazards

The common non-radiological hazards encountered at the INEEL include work with chemical agents, Heat/Cold Stress, industrial hygiene considerations, and ergonomic considerations. Implementation of worker safety programs such as the Department's Integrated Safety Management program and the Voluntary Protection Program have improved the INEEL's safety posture. It is the conclusion of this review that the 1995 EIS continues to provide an appropriate bounding analysis of the non-radiological hazards at the INEEL.

1) Air Emissions

The health and safety impacts from Criteria Air Pollutants and Toxic Air Pollutants for most of the pollutants are clearly within the bounds established by the 1995 EIS. The following pollutants are those that were reported in the Air Resources section as having exceeded the estimated emissions in the 1995 EIS: beryllium, carbon tetrachloride, chloroform, hydrochloric acid, and VOCs.

VOCs as a group are measured for their potential to generate ozone and do not represent a direct hazard to workers. The hazards to workers from individual pollutants are addressed separately. Hazards from the VOC emissions are discussed under the Public Risk Analysis – Non-Radiological Hazards.

The potential health impacts of the rest of the pollutants addressed above are shown in the following table. In all cases, the concentrations of the air pollutants are below the given standards. Thus, while the emissions exceeded the previous analysis, the results show that there are no adverse health impacts from emissions at these levels.

Table 8-1.10.2 Onsite Emissions Impacts

Pollutant	1995 EIS Concentrations ($\mu g/m^3$)	Ratio[a]	Revised Concentrations ($\mu g/m^3$)	Standard ($\mu g/m^3$)[b]	Impact as percent of standard
Beryllium	2.8E-04	3.28	9.2E-04	2.0E+00	<1
Carbon tetrachloride	2.5E+02	9.21	2.3E+03	1.3E+04	18
Chloroform	1.7E+01	2.90	4.9E+01	9.8E+03	<1
Hydrochloric acid	1.4E+02	1.25	1.8E+02	7.0E+03	3

a This is the ratio of the 1999 Total INEEL Air Emissions Inventory Report to the 1995 EIS Air Emissions estimate from Table 8-1.3.2. This ratio when multiplied by the maximum concentrations in the 1995 EIS will provide the revised maximum concentrations of these pollutants.

b Limits are 8-hour time-weighted averages established by either the American Conference of Government Industrial Hygienists or the Occupational Safety and Health Administration; the lower of the two is used.

2) Injury/Illness Rate for 1996 – 2000

There were 1,092 reportable Injury/Illnesses from 1996 – 2000, during which a total of 61,085,712 hours were worked. Total injury/illness case rates varied from 2.9 to 4.2. By comparison, the 1995 EIS reported 1,337 reportable events from 1987 – 1991, during which a total of 79,654,000 hours were worked. The 1995 EIS reported total injury/illness case rates from 1.8 to 4.9. Comparing these two five-year periods show comparable case rates. However, the INEEL experienced two fatalities in 1996 and 1998. The 1996 fatality occurred when a worker fell from an elevated platform at the Radioactive Waste Management Complex. The 1998 fatality resulted from an unplanned discharge of a CO_2 fire suppression system at the Test Reactor Facility. A direct result of the two fatalities was the total revamp of the work control system to improve the integration of safety into all INEEL program activities. The 1995 EIS estimated an average injury/illness rate of 273 and an average fatality rate of 0.29 over the years from 1995 - 2005. Therefore, the 1995 EIS continues to bound the injury/illness rate for activities at the INEEL but the fatality rate is greater than that projected in the analysis. The major changes to the work control system described above are mitigative actions taken in response to the unacceptable fatality rate. A review of table 8-1.10.3 reflects the seriousness of the CO_2 accident in 1998 and gradual improvements since then.

Table 8-1.10.3 Injury/Illness Case Rates for the INEEL[a]

Year	Total Workhours	Total Recordable Cases		Lost Workday Cases		Fatalities
		Number	Rate[b]	Number	Rate[b]	
1996	12,711,062	197	3.1	80	1.3	1
1997	12,078,235	228	3.8	97	1.6	0
1998	11,530,387	244	4.2	94	1.6	1
1999	11,959,675	236	3.9	83	1.4	0
2000	12,806,353	187	2.9	76	1.2	0

a Data obtained from the DOE Computerized Accident/Incident Reporting System
b Case rates are determined by multiplying 200,000 hours (100 workers working for a year) by the number of cases divided by the number of workhours.

3) INEEL Fire Loss History

During the period 1994 – 2000, the INEEL has experienced approximately 40 Wildland fires. The INEEL successfully contained the wildland fires without damage to significant INEEL structures; the 2000 wild land fire destroyed several utility poles. In addition, the INEEL was commended by the Secretary of Energy for successfully containing a wildland fire in 2000. The fire safety posture for the INEEL is enhanced by cooperative agreements for support with the counties surrounding the INEEL as well as other federal agencies such as the Department of Interior. The 1995 EIS reported $88,000 in fire related damages in the five year period analyzed. The 1995 EIS continues to provide a bounding analysis for INEEL fire losses.

Public Risk Analysis - Radiological Hazards

1) Air Emissions

The public risk from ongoing operations is the risk associated with air emissions and associated inhalation and ingestion pathways. The following table shows the dose to a maximally exposed individual as estimated by the Environmental Science and Research Foundation, an independent environmental monitoring organization. This table shows that the dose to the public is well below the doses that were estimated in the 1995 EIS.

Table 8-1.10.4 Radioactive Dose to the Public

	Dose to Maximally Exposed Individual (mrem)	1995 EIS Estimated Dose to Maximally Exposed Individual (mrem)[e]	Maximum Potential Population Dose (person-rem)	1995 EIS Estimated Maximum Potential Population Dose (person-rem)[f]
1995[a]	0.018	0.63	0.08	2.9
1996[b]	0.03	0.63	0.2	2.9
1997[c]	0.03	0.63	0.2	2.9
1998[d]	0.007	0.63	0.08	2.9

a. Site Environmental Report for Calendar Year 1995, DOE/ID-12082 (95) (ESRF-014)
b. Site Environmental Report for Calendar Year 1996, DOE/ID-12082 (96) (ESRF-018)
c. Site Environmental Report for Calendar Year 1997, DOE/ID-12082 (97) (ESRF-030)
d. Site Environmental Report for Calendar Year 1998, DOE/ID-12082 (98) (ESRF-034)
e. 1995 EIS, Table 5.12-1, Alternative B – 10-year dose of 6.3 mrem divided by 10 to give an average yearly dose of 0.63 mrem.
f. 1995 EIS, Table 5.12-2, Alternative B – 10-year dose of 29 mrem divided by 10 to give an average yearly dose of 2.9 mrem.

One area where the 1995 EIS made an assumption regarding public exposure that was not conservative is the assertion that it is unlikely for hunters to eat game animals that feed on INEEL rangeland. Over the last several years, the Idaho Department of Fish and Game has held controlled hunts on the INEEL. Reference d from the above table provides a maximum potential dose to a hunter consuming game from the INEEL as 0.03 mrem. If this value is added to the dose for a maximum exposed individual for any of the years, the result is still well below the estimated maximum dose given in the 1995 EIS.

2) Ground Water Impacts

The 2000 RWMC Performance Assessment (PA) provided updated impacts to a maximally exposed member of the public from the low-level waste disposal facility located at the RWMC. The 2000 RWMC Composite Analysis shows the impacts to that same individual from all sources of buried radioactive wastes at the RWMC. The 1995 EIS used information from the 1994 RWMC PA. While the times of compliance that are shown in the following paragraph are not entirely consistent, these are the doses which are presented in each of these reference documents. Each of the doses presented are estimates of doses to a maximally exposed member of the public at the receptor locations.

In the near term (through the year 2120):

1995 EIS	0.57 mrem/yr
2000 RWMC PA	0.0022 mrem/yr
2000 RWMC CA	0.07 mrem/yr

In the long-term:

1995 EIS	17 mrem/yr	10,000 years
2000 RWMC PA	15.9 mrem/yr	10,000 years
2000 RWMC CA	30 mrem/yr	3,000 years

As shown in the ground water analysis, these results are not comprehensive for the site. While these preliminary results show no adverse impacts to the public, they are not complete. While the analysis provided in the 1995 EIS regarding ground water doses over the next 20 years is comparable to the 2000 RWMC CA for the wastes that were analyzed, it is not clear that health impacts are understood especially in the light of new D&D decisions that are made to potentially leave additional waste in the ground. While a great deal of additional work has been completed since the 1995 EIS, a cumulative analysis of the health impacts of all of the radioactive wastes that are left in the ground to a maximally exposed individual has not yet been completed. This analysis is necessary in order to make informed decisions regarding ongoing D&D, waste disposal, and environmental remediation activities.

Public Risk Analysis – Non-Radiological Hazards

The health and safety impacts from Criteria Air Pollutants and Toxic Air Pollutants for most of the pollutants are clearly within the bounds established by the 1995 EIS. The following pollutants are those that were reported in the Air Resources section as having exceeded the estimated emissions in the 1995 EIS: beryllium, carbon tetrachloride, chloroform, hydrochloric acid, and VOCs.

VOCs are measured for their potential to generate ozone. The State does not require evaluation of projected increases in ambient ozone concentrations under application procedures for major stationary sources unless a new or modified major facility will result in a net increase in VOCs of 100 tons per year or greater. Part of the reason for the lack of required analysis at lesser emission levels is because no simple, well-defined methods exist to evaluate ozone generation potential. The revised maximum VOCs emission level is well below the threshold emission level of 100 tons per year for which analyses are required by the State and the 4- ton per year threshold for designation as a major source. Therefore, ozone precursor emissions of VOCs are expected to be a negligible contributor to ozone generation and no further analyses have been conducted.

The potential health impacts of the rest of the pollutants addressed above are shown in the following table. The table uses a simple ratio of the 1995 EIS emission rates to the 1999 AEI emission rates and multiplies that ratio by the 1995 EIS concentrations to obtain the revised concentrations. This is an acceptable comparison method as long as the location of the releases in the AEI is the same distance from (or farther from) public roads.

Because beryllium emissions are from the consumption of fossil fuels and fossil fuels are consumed across the site, simply scaling the emissions is appropriate without taking into consideration specific locations. For carbon tetrachloride and chloroform, the location of the highest concentrations reported in the 1995 EIS are at the RWMC. Since this is also the location of the higher revised emissions, this is a reasonable method for comparison.

For hydrochloric acid, the location of the highest concentrations reported in the 1995 EIS are at the WERF (3.2 miles from public roads). Since the emissions of the higher concentrations are approximately ½ from WERF and ½ from the RWMC (2 miles from public roads) this will not give an accurate representation of the actual air concentrations. So information from reference 1 (where emissions were modeled at the RWMC) was used to show the maximum concentrations for HCl to the public.

In all cases, the revised concentrations of these air pollutants are below the given standards. Thus, while the emissions exceeded the previous analysis, the results show that there are no adverse health impacts from emissions at these levels.

Table 8-1.10.5 Offsite Emissions Impacts

Pollutant	1995 EIS Concentrations (ng/m^3)		Ratio[a]	Revised Concentrations (ng/m^3)		Standard (ng/m^3)[b]	Impact as percent of standard	
	Site Boundary	Public Roads		Site Boundary	Public Roads		Site Boundary	Public Roads
Beryllium	4.0E-04	1.0E-03	3.28	1.3E-03	3.3E-03	4.2E+00	<1	<1
Carbon tetrachloride	2.4E+00	2.2E+00	9.21	2.2E+01	2.0E+01	6.7E+01	33	30
Chloroform	8.9E-02	8.3E-02	2.90	2.6E-01	2.4E-01	4.3E+01	<1	<1
Hydrochloric acid[c]					1.7E-02 mg/m^3	3.8E-01[d] mg/m^3		4.5

a This is the ratio of the 1999 Total INEEL Air Emissions to the 1995 EIS Air Emissions estimate from Table 8-1.3.2. This ratio when multiplied by the maximum concentrations in the 1995 EIS will provide the revised maximum concentrations of these pollutants.

b As in the 1995 EIS, these are the Acceptable ambient concentration increments (AAC) listed in State of Idaho Rules for the Control of Air Pollution in Idaho. These standards apply to incremental (not cumulative) impacts of facilities constructed or modified after May 1, 1994.

c. The ratio was not used for this pollutant. The revised concentrations were obtained from "Operable Unit 7-08 Air Dispersion Modeling and Health Effects from Thermal and Catalytic Oxidation Unit Emissions at the Radioactive Waste Management Complex", EDF-1901, June 25, 2001. Only the portion of the HCl emissions that is greater than in the 1995 EIS are reflected here. Since the locations of the two sources are different, there is not a concern with cumulative effects between the two sources.

d. Acceptable Ambient Concentration (AAC) for hydrochloric acid (24-hour average) (IDAPA 58.01.01)

Summary of Major Impacts

The INEEL conditions, data, and methodology used in the 1995 EIS remain valid with the exception of the five air pollutants discussed below. The type and scope of work performed at the INEEL has not changed significantly during the period 1995 – 2000. Changes in the safety programs at the INEEL have improved operational safety in many respects. Adoption of the

Radiation Protection, Quality Assurance, and Nuclear Safety Regulations has improved the overall conduct of operations and safety at the INEEL. Implementation of the Integrated Safety Management System at the INEEL ensures that operations performed at the INEEL have safety and health requirements integrated with all INEEL work activities.

While emissions of hazardous air pollutants were greater than estimated for five pollutants, the resulting maximum concentrations for those pollutants are still below any regulatory threshold requiring additional controls. As a result there are no adverse health impacts to the public from these pollutants.

The analysis for the RWMC shows no adverse health impacts to the public from buried wastes. However, a cumulative analysis of all of the sources of radioactive wastes left in the ground at the INEEL over the long term needs to be performed in order to fully understand the potential ground water related health impacts to the public.

The analysis in the 1995 EIS was adequate for DOE decisions announced in the ROD. Future DOE decisions on major federal actions on the INEEL, or decisions deferred in the ROD, will require additional analysis for this discipline.

References:

1. INEEL Radiological Dosimetry Program

2. Air Emissions Inventory for the Idaho National Engineering and Environmental Laboratory – 1999 Emission Report, DOE/ID-10788, May 2000

3. DOE Computerized Accident/Incident Reporting System

4. Site Environmental Report for Calendar Year 1995, DOE/ID-12082 (95) (ESRF-014)

5. Site Environmental Report for Calendar Year 1996, DOE/ID-12082 (96) (ESRF-018)

6. Site Environmental Report for Calendar Year 1997, DOE/ID-12082 (97) (ESRF-030)

7. Site Environmental Report for Calendar Year 1998, DOE/ID-12082 (98) (ESRF-034)

8. Technical Revision of the Radioactive Waste Management Complex Low-Level Waste Radiological Performance Assessment for Calendar Year 2000, INEEL/EXT-2000-01089, September 2000

9. Radioactive Waste Management Complex Low-Level Waste Radiological Composite Analysis, INEEL/EXT-97-01113, September 2000

10. Operable Unit 7-08 Air Dispersion Modeling and Health Effects from Thermal and Catalytic Oxidation Unit Emissions at the Radioactive Waste Management Complex, EDF-1901, June 25, 2001

8-1.11 INEEL Services

Scope of the 1995 Analysis

The 1995 EIS addressed INEEL Services in the areas of water consumption, electricity consumption, fuel consumption, wastewater disposal, and security and emergency protection. These are discussed in sections 4-13 for the baseline services and section 5-13 for the alternatives analysis. Calendar year 2000 represents the most recent full operating year. This is a representative year for utilities. The 1995 EIS Annual Usage column reflects the baseline utilities plus the anticipated additions from implementing Alternative B. Changes in these services are reflected in the following table.

Table 8-1.11.1 Usage of Resources

1995 EIS Annual Usage	Most Recent Data	Change in Usage
Water usage – - INEEL site: 1.78 billion gallons - I.F. Facilities: 79 million gallons	Water Usage 2000 - INEEL site: 1.2 billion gallons, I.F. Facilities: 71 million gallons	Decreased water usage.
Electricity usage - INEEL site: 303,521 megawatt hrs I.F. Facilities: 31,500 megawatt hrs	Electricity usage 2000 - INEEL site: 156,639 megawatt hrs I.F. Facilities: 27,683 megawatt hrs	Decreased electricity usage.
Fuel consumption - Heating Oil usage - 4.25M gal; Diesel Fuel usage - 1.8M gal; Propane gas use - 863,000 gal; Gasoline usage - 557,000 gal; Jet Fuel usage - 73,100 gal; Kerosene usage - 33,800 gal; Coal usage - 9000 tons (Natural gas and LNG/CNG was not addressed in the 1995 EIS)	Calendar Year 2000 Actuals Heating Oil use - 2.3 M gal Diesel Fuel use – 652,800 gal Propane usage - 63,121 gal Gasoline usage - 381,347 gal Jet Fuel usage - 0 gal Kerosene usage - 45,006 gal Coal usage - 0 tons LNG/CNG usage 4.6Mbtu (vehicles and two buildings at CFA) Natural Gas usage – (I.F. facilities) - 16,816 Mcf	Heating Oil - Decrease; Diesel Fuel - Decrease; Propane - Decrease; Gasoline - Decrease; Jet Fuel - Decrease; Kerosene - Increase;[1] Coal – Decrease[2] Note: 1 - Kerosene increase was due to NWCF operations at INTEC. This process is temporarily shutdown. 2 - The Coal Fired Steam Generating Facility at INTEC was permanently shut down in late FY-99. A separate NEPA review was completed.
Wastewater treatment and discharge systems. Average annual wastewater disposal - INEEL site: - 144 million gallons I.F. facilities: 79 million gallons	Wastewater disposal 2000 - INEEL site: 1.16 billion gallons I.F. facilities: 70 million gallons	INEEL site - Decrease;[3] I.F. facilities - Decrease 3 - The data for the INEEL site for 1995 (142 million gallon) appears to be in error. Based on 1996 data, (1.18 billion gallon disposed), an overall decrease is evident. This water disposal is in

		accordance with regulatory requirements and no adverse environmental impacts have been observed as a result of this disposal.
Fire Department - The INEEL contractors operate and staff three fire stations on the site. Each station has a minimum of one engine company capable of supporting any fire emergency in their assigned area. The services also include site ambulance, emergency medical technician, and hazardous material response services. Mutual aid agreements exist with fire fighting entities such as the BLM and cities of Idaho Falls, Blackfoot, and Arco.	The Fire Department is basically the same as the 1995 description. Several infrastructure improvements to the Fire Department have taken place as follows: Replacement of the CFA and ANL-W fire stations, a new fire fighting training facility, upgrade of several fire fighting trucks and the addition of a wildland fire suppression unit.	Replacement fire stations at CFA and ANL-W were completed in October 1996 and November 1998 respectively. Also, at CFA, a Fire Training Facility was constructed complete in July 1997, and the old fire fighter training facility was torn down. Another change was the addition of one heavy wildland fire suppression unit.
Emergency Preparedness - Each INEEL contractor administers and staffs its own emergency preparedness program under supervision of DOE. The DOE emergency preparedness system includes mutual aid agreements with all regional county and major city fire departments, police, and medical facilities.	The Emergency Preparedness programs for DOE-ID and the Contractors are essentially the same as the 1995 program description. The Warning Communications Center has been enhanced to improve communication. Mutual aid agreements with regional county and major city fire departments, police, and medical facilities remain essentially unchanged from 1995.	No change - Improvement to the Warning Communications Center was performed.
Security - DOE has oversight responsibility for safeguards and security at the INEEL. The security program is divided into three categories: security operations, personnel security, and safeguards.	The Security Program for DOE-ID and the Contractors is essentially the same as the 1995 program description. There are memorandums of agreements with city, county, and state law enforcement support.	Changes are: 1) Elimination of two helicopters stationed at the INEEL. 2) Acquisition of one M1114 up-armored special purpose military vehicle. 3) Constructed a new central alarm station at INTEC which receives all INEEL alarms. 4) Constructed a replacement security entrance building for INTEC which includes improved security offices and portal monitoring. 5) Upgraded the security firing range at ANL-W.

Summary of Major Impacts

In almost every category, the usage rate for these resources has gone down. Where they have not, the increase has been more than offset by the identified decreases in resource usage.

The analysis in the 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

References:

1. Ogilvie, C. to Harker, W. S., E-mail, "EIS Supplemental Analysis – Administrative Record for Emergency Preparedness", dated 5/28/2001

2. INEEL Nonradiological Waste Management Information System, "INEEL Water Usage Summary in Thousand Liters Record to Date", INRPT 032A, dated 3/21/2001

3. INEEL Nonradiological Waste Management Information System, "INEEL Water Pumped Summary in Thousand Liters Record to Date", INRPT 032, dated 3/21/2001

4. Guymon, R. H. to Dunn, D., letter, "Transmittal of the 2000 INEEL Water Use Report", CCN 18562, dated 2/26/2001.

5. INEEL, Quarterly Energy Conservation Performance Report, dated 3/3/2000

6. INEEL, "Infrastructure Long-Range Plan", INEEL/EXT-2000-01052, August 2000

7. Harker, W. S., "Worksheet showing additions due to alternative B (Ten-Year Plan) Volume 2 Part A page 5.13.3", dated 5/11/01

8. INEEL, "INEEL Industrial Usage Summary (Fuel Oil & Diesel, Coal and Water Pumped)", INRPT 030A

8-1.12 Irreversible and Irretrievable Commitments of Resources

Scope of 1995 EIS

The 1995 EIS analyses found irreversible and irretrievable commitments would potentially include land, groundwater, aggregate, and energy resources in section 5.18. These resource commitments would be caused by past activities, construction, and operation of new storage and disposal facilities and potential remediation actions.

Changes in the environmental discipline

The methodology used in the 1995 EIS was to review each alternative and the project specific impacts for commitment of resources that could be considered to be irreversible or irretrievable. The major assumption used was that impacts on air quality are not considered irreversible and irretrievable commitments of resources. Rather, these are potential impacts that could materialize and persist for the duration of the projects in question. This methodology and the major assumptions are still applicable.

Summary of Major impacts

Of the projects analyzed in the1995 EIS some are no longer operating, and of the planned projects, some have not been implemented. As a result irreversible and irretrievable commitments of resources have in general been less than projected in the1995 EIS.

The analysis in the 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

8-1.13 Land Use

Scope of 1995 Analysis

Section 4.2 of Volume 2 Part A of the 1995 EIS described the existing land uses on the INEEL and in the surrounding areas and land use plans and policies applicable to the surrounding area. Section 5.2 of Volume 2 Part A of the 1995 EIS provided an analysis of the impacts to INEEL lands and the area surrounding the site from existing and proposed activities. DOE compared proposed land uses and plans to existing land uses and plans. Potential effects, if any, of changing land uses were qualitatively assessed. For the purposes of assessing land use impacts, it was assumed that no projects would be built outside the INEEL boundaries, DOE determined there would be no effects on the public and private land use that surround the site.

For the selected alternative (the preferred alternative), DOE determined the proposed activities would be consistent with existing DOE plans for continued operations, environmental restoration, and waste management and would be similar to uses in existing developed areas on the site.

Ultimate shutdown and decontamination and decommissioning (life cycle) impacts for the projects were qualitatively assessed if they occurred beyond the time fame (10 years) analyzed in the 1995 EIS. The 1995 EIS does not specifically indicate the time frame used for the analysis of land use impacts, however, land use impacts were assumed to occur for the duration of the activity. For some activities, the loss of acres of open space was considered to be an irretrievable and irreversible commitment of resources (radioactive waste disposal).

Changes in the Environmental Discipline

1. Methodology-No change

2. Assumptions-No change

3. Analytical Methods-NA

4. Data Adequacy- N/A

5. Accident Scenarios-N/A

6. Accident Probabilities-N/A

7. Cumulative Impacts

   The EIS predicted that INEEL activities would disturb approximately 537 acres. The total acres now disturbed or predicted to be disturbed is 705. (See following discussion of land use.)

8. Changes in Regulatory Requirements-N/A

9. Other NEPA Analysis for INEEL Operations

> Additional NEPA analyses for land use concerns have been completed in the Advanced Mixed Waste Treatment Project EIS; Treatment and Management of Sodium-Bonded Spent Nuclear Fuel EIS; the Final Programmatic Environmental Impact Statement for Accomplishing Expanded Civilian Nuclear Energy Research and Development and Isotope Production Missions in the United States, including the Role of the Fast Flux Test Facility; and the High-Level Waste and Facilities Disposition EIS.

A qualitative analysis of INEEL activities was performed to determine if current land uses are different from those described in the 1995 EIS. Some changes have occurred in the activities described in the 1995 EIS. The most important changes include:

- Two new percolation ponds for process water from INTEC are being constructed approximately two miles from INTEC. The new ponds were not contemplated during the development of the 1995 EIS. The ponds will cover approximately twenty acres. This activity was included in the ROD for WAG 3,

- The INEEL CERCLA Disposal Facility (ICDF) is a CERCLA – authorized, RCRA/TSCA – compliant mixed-waste disposal facility for the on-site disposal of INEEL CERCLA soils and debris. The design of the ICDF will meet the minimum technology requirements for a RCRA Subtitle C landfill, with a low permeability layer and a double liner leachate collection system. The leachate collection system will feed to a lined hazardous waste evaporation pond with an estimated surface area of approximately five acres. The waste disposal landfill will cover approximately 23 acres and is sized to accept approximately 510,000 cubic yards of waste. The total land disturbed by building the facility will be approximately 40 acres. The planned location of the ICDF is outside the facility fence immediately south of INTEC and west of the existing percolation ponds.

- The Staging, Storage, Stabilization, and Treatment facility (SSSTS) will be a general purpose support facility designed to provide centralized receiving, inspection, and treatment of wastes from various INEEL CERCLA remediation sites prior to disposal into the ICDF or shipment offsite. The facility will encompass approximately 50,000 square feet, and consist of a storage/staging building and associated treatment equipment, a waste storage area, decontamination facilities, and an office facility. The total land disturbed by building the facility will be approximately 20 acres. This facility will be located outside the INTEC fence along the southwest side.

Several projects listed in the 1995 EIS will not be built including the Waste Characterization Facility, the Mixed Waste Disposal Facility, and the Idaho Waste Processing Facility. One project, the Advanced Mixed Waste Treatment Facility, was built within the Radioactive Waste Management Complex and not outside that facility's fence as described in the1995 EIS (Volume 2 Part B, Figure C-1-1). Another project, the Dry Fuel Storage Facility, will not be built inside the INTEC fence, but will be built just east of the INTEC fence on a previously disturbed (FPR soil storage and laydown area) site.

In addition, several other facilities not identified in the 1995 EIS have been constructed on the INEEL including the ANL-West Fire Station, the CFA Fire and Medical Facilities, and new sewage lagoons located adjacent to the Test Reactor Area's east fence.

A portion of the INEEL was set aside as a Sagebrush Steppe Reserve in order to preserve that unique ecosystem. This is a change in land management policies and practices but does not change the overall land use. The Sagebrush Steppe Reserve is still maintained as part of the withdrawn land used as a buffer zone around active facilities.

Since the 1995 EIS was completed, DOE has developed two additional planning documents, the Comprehensive Facility and Land Use Plan and the Draft Infrastructure Long Range Plan. The Comprehensive Facility and Land Use Plan provides a comprehensive resource of facility and land use planning information for the INEEL to guide land and facility use decisions. The plan represents DOE facility and land use policy and serves as a reference for INEEL personnel and the public. The Draft Infrastructure Long Range Plan provides a forecast of the INEEL infrastructure – the basic land, facilities and capital equipment needed for the INEEL to function.

On November 9, 2000, President Clinton signed a Presidential Proclamation that expanded the boundaries of Craters of the Moon National Monument. The expansion adds 661,000 acres to the existing 54,000-acre monument.

The previously noted changes in activities at the INEEL do not differ substantially from planned uses of the INEEL.

Acres of undisturbed land projected to be disturbed: 537 acres (217 hectares)
Approximate acres of undisturbed land actually disturbed including acreage to be disturbed that was identified in a decision document but not yet implemented:

INTEC Percolation Ponds	= 20
ICDF	= 40
SSST	= 20
Expanded Landfill	= 225
CFA Medical and Fire Station	= 7
Gravel Pits Total	= 85
*Silt/Clay Sources	= 290
TRA Sewage Lagoons	= 18
Total	= 705

*An Environmental Assessment for New Silt/Clay Source Development and Use at the INEEL was completed and identified 290 additional acres needed for Silt/Clay extraction.

Summary of Major Impacts

A number of changes in activities at the INEEL were noted, however they do not differ substantially from planned uses. There have been changes in land management policies and practices but this has not changed the overall land use.

The 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

References:

1. INEEL Comprehensive Facility & Land Use Plan, DOE/ID-10514, December 1996

2. Draft Infrastructure Long Range Plan, February 15, 2001

3. Environmental Assessment for New Silt/Clay Source Development and Use at the INEEL, DOE/EA-1083, May 1997

8-1.14 Mitigation

Potential mitigation measures were discussed in Section 5.19 of Volume 2, Part A of the 1995 EIS. That analysis was applied to the Cultural Resources, Aesthetic and Scenic Resources, Geology, Air Resources, Water Resources, Ecology, Transportation, Health and Safety, INEEL Services, Facility Accidents analyses. The discussion of mitigation measures in the 1995 EIS did not distinguish mitigation from standard practices and appeared to treat all activities that reduce any impact as mitigation. Mitigation measures were discussed in general terms and the document seemed to imply that mitigation activities would be addressed for each new activity as more was known about that activity (e.g., the Advanced Mixed Waste Treatment Facility).

It is acknowledged that normal programmatic activities will continue and any impacts will be minimized to the extent possible using standard practices. However, without a clear distinction between standard practices and specific mitigation activities for a specific action, it is not clear what mitigation measures may have been required for a given activity. Therefore, the document did not stipulate any specific mitigation measures and relied on standard, routine practices to reduce or eliminate the impacts of any alternative selected. No Mitigation Action Plan was prepared in conjunction with the EIS or Record of Decision and the ROD did not commit to any particular mitigation. However, the 1995 EIS did not include all site wide activities (e.g., reactor and in-town operations).

Typically, mitigation is addressed as the following. Mitigation is a specific activity associated with a specific alternative that will lessen specific adverse impacts of that alternative. Mitigation can be accomplished by:

a) Avoiding the impact altogether by not taking a certain action or parts of an action.
b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
e) Compensating for the impact by replacing or providing substitute resources or environments.

Generally, mitigation activities are appropriate when an alternative will have significant effects on the environment if implemented. The impacts of implementing mitigation activities must be evaluated in the NEPA document.

Summary of Major Impacts

The Mitigation analysis is adequate for the scope of activities identified in the 1995 EIS. The addition of other actions to this scope will require additional review to ensure Mitigation actions are not required.

The 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

8-1.15 Noise

Scope of the 1995 Analysis

Section 4.10 of Volume 2 Part A of the 1995 EIS described the INEEL-related noise of public significance occurring during 1995. That section also provided noise levels from other sources not related to INEEL activities to help the public put noise levels into perspective. Section 5.10 of Volume 2 Part A of the 1995 EIS analyzed the effects of INEEL-related noise of public significance stemming from buses, trucks, private vehicles, helicopters, freight trains, air cargo and business travel, industrial operations, and construction activities for all the alternatives. The methodology used in the 1995 EIS was to describe how far facilities were from public receptors; thus justifying that the only impact to the general public was from transportation noise. Transportation of the operations workforce stationed at the site to and from the site and waste and spent fuel shipments were considered to be the largest contributors to noise impacts to the public. Noise impacts to workers were considered to be “mitigated” by OSHA requirements. The operations workforce stationed at the site (i.e., transportation impacts) was assumed to be lower than the baseline for all years for all alternatives. Therefore, there would not be an increase of noise impacts over the baseline from the operations workforce traveling to and from the site. Waste and spent fuel shipments were determined to be infrequent and indistinguishable from any other public transportation noises. Noise impacts from railroad and aircraft traffic were determined to be negligible. No environmental impact due to noise was expected from any of the alternatives.

Changes in the Environmental Discipline

1. Methodology-No change
2. Assumptions-No change
3. Analytical Methods-NA
4. Data Adequacy- N/A
5. Accident Scenarios-N/A
6. Accident Probabilities-N/A
7. Cumulative Impacts-N/A
8. Changes in Regulatory Requirements-N/A
9. Other NEPA Analysis for INEEL Operations

Additional NEPA analyses for noise concerns have been completed in the Advanced Mixed Waste Treatment Project EIS; Treatment and Management of Sodium-Bonded Spent Nuclear Fuel EIS; the Final Programmatic Environmental Impact Statement for Accomplishing Expanded Civilian Nuclear Energy Research and Development and Isotope Production Missions in the United States, including the Role of the Fast Flux Test Facility; and the High-Level Waste and Facilities Disposition EIS.

A qualitative analysis was completed by comparing the numbers and types of sources of transportation noises identified in the 1995 EIS to current sources. A re-evaluation of noise impacts is not warranted based on the following:

- The total number of INEEL workers was approximately 8,600 in 1995 (1995 EIS) and the current number is approximately 8,155 (INEEL Impact 2000). However, the number of site workers has remained fairly constant for the past several years. The 1995 EIS used 4,000 to 5000 site workers and the current estimate in the HLW EIS is also 4,000 to 5,000 workers.
- The INEEL no longer has helicopters eliminating those impacts,
- Major projects not identified in the 1995 EIS would have a negligible increase in transportation noise that could affect the general public,
- There is now a consolidated bus route which reduces the number of buses and routes used from 133 buses for 108 routes in 1995 to 104 buses for 81 routes in 2000,
- There is also only a four day work week now for site workers instead of a five day work week which reduces transportation noise,
- Several projects listed in the 1995 EIS will not be built including the Waste Characterization Facility, the Mixed Waste Disposal Facility, and the Idaho Waste Processing Facility, and
- Shipments of transuranic waste, low-level waste, and spent nuclear fuel have been much lower so far than predicted in the 1995 EIS.

Summary of Major Impacts

The primary source of noise from INEEL operations is from transportation noise. There have been a number of decreases in transportation activities in the last five years including total number of INEEL workers, decrease in the number of bus routes, elimination of helicopters, and use of a four day work week.

The 1995 EIS provides a bounding analysis for the environmental impacts of noise. Additional analysis for this discipline is not required.

References:

1. INEEL Impact 2000

2. Idaho High-Level Waste and Facilities Disposition Draft Environmental Impact Statement, DOE/EIS-0287D

8-1.16 Regulatory Framework

Scope of 1995 EIS

The 1995 EISs Chapter 7 listed some, though not all, of the Federal laws applicable to the INEEL and provided a very summary description of the function of the law.

Changes in the environmental discipline

1. Methodology

This method of identifying and defining various federal laws met the minimal criteria set by CEQ for an EIS at that point in time. Nonetheless, it is not the best approach for satisfying the spirit of the CEQ regulation cited previously. Part 1502.25(b) requires that DOE consider the proposed activity(ies) and the applicable Federal laws, and harmonize how the legal requirements would be carried out if the proposed activity were selected for implementation.

2. Assumptions

a) All programs and activities at the INEEL comply with all Federal laws, both in ongoing activities and operations, and in future activities and operations, out to the planning horizon analyzed in this SA;

b) Because reliable National opinion polls show that environmental protection continues to be a primary concern for most Americans, regardless of political party, any shifts in Presidential or Congressional party make-up will not result in a dramatic change in Federal environmental law (either dramatically more protective of the environment or dramatically less protective of the environment) from the current law;

c) The regulatory entities that monitored Federal law compliance at the INEEL in 1995 remain essentially unchanged, and based upon "b" above, will continue in their roles out to the planning horizon of this SA (with the exception of some minor changes that are discussed in the subsequent section on "privatization");

d) Any budget-cutting activities by Congress will not eliminate funds essential to meeting the assumption in "a" above, at least out to the planning horizon analyzed in this SA.

3. Changes in Regulatory Requirements.

The purpose of this analysis is to review the 1995 EIS's Chapter 7, *"Consultations and Environmental Requirements,"* and compare the legal requirements described in that document against the present-day legal requirements that govern current and proposed activities at the INEEL. The purpose for making this comparison is to address a two-part issue: a) have the applicable environmental laws (statutes, regulations, rules, orders, and binding agreements] changed in any way over the past five years; b) if there have been changes, is there a reasonable possibility that the changes could cause significant impacts to the environment on and around the INEEL?

Appendix 8 – 3 provides a listing of all of the currently applicable regulations.

Summary of Major impacts

The analysis that was performed for the 1995 EIS was acceptable for the time in which it was performed. However, the approach taken was simply a recitation of the most applicable regulations and a general statement of the intent of the regulation. The analysis that needs to be completed is to provide a complete list of all applicable regulations with analysis of how those regulations will have impacts on human health and the environment. In every case reviewed, changes in regulations between 1995 and 2000 were to make the regulations more restrictive, thus reducing environmental impacts. The HLW & FD EIS provides a good analysis of most regulations applicable to the INEEL and provides the appropriate level of analysis. The 1995 EIS does not provide a bounding analysis for the regulatory environment, however, the HLW & FD EIS provides the majority of the required analysis. Because the regulatory changes have resulted in reduced environmental impacts, no further analysis is required.

The analysis in the 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

8-1.17 Relationship Between Short-term Use of the Environment and the Maintenance and Enhancement of Long-term Productivity

Scope of 1995 EIS

The 1995 EIS analyses found that there would be no long-term loss of productivity from the actions planned except for the impacts to the ecology. Ecological impacts would result in the loss of productivity and biodiversity associated with the amount of land that would be disturbed and used.

Changes in the environmental discipline

1. Methodology

The methodology used in the 1995 EIS was to review each alternative and the project specific impacts for potential impacts that would occur over the life of the project. These potential impacts were then compared to the potential benefits that may result over the long-term from the project. This same methodology was used for this SA.

2. Assumptions

The major assumption used was that each and every project would result in a potential long-term benefit.

3. Analytical Methods

None used. Analytical analyses were performed by each of the disciplines, alternative by alternative.

4. Data Adequacy

Determined by each discipline.

5. Accident Scenarios

Accident impacts are not included in this section. The potential impact from a single accident at a facility is included in the existing accident analysis section. The probability of multiple accidents at multiple facilities is so small that the situation is not analyzed.

6. Accident Probabilities - N/A

7. Cumulative impacts

Cumulative Impacts are addressed specifically in another section of the SA. In general, potential cumulative impacts have been reduced on the INEEL and surrounding area since the 1995 EIS.

8. Changes in Regulatory Requirements.

What changes in regulations that have occurred (air, water, etc), have reduced potential impacts at least in the short term.

9. Other NEPA

Several EAs and EISs have been prepared that tier from the 1995 EIS that analyze existing or proposed INEEL facilities and operations. These are the Advanced Mixed Waste Treatment Project EIS, EIS for the Treatment and Management of Sodium-Bonded Spent Nuclear Fuel, Nuclear Infrastructure EIS, and Idaho High Level Waste and Facilities Disposition EIS. The Idaho HLW EIS also integrates the analysis of CERCLA and RCRA actions to comprehensively analyze impacts for environmental restoration and waste management. Each of these EISs analyzes the impacts of the actions within their scope as they contribute incrementally to INEEL cumulative environmental impacts. Except for reactor operations, all actions analyzed in these EISs were anticipated and addressed in the 1995 EIS.

Summary of Major impacts

Of the projects analyzed in the 1995 EIS some are no longer operating and of the planned projects some have not occurred. The section on cumulative impacts and Impacts from Connected or Similar Actions provides a summary of the operational changes that have occurred since 1995. As a result short-term impacts have in general been less than projected in the 1995 EIS. In addition, the long-term impacts associated with land disturbances have also been less. The potential long-term risk to workers, the public and the environment remains extremely low even though this risk may be long-term. The impacts resulting from wildfires on the INEEL since 1995 were not anticipated in the 1995 EIS. However, again no long-term loss of productivity within the ecological environment on the INEEL is anticipated. Wildfires often times result in a long-term increase in productivity within ecological environments. The wildfire impacts to facility operations on the INEEL resulted in no long-term changes.

This SA acknowledges that several flood studies have been conducted on the INEEL but that there is a degree of uncertainty associated with flooding and overland flow. There is also a difference of opinion between the United States Geological Survey and the Bureau of Reclamation that is fully described in the HLW & FD EIS. Again, although the potential exists for short-term impacts, the existing studies show minimal potential impact on long-term productivity.

The analysis in the 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

8-1.18 Socioeconomics

Scope of 1995 Analysis

The 1995 EIS, sections 4.3 and 5.3, provided an analysis of the socioeconomic impact to the surrounding counties of the INEEL primarily from any increases in INEEL employment. Based on Alternative B, any increases in employment would be offset by a declining workforce because of shrinking federal budgets experienced at the time in other DOE programs.

Changes in the Environmental Discipline

1. Methodology

Socioeconomic impacts in the 1995 EIS basically relied on compilation of statistical data from the government and internal sources. This socioeconomic data/information including potential declining outyear budgets and employment reductions were used to establish a basis and then this basis was adjusted by the potential needs and requirements (increased employment) outlined in the1995 EIS.

2. Assumptions

The relevant assumption was that any additional employment planned in the1995 EIS would offset declining employment in other program areas at the INEEL i.e., no major overall employment impacts were expected, thus no material socioeconomic impacts to the region were projected.

3. Analytical Methods

Statistical forecasting provided by government and internal sources. Qualitative estimating based on information relevant at the time.

4. Data Adequacy

Data/information provided in the1995 EIS covered the major areas of concern regarding socioeconomics.

5. Accident scenarios - None N/A

6. Accident probabilities - None N/A

7. Cumulative Impacts

The 1995 EIS projected minimal/immaterial changes in the area of socioeconomics. Any additional employment (impacts) would be offset by other INEEL programs that were declining due to shrinking budgets.

8. Changes in Regulatory - None N/A

9. Other NEPA Analysis for INEEL operations - N/A

In the 1995 EIS the following selected data was derived from table F-1-7 from page F-1-16:

Table 8-1.18.1 Total Employment

	1994	1995	2000
Total direct Employment from the INEEL	10,729	8,620	7,254

As expected, in 1995 employment levels decreased nearly 20% from 1994 to 1995 due to federal budget reductions. The year 2000 estimate of 7,254 was based on out-year projections. Alternative B (table F-1-1, page F-1-10) estimated that 1,062 jobs would result from this alternative. Using this data, the projected direct employment was estimated to be 8,316.

7,254 No action
1,062 Alternative B
8,316 Projected 2000 employment level.

Summary of Major Impacts

The 1995 EIS Alternative B projected minimal socioeconomic impacts beyond 1995 since employment levels would be nearly the same as they were in 1995 (8,620 in 1995 and 8,316 Alternative B projected for the year 2000).

The document titled "INEEL Impacts 2000" published by the Department of Energy, Idaho Operations Office, shows total INEEL employment in 2000 was 8,155 people. A comparative analysis between the 3 sets of employment numbers to the current socioeconomic conditions and the continued growth seen in the region of influence and lack of any known direct adverse socioeconomic impacts, supports the 1995 EIS conclusions that minimal socioeconomic impacts have resulted from implementation of the Alternative B decision.

The analysis in the 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

Table 8-1.18.2 Projected Employment

	1995 Actuals	2000 (projected in 1995 EIS)	2000 (Actuals based on "INEEL Impacts 2000")
Direct Employment	8,620	8,316	8,155

References:

1. INEEL Impacts 2000

8-1.19 Traffic and Transportation

Scope of the 1995 EIS

Transportation analysis of all four alternatives was performed in sections 4.11 and 5.11 in the 1995 EIS. Each of the alternatives provided analysis of associated shipments for that alternative.

The selection of a specific alternative or a change in the time frame for the alternative would have little or no affect on specific characteristics (external dose rate, route of travel, etc.) of individual shipments since these items are controlled by federal regulations.

Transportation impacts can be radiological (involving exposure to or release of radioactive material) or nonradiological (physical impacts resulting in injuries or fatalities). Nonradiological impacts are independent of the cargo and depend primarily on routing, accident rates for selected routes, and number of shipments. Radiological impacts can be accident impacts or non-accident impacts. Non-accident impacts are primarily a function of the external dose rate from the shipping container, routing (which includes distances and population densities), and the number of shipments. Accidents impacts depend on the physical/chemical/radiological characteristics of the cargo, routing, number of shipments, accident severity, release fractions, atmospheric dispersion, population densities and other pathway factors.

Changes in the Environmental Discipline

Alternative B of the 1995 EIS provides estimated number of shipments for a number of options (potential shipping destinations) that have not been utilized to date. This is not to say they will not be utilized in the future, but rather that to date there have been no actual shipments on which to base a comparison. For those options and categories that have been utilized, a comparison is made to the option B estimates to determine that actual shipments (a shipment consists of all material on one shipping paper, bill of lading, or manifest) are within the estimates. The estimated number of shipments for Alternative B was obtained from EIS tables 5.11-4 and 5.11-5, and compared to the actual number of shipments from the past year. The 1995 EIS tables show estimates for making both 100% of the shipments by Truck and for making 100% of the shipments by rail. The actual shipments shown are 100% by truck. The comparison is as follows:

Table 8-1.19.1 Spent Nuclear Fuel Shipments

Spent Nuclear Fuel	Number of Shipments Forty year totals from Alternative B table 5.11-5		Actual in 2000	
	By Truck	By Rail	By highway	By Rail
Naval[a]	3024		0	5
University[b]	519	519	0	0
Foreign[b]	1008	1008	7	1
DOE[b]	743	297	3 (ANL)	0
Onsite[c]	1764	0	4	0

a Includes offsite and onsite shipments. Naval shipments would be made using a combination of truck and rail transport.
b Shipments based on 100 percent transport by truck or 100 percent transport by rail.
c Onsite shipments generally are made by truck only.

Table 8-1.19.2 Shipments of Radioactive Waste and Hazardous Materials

Material	Number of Shipments Ten year totals from Alternative B table 5.11-4[d]		Actual in 2000
Transuranic Waste	By Truck	By Rail	Total
INEEL to WIPP	4,317	1,695	26[a]
Rocky Flats to INEEL	830	326	0
ANL-E to INEEL	207	104	0
INEEL to PSF	5,434	2,206	0
PSF to INEEL	2,495	980	0
INEEL to Hanford	0	0	0
NTS to INEEL	0	0	0
SNL to INEEL	0	0	0
LANL to INEEL	0	0	0
Low-level waste			
INEEL to PSF	710	355	0
PSF to INEEL	23	12	0
INEEL to NTS	0	0	0
Rocky Flats to INEEL	0	0	0
LANL to INEEL	0	0	0
PANTEX to INEEL	0	0	0
SNL to INEEL	0	0	0
ITRI to INEEL	0	0	0
Mixed Low Level Waste[b]			20
INEEL to NTS or Hanford	0	0	0
Rocky Flats to INEEL	0	0	0
LANL to INEEL	0	0	0

PANTEX to INEEL	0	0	0
ETEC to INEEL	0	0	0
Onsite radioactive waste	1,365		115

a. The 26 shipments to WIPP in 2000 includes 8 TRU mixed waste shipments
b. None of the actual 20 mixed waste shipments in 2000 had both an origin and destination comparable to those from table 5.11-4.
c. WIPP = Waste Isolation Pilot Plant, ANL-E = Argonne National Laboratory – East, PSF = Private Sector Facility, NTS = Nevada Test Site, SNL = Sandia National Laboratories, LANL = Los Alamos National Laboratory, ITRI = Inhalation Toxicology Research Institute, ETEC = Engineering Technology Engineering Center.
d. Shipment counts represent 100 percent by truck or 100 percent by rail, except for onsite shipments that only use truck.

The 1995 EIS provides estimated annual vehicle miles traveled by DOE vehicles. A comparison is made to the estimates from table 4.11-2 of the 1995 EIS, to the actual miles traveled by DOE vehicles in 1999 as obtained from BBWI Fleet Management, to determine that actual miles traveled are within the estimates. The 1999 miles represent all miles for DOE vehicles regardless of the facility, project, or operation they were supporting.

Table 4.11-2 of the 1995 EIS also provides the miles driven per year, related to SNF, ER, HLW, and WM, by commercial vehicles as 905,900 miles total. As means of comparison, based on DOE Enterprise Transportation Analysis System (ETAS), in the year 2000 there were 2305 commercial vehicles that delivered and or picked up material in connection with all INEEL operations. This mileage represents all mileage for all BBWI programs projects and facilities at the INEEL, not just those within the scope of the EIS. This includes express carriers (such as Federal Express, Air Borne Express, and UPS) for hire carriers (such as TRISM, Yellow Freight, and Consolidated Freight, City Express), vendors (such as Gas House, Bangs Office Supply, and Bowen Petroleum) and House Hold movers and air-ride vans (such as United Van Lines and Wheaton Van Lines). Most of these commercial vehicles are involved in delivering materials where the INEEL would be only one of numerous customers to whom deliveries are made on any given day/trip. Accordingly miles driven, related to the INEEL, per vehicle would be the distance from their dispatch points in the surrounding communities to the INEEL and return to their dispatch point. The dispatch points for virtually all the commercial vehicles are located in Idaho Falls (55 miles from the INEEL Central Facilities Area) or Pocatello (60 miles from the INEEL Central Facilities Area). The INEEL related commercial vehicle miles traveled last year can be approximated by multiplying the number of commercial vehicles that delivered to and or picked up material from the INEEL by the average round trip miles from dispatch point to the INEEL delivery point, and return, or:

(2305 commercial vehicles) X (120 miles) = 276,600 commercial vehicle miles

Table 8-1.19.3 Vehicle miles traveled for traffic related to the INEEL

Type of vehicle	Miles traveled per year Estimated from EIS	Actual in 2000
DOE Busses	6,068,200	2,903,021

Other DOE vehicles	9,183,100	Light vehicles 6,251,561 Trucks 382,014 Total 6,633,575
Commercial vehicles	905,900	276,600

The comparison shows that the miles traveled per year by DOE vehicles and commercial vehicles in relation to the INEEL are well within the original estimates used for the EIS.

The 1995 EIS considers only radioactive shipments connected to SNF, ER, and WM projects, for the transportation analysis. To provide comparison, the number of radioactive shipments from all projects and facilities over a five-year time period was obtained from the DOE Enterprise Transportation Analysis System (ETAS) and is provided for comparison EIS. The table below compares the estimated number of radioactive shipments from the EIS specific to SNF, ER, and WM and compares that number to the actual number of radioactive shipments from all programs, projects, and facilities per year (per ETAS) times 10.

Table 8-1.19.4 Total Radioactive Shipments

EIS Estimate for specific operations from table 5.11-4, 5,381 shipments (a ten year estimate) plus (+) Table 5.11-5, 7,058 shipments (a 40 year estimate adjusted to a ten year estimate, 7,058 divided by 4) 7,058 divided by 4 = 1,764 (5.11-5 10 year total) + 15,381 (5.11-4 10 year total) = 17,145. Radioactive shipments from the 1995 EIS tables 5.11-4 & 5.11-5 (10 year time frame) = 17,145
Actual radioactive shipments for all programs projects and facilities for the following years. 1996 = 299 1997 = 331 1998 = 278 1999 = 167 2000 = 180 actual 5 year total 1255 Total shipments for the five year time frame = 1,255 Times 2 to make it comparable to the EIS 10 year time frame = 2,510

This figure Includes TRU waste shipments to WIPP, mixed waste shipment from Sandia, mixed waste shipment from Paducah, mixed waste shipments to Treatment/Storage/Disposal (TSDs), long haul shipments, and miscellaneous shipments; to Massachusetts, Pennsylvania, New Jersey, Maryland, Tennessee, South Carolina, Louisiana, Oklahoma, Texas, Colorado, California, and Washington (shipments include samples, sources, instrumentation, empty packagings, etc.)

The comparison shows that the total number of radioactive shipments, over a five year period, for all programs, projects, and facilities is well within the original estimates used for the EIS.

Summary of Major Impacts

For purpose of comparison, the number of shipments (1,255) and vehicles miles traveled (9,813,196) related to the INEEL, during the past five years are well within the bounded number of shipments (17,145) and miles (16,157,200) analyzed in the 1995 EIS.

The analysis in the 1995 EIS provides a bounding analysis for the environmental impacts in this discipline. Additional analysis for this discipline is not required.

References:

1. DOE-AL Enterprise Transportation Analysis System

8-1.20a Water Resources - Ground Water

Scope of the 1995 Analysis

The water resources section of the 1995 EIS addressed both possible flood hazards and ground water impacts from INEEL operations. These two topics are addressed separately in this Supplement Analysis document.

Section 4.8 of the 1995 EIS addresses the water resources of existing activities on the INEEL, and section 5.8 addresses the estimated impacts from proposed actions. The 1995 EIS ground water analysis was based on two primary pieces of information. The first is the 1994 RWMC Performance Assessment (1994 PA). The second is the ground water monitoring data that was available in 1994. The analysis included monitoring data tabulation and modeling to assess water resources with respect to potential impacts of the activities delineated in the 1995 EIS. The geology and water resources methodologies and assumptions are detailed in Appendix F-2 in Volume 2 of the 1995 EIS. Preliminary predictions of groundwater impacts from other areas and activities (INTEC, TAN, TRA, and RWMC) were presented with detailed analyses deferred to future characterization activities.

The result of the NEPA analysis showed hazardous constituents in the ground water at TAN, TRA, INTEC, and in the subsurface at RWMC. The potential radioactive plume projected to emanate from the RWMC was projected to result in a maximum exposure rate to the public of 0.60 mrem/yr by the year 2060. This information was based on the Performance Assessment (PA) for the active LLW disposal facility (Pits 17 – 20, disposal vaults) at the RWMC. The buried ER wastes were addressed and the statement was made that federal drinking water standards would not be exceeded through 2005. Also addressed were the iodine-129 (I-129), tritium (H-3), and strontium-90 (Sr-90) plumes from TRA and INTEC, and the trichloroethylene plume from TAN.

The 1995 EIS acknowledged that additional analysis was needed in order to fully understand the ground water impacts to a maximally exposed member of the public. Reference was made to the ongoing Remedial Investigation and Feasibility Study for WAG 7 (INTEC). No credit was given for any activities at the Pit 9 project or the Test Area North (TAN) pump and treat remediation project.

Water use and discharge data is analyzed in the INEEL Services section of this appendix.

Changes in the Environmental Discipline

1. Methodology

The 1995 EIS concluded that possible groundwater impacts were not by themselves a discriminating factor in the weighting of alternatives.

Since the 1995 EIS was published a great deal of analysis and remediation has been completed on ground water for the INEEL. The remediation includes removal of volatile organics from the vadose zone at RWMC and the removal of contaminated groundwater from the TAN injection well through pump and treat processes. Other changes include the use of bioremediation in cleaning up the TAN TCE plume, which has been so successful that the ROD is being amended to recommend bioremediation for the most contaminated portion of the plume.

Other more recent analyses include the 2000 update to the RWMC Performance Assessment (2000 PA), development of the RWMC Composite Analysis (CA), the WAG 3 (INTEC) Remedial Investigation and Feasibility Study, the draft HLW & FD EIS and the ongoing analysis for the Waste Area Group 7 (RWMC) Remedial Investigation and Feasibility Study (WAG 7 RI/FS). The HLW & FD EIS groundwater characterization and impacts analyses rely heavily on the data and modeling results contained in the 1997 WAG-3 Remedial Investigation and Feasibility Study for the INTEC. The 2000 Composite Analysis provides significantly more detail regarding the groundwater impacts of INEEL activities.

The 2000 PA addresses the potential maximum environmental impacts to a member of the public from the active LLW disposal facility. The CA addresses the potential maximum environmental impacts to a member of the public from all sources of radiological contamination in the subsurface at the INEEL, including the active disposal facility.

2. Assumptions

The primary assumptions from the1995 EIS are similar to those that are currently used in the RWMC 2000 Performance Assessment. The agricultural scenarios and intruder scenarios for receptors are essentially the same. Key assumptions for the INTEC/TRA models included; meteorological data for vadose zone transport rate analyses, retardation coefficient (kd) values, a transport time of three years through the vadose zone to the aquifer, and that there would be no intentional surface or subsurface discharges exceeding DOE standards. The TAN TCE model assumed an infinite source of TCE and identified TCE as a major potential contaminant of concern. Subsequent analyses indicate that in-situ bioremediation is significantly attenuating the distal TAN TCE plume. The robust and defensible documentation of this attenuation has led to the generation and acceptance of alternative remediation strategies for the TAN TCE plume. Other assumptions are delineated in Appendix F-2 in Volume 2.

Some significant changes in assumptions for RWMC groundwater modeling since 1994 include: the adjustment of the retardation coefficient (Kd) for uranium from 1000 mL/g to 6 mL/g, the inclusion of source terms from the entire Subsurface Disposal Area, and the development of a more sophisticated release model for buried waste.

A key assumption in the 1995 EIS regarding the recession of contaminant plumes on the INEEL seems to have been verified by data and models contained in the CA. However, the WAG 3 RI/FS indicates that the I-129 plume could reach the INEEL southern boundary at or above the 1 pCi/l MCL. It is also important to note that aquifer risks were characterized with respect to impacts at the site boundary in the 1995 EIS. Thus, more potential contaminants of concern will be identified in analyses (such as the WAG 3 RI/FS) that seek to identify threats to the aquifer.

3. Analytical Methods

The 1995 EIS used MODFLOW and its MT3D fate and transport module for INTEC/TRA 2-d saturated zone contaminant transport characterization. The GFLUX 1-d unsaturated zone contaminant transport code was used to numerically introduce contaminants into the saturated zone. This modeling process has been replaced by the use of the TETRAD multi-phase flow and transport simulator. The MODFLOW/PORFLOW or GWSCREEN approach is arguably limited by the 1-d assumptions required for vadose zone transport but has reasonably fast computation times. TETRAD has the capability to fully capture 3-d geohydrologic and source term effects on coupled saturated and unsaturated zone fate and transport. Lengthy computation times limit the range of sensitivity analyses that can be done and assumptions have to be made regarding the geohydrologic structure in 3 dimensions.

The TAN and RWMC models (FLASH/FLAME and PORFLOW respectively) were used in the 1995 EIS and have subsequently been replaced by the TETRAD simulator.

4. Data Adequacy

Since the 1995 EIS, new monitoring data is available for further refining fate and transport history matching. RWMC data gathered since the 1995 EIS analyses will be crucial in assessing 1995 EIS assumptions. Additional data on point source releases of water to the vadose zone at the INTEC is now available and summarized in the 1997 WAG-3 RI/FS. This new water input is in part responsible for the modeled peak aquifer concentration of Sr-90 of 16 pCi/l. TRA operations will not contribute to further potential for ground water contamination unless decisions are made to D & D the MTR and ETR reactors in place. New data demonstrating the effectiveness of in-situ bioremediation in the distal TAN TCE plume is now available.

The source term data that was used in the1995 EIS is the same source term data that was used in the 94 Performance Assessment. That data came directly from the RWMIS database maintained by the Waste Management organization. Since then, a number of efforts have been made to more accurately characterize some of the remote-handled waste received from TRA and from NRF. This has resulted in another revision to the database. As a result of these changes, the data quality has been upgraded since the1995 EIS. The CIDRA database is an example of additional data that is now available for refining source term estimates.

The ground water monitoring results comparing data from the 1995 EIS and maximum ground water monitoring results from 1995 - 1999 is shown in Table 8-1.20.1. The table shows decreased contaminant levels for most contaminants. The contaminants that show increases are for inorganic salts around the Mud Lake area (not attributable to INEEL actions) and for carbon tetrachloride. The receding plume observation cited in the 1995 EIS is justified given the data set for H-3 and Sr-90 but problematic for other radionuclides due to sporadic sampling. The CA model calibration ignored the impacts of sporadic and isolated contaminant detections on model parameters. This assumption is reasonable in light of the model's main objective which is to capture the large scale behavior of contaminants that are consistently detected.

5. Accident Scenarios

One scenario was analyzed in the 1995 EIS in which a HLW tank was postulated to simultaneously release 1,300,000 curies of Sr-90 in 300,000 gallons of water at the surface. Assuming only meteorological input, the maximum modeled aquifer concentration of 2 pCi/l (MCL=8 pCi/l) occurred in the model 300 years after the release.

The intruder and inadvertent intruder scenarios that were described in the1995 EIS are essentially the same as are currently used in the 2000 PA. The CA uses a different set of exposure scenarios than the PA (in accordance with the DOE guidance on development of a CA).

6. Accident Probability

No probabilities are assumed in the PA and the CA. The analysis assumes that the intrusion into the facility takes place and analyzes the impact of the intrusion.

7. Cumulative Impacts

The PA and the CA evaluate doses in a number of different scenarios and in comparison to a number of different criteria. These documents are available in the source documents for this Supplement Analysis. The all-pathways dose will be shown here as a representative example of the maximum calculated dose.

Additional analysis is required to address all of the buried radiological source terms across the site. This analysis could be compiled from the existing Composite Analysis (CA) and other NEPA and CERCLA documents. However, use of the existing CA is problematic because it does not address all of the buried wastes across the INEEL.

In the near term, the 2000 PA shows a dose to a maximally exposed member of the public from the all-pathways dose of 0.0022 mrem/yr through 2120. This compares to the 1995 EIS which shows a dose of 0.60 mrem/yr through 2060. The CA shows an all-pathways dose from all buried waste of 0.07 mrem/yr through 2120. The long-term analysis shows doses of 17 mrem/yr (at 10,000 years - 1994 PA), 15.9 mrem/yr (at 10,000 years – 2000 PA), and for all sources of contamination 30 mrem/yr (at 3000 years – CA).

8. Changes in Regulatory Environment

The primary regulations governing ground water, the Safe Drinking Water Act and the Clean Water Act, have not significantly changed in the previous five years. The designation of the Snake River Plain Aquifer as a sole source aquifer in 1991 did not appreciably change regulatory requirements for INEEL actions. These have not changed in the previous five years.

The 1994 PA was written to the requirements of DOE O 5820.2A. The 2000 PA was written to DOE O 435.1 which has recently replaced DOE O 5820.2A but imposes similar requirements for a PA analysis. The CA is relatively new and the requirements for it are found in DOE O 435.1. Additionally, the creation of the WAG-10 (site-wide) aquifer characterization unit creates opportunities and issues with respect to the integration and coordination of groundwater characterization and remediation strategies.

9. Other NEPA Analysis for INEEL Operations

The HLW & FD EIS is now near completion which incorporates WAG 3 RI/FS groundwater data and modeling results.

Summary of Major Impacts

The 1995 EIS addressed existing groundwater plumes from the TRA, INTEC, TAN, and RWMC. It also provided estimates of ground water doses from the ongoing low-level waste disposal activities at the RWMC. The 1995 EIS showed a dose of 0.60 mrem/yr attributable to the LLW disposal facility through the year 2060. It also stated that results of the preliminary risk assessment for buried wastes indicate that contaminants would not reach the INEEL site boundary exceeding Federal primary drinking water standards through 2005. Additional analysis completed since the 1995 EIS confirms that these statements are still valid. The projected groundwater dose from all buried waste at the RWMC is 0.07 mrem/yr through 2120.

The 1995 EIS stated that additional work was required in order to understand ground water impacts from INEEL operations. Since that time, additional analysis has been completed that addresses some of the unknowns but additional work is still required. The RWMC Composite Analysis (CA) has been completed since the 1995 EIS was published along with updates to the RWMC Performance Assessment. These have addressed one of the major groundwater analysis needs: further definition on the balance of the buried waste at the RWMC. The WAG 3 RI/FS has also been completed since the 1995 EIS and provides another major piece of the groundwater analysis such as impacts from spills at the INTEC. (It should be noted during the discussion of groundwater impacts, that there is a great deal of uncertainty in groundwater modeling and impacts. Most models calculate results conservatively because they cannot duplicate actual transport mechanisms through the vadose zone. These transport processes are highly complex especially in an environment like the INEEL where fractured basalt, rift zones, geothermal activity, and sedimentary interbeds all play a part in fate and transport of contaminants. Analysis done to date has consistently used conservative assumptions in performing this analysis.)

Decontamination and decommissioning (D & D) decisions on ultimate disposition of radiologically contaminated facilities have the potential to add significant source term that may increase the long-term dose reflected in the Composite Analysis. From a site-wide cumulative impacts standpoint, the D & D impacts on the long-term ground water dose are uncertain. D & D decisions must take into account cumulative impacts on groundwater dose estimates. The additional analysis that is needed is a site-wide Composite Analysis in accordance with DOE O 435.1. This information will be used to address some of these uncertainties.

While additional work is required beyond 2005 and for D&D decisions, the conclusions of the 1995 EIS (see page 5.8-4 in the 1995 EIS) are adequate to support the ROD. Actual ground water monitoring data shows decreasing contaminants across the INEEL with the exception of inorganic salts (from agricultural sources in the Mud Lake area) and carbon tetrachloride, which is being addressed through CERCLA remediation actions.

The analysis in the 1995 EIS was adequate for DOE decisions announced in the ROD. Future DOE decisions on major federal actions on the INEEL, or decisions deferred in the ROD, will require additional analysis for this discipline.

References:

1. Technical Revision of the Radioactive Waste Management Complex Low-Level Waste Radiological Performance Assessment for Calendar Year 2000, INEEL/EXT-2000-01089, September 2000

2. Radioactive Waste Management Complex Low-Level Waste Radiological Composite Analysis, INEEL/EXT-97-01113, September 2000

3. E-mail from Leah Street, INEEL Ground Water Monitoring Data, Data Qualifiers, and updated Maximum Contaminant Levels, 4/11/01

4. Comprehensive RI/FS for the Idaho Chemical Processing plan OU 3-13 at the INEEL – RI/BRA Report (Final), DOE/ID-10534, Nov. 1997

5. Draft Record of Decision Amendment for the Technical Support Facility Injection Well (TSF-05) and Surrounding Groundwater Contamination (TSF-23) and Miscellaneous No Action Sites, Final Remedial Action, DOE/ID-10139 Amendment, July 2001

Table 8-1.20.1 Summary of highest detected contaminant concentrations in groundwater within the INEEL site 1995 – 2000

Parameter	Highest detected recent concentration through 2000	Recent boundary concentration through 2000	Highest detected recent concentration through 1995[g]	Recent boundary concentration through 1995[g]	Current maximum contaminant level[g]	Derived concentration guide[g]
Radionuclides in picocuries per liter						
Americium-241	< detection limit (1998)[a]	< detection limit	0.91 (1990)	< detection limit	15	30
Cesium-137	< detection limit (1998)[a]	< detection limit	2,050 (1992)	< detection limit	200	3,000
Cobalt-60	< detection limit (1998)[a]	< detection limit	890 (1987)	< detection limit	100	10,000
Iodine-129	3.82 (1990)[b]	0.00083	3.6 (1987)	0.00083	1	500
Plutonium-238	< detection limit (1998)[a]	< detection limit	1.28 (1990)	< detection limit	15	40
Plutonium-239/240	< detection limit (1998)[a]	< detection limit	1.08 (1990)	< detection limit	15	30
Strontium-90	76 (1995)[c]	< detection limit	640 (1992)	< detection limit	8	1,000
Tritium	25,100 (1995)[c]	310	48,000 (1988)	Background	20,000	2,000,000
Nonradioactive metals in milligrams per liter						
Cadmium	0.002 (1998)[a]	Background	0.0073 (1992)	Background	0.005	Not applicable
Chromium	0.168 (1998)[a]	Background	0.21 (1988)	Background	0.1	Not applicable
Lead	0.02 (1998)[a]	Background	0.009 (1987)	Background	0.015	Not applicable
Mercury	0.0006 (1995)[c]	Background	0.0004 (1987)	Background	0.002	Not applicable
Inorganic salts in milligrams per liter[1]						
Chloride	267 (1997)[d]	Background	200 (1991)	--	250	Not applicable
Nitrate	11 (1995)[c]	Background	5.4 (1988)	Background	10	Not applicable
Sulfate	270 (1995)[e]	Background	140 (1985)	Background	250	Not applicable
Organic compounds in milligrams per liter						
Carbon tetrachloride	0.0072 (2000)[f]	Background	0.0066 (1993)	< detection limit	0.005	Not applicable
Chloroform	0.0012 (2000)[f]	Background	0.951 (1988)	< detection limit	0.1	Not applicable
1,1-dichloroethylene	0.0011 (1996)[f]	Background	0.009 (1989)	< detection limit	0.007	Not applicable
Cis-1,2-dichloroethylene	0.05 (1996)[f]	Background	3.9 (1992)	< detection limit	0.07	Not applicable
Trans-1,2-dichloroethylene	0.02 (1996)[f]	Background	2.6 (1988)	< detection limit	0.1	Not applicable
Tetrachloroethylene	0.046 (1996)[f]	Background	0.051 (1992)	< detection limit	0.005	Not applicable
1,1,1-trichloroethylene	0.0076 (1996)[f]	Background	0.012 (1989)	< detection limit	0.2	Not applicable
Trichloroethylene	0.99 (1996)[f]	Background	4.6 (1992)	< detection limit	0.005	Not applicable
Vinyl Chloride	<0.0002[f]	Background	0.027 (1989)	< detection limit	0.002	Not applicable

Note 1: The inorganic salts were detected in wells at the northern portion of the INEEL. This is indicative of agricultural fertilizers used by farmers in the Mud Lake area.

a	Bartholomay, Tucker, and others (2000)	DOE/ID-22167
b	Mann and Beasley (1994)	DOE/ID-22115
c	Bartholomay, Tucker, et.al. (1997)	DOE/ID-22137
d	Bartholomay, Knobel, et.al. (2000)	DOE/ID-22165
e	Bartholomay, Knobel, and Tucker (1997)	DOE/ID-22143
f	USGS database – www.water.usgs.gov/nwis/, this data is for wells extending into the aquifer	
g	1995 EIS, Table 4.8-1	

8-1.20b Water Resources – Surface Water

Scope of the 1995 Analysis

The water resources section of the 1995 EIS addressed both possible flood hazards and ground water impacts from INEEL operations. These two topics are addressed separately in this Supplement Analysis document.

Section 4.8 of the 1995 EIS addresses the water resources of existing activities on the INEEL, and section 5.8 addresses the estimated impacts from proposed actions. Flood hazard characterization in the 1995 EIS was limited to the Mackay dam failure scenario, which is considered to be a bounding accident. Structural failures were assumed to be insignificant due to the shallow depth and low flow velocity and the low probability of the initiating event. Subsequent flood hazard studies and their implications are discussed in the HLW & FD EIS.

1. Methodology

Flood Hazard characterization methodology is described in detail in Appendix F-2 in Volume 2. The primary source for the 1995 EIS flood hazard analysis was the Koslow and Van Haaften (1986) Mackay dam failure analysis. This report relied on the DAMBRK one-dimensional (1-d) flood routing model (developed by the National Weather Service) to simulate 4 scenarios; seismic dam failure, hydraulic (piping) failure of the dam with a 100 year flood, hydraulic failure with a 500 year flood, and overtopping failure with a probable maximum flood. DAMBRK was validated with data from actual dam failures including the Teton Dam failure.

This report also included an analysis of local basin snowmelt effects with a combined rain and snowmelt water availability of 2.74 inches per day. This analysis concludes that there is no threat to INEEL facilities from local runoff resulting from the simultaneous occurrence of heavy rains and melting snow. Local basin snowmelt flooding is identified in the 1995 EIS as a problem which can be alleviated through adequate hydrologic design, construction and maintenance. Subsequent analyses for the RWMC provided design parameters for the 100-year precipitation event occurring for 24 hours (Zukauskas, 1992). The 1992 study concluded that minor modifications would result in adequate control of surface water flooding at the RWMC from these events. These modifications have been completed.

Current sub-surface water quality analyses at the RWMC could represent the integrated results of surface water flooding and infiltration. These analyses (the Composite Analysis and 2000 Performance Assessment for example) and models tend to show limited risks (depending on receptor location) resulting in part from RWMC surface water flooding. Similar analyses at TRA and INTEC are complicated by process and other water releases that amplify natural sources of infiltration water. Similarly, flow in the Big Lost River that might impact INTEC perched aquifers is controlled by irrigation demands and INEEL Diversion Dam operations, not natural processes.

2. Assumptions

The most heavily weighted assumption underlying the data analyzed in the 1995 EIS is that all the hypothetical risks from flooding would come from structural failure. The total risk from other flood hazard related contaminant migration modes cannot be formulated until the probabilities and magnitudes of the initiator events (floods) are rigorously determined consistent with DOE standards. There are no significant technical barriers to characterizing the INEEL flood hazard risk per DOE standards.

Detailed surface water analysis technical assumptions are provided in Appendix F-2 of the 1995 EIS. The Koslow and Van Haaften (1986) study did include sensitivity analyses for the parameters related to dam failure time and breach bottom width, which are responsible for most of the uncertainty in forecasting dam break floods. Variations in Manning's n (a surface roughness estimate assumed to range from 0.030 – 0.060) and flow losses (due to infiltration and net flow away from the main channel assumed to be 40%) result in small changes in peak flood arrival time and flood elevation (0.4 feet increase in flood elevation for a 20% decrease in assumed infiltration rate for example).

The Big Lost River has to make an almost 90 degree left turn at the INEEL Diversion dam in order to continue on to the central part of the INEEL. Without making the left turn, the Big Lost River flows almost straight into the INEEL spreading areas. Modeling the change in Big Lost River flood momentum at the INEEL Diversion Dam is problematic but it was conservatively estimated that flow into the INEEL spreading areas was only a function of elevation. It is likely that a flow model that fully captures flow momentum would have shown more water entering the spreading areas.

Although the actual stability and probability of failure of the Mackay dam under the different scenarios is unknown, it was assumed in this conservative calculation that the probability of failure under each of these conditions is 1.

3. Analytical methods

The 1986 Koslow and Van Haaften study used in the 1995 EIS relied on 1-d hydraulic models of dam failure assigned a probability of 1, subject to loads with varying probabilities. Although the DAMBRK code used by Koslow and Van Haaften (1986) is 1-d, it is more dynamic than most 1-d codes. DOE standards (as well as the rigorous computation of risk) require that explicit probabilistic formulation of flood hazard frequencies (including the propagation of uncertainty) be computed for each potential flood hazard mode (river flooding dam failure, surface run-off, etc.). Thus, the 1986 Mackay Dam failure analysis provides extremely conservative frequency estimates for flooding events because the probability of dam failure under all scenarios is assumed to be 1.

Subsequent flow frequency estimates (such as the USGS WRI 96-4163 report) obtain 100 and 500-year flow estimates by assigning a probability of 1 for various events with extremely small real probabilities. The U.S. Bureau of Reclamation (BOR) recently completed a fully probabilistic flood hazard analysis of the Big Lost River consistent with DOE standards (Ostenaa, et al., 1999). Multiple INEEL reviews of this study are documented in the HLW & FD EIS project files. The defensibility of this study is also demonstrated by publication in the peer-reviewed literature of four articles resulting from this work. Additional work by the USGS and BOR to evaluate flow frequency estimates is being completed. Summaries of the USGS and BOR work are presented in the HLW & FD EIS.

4. Data adequacy

The flood hazard data in the 1995 EIS is incomplete. Before impacts can be analyzed, defensible flood frequencies and magnitudes have to be determined. The DAMBRK 1-d code establishes flood flow levels in the context of deterministic dam failure modes, 1-d flow, and low resolution contour data. Risks for contaminant release should be analyzed. The first element in such an analysis is the determination of the combined mean flood hazard in a probabilistic context per DOE standards.

The BOR INEEL flood hazard characterization (Ostenaa, 1999) meets all NRC and DOE QA/QC requirements and is the only study consistent with the DOE flood hazard characterization standards. In addition to extensive INEEL and external peer review, the BOR analysis incorporates Big Lost River stream gauge data, paleohydrologic data, extensive radiocarbon dating, 2-d hydraulic modeling to develop flow estimates constrained by high resolution geologic and radiocarbon data, statistical analyses incorporating Bayesian updating and maximum likelihood functions, and extensive sensitivity analyses. All of these elements are consistent with or required by DOE standards. The BOR study also avoids the effects of system regulation, which complicate traditional flow frequency analyses by extending the hydrologic record into pre-historic times. The depth, frequency, and quality of independent review of the BOR report is documented in the HLW & FD EIS project files.

The BOR report also uses new geomorphologic data to establish that the "outburst flood" was in fact either much less in magnitude than previously thought and/or occurred at a much earlier time (over 100,000 years ago).

USGS WRI 96-4163 (Kjelstrom and Berenbrock, 1996) attempts to mitigate the effects of reservoir regulation of the Big Lost River by using an ad hoc technique based on conservative assumptions. In particular the assumption that all 22 upper subbasins empty instantaneously at the Arco gauging station and that no flood water is lost from Arco to the diversion dam is not supported by factual observations and lack quantitative assessments regarding the impacts of these assumptions on the uncertainty in flow frequency estimates. While reviewed internal to the USGS, WRI 96-4163 has no documented external review associated with it. This as well as other limitations has led the USGS to propose additional work to refine their previous flow frequency estimates; this work is presently underway.

The BOR 100 year flow is 2,917 CFS while the USGS 100 year flow 7,260 CFS. The BOR 20,000 year flow is 5,012 CFS. The present capacity (based on a geotechnical analysis using tensiometer and standard penetration test data) of the INEEL diversion dam is 6,000 CFS (factor of safety = 1.91). The INEEL diversion dam is not certified as a flood control structure and is therefore numerically "erased" for FEMA type flood plain modeling.

Two-dimensional (2-d) flow models are required to understand flood impacts on the INEEL. Previous 1-d models conserve flow between cross sections or rely on infiltration only to account for flow losses. The topography and irrigation diversion system of the Big Lost River suggest that 2-d flow models would show that there are significant flow losses in the reach from the Mackay Dam to the Big Lost River sinks. Scenarios and codes for 2-d modeling have to be carefully chosen and include; flows for return periods determined in a combined probability context (per DOE standards), robust sensitivity analyses reflecting the uncertainty of the data and parameters, sufficient memory for large scale high resolution model development, realistic viscosity terms, and initial and final conditions consistent with site geomorphology.

5. Accident Scenarios

No significant accident analysis scenarios in the 1995 EIS were related to flooding. Potential groundwater impacts of flooding at the INTEC are addressed in the HLW & FD EIS.

6. Accident Probability

DOE requirements for flooding analysis are based on flood return frequencies. Thus the probabilities for these floods have not changed.

7. Cumulative Impacts

There were no cumulative impacts identified with surface water identified in the 1995 EIS. The potential cumulative impacts of INEEL management of Big Lost River flow in the INEEL should be systematically analyzed and managed. The cumulative effects of surface water flow (natural and artificial) could be reflected in water quality and modeling results from INEEL facilities. Flood hazard mitigation, RWMC subsurface contaminant migration and INTEC perched aquifer impacts on the Snake River Plain aquifer could be optimized by systematically alternating the diversion of Big Lost River flows at the Diversion Dam to the INEEL spreading areas with periods when flows are allowed to continue downstream.

Other risk modes (such as dispersion of contaminated soils) should be analyzed. The mitigating factors with respect to these risks include: high impact floods are likely to have extremely low probabilities (see HLW & FD EIS section 4.8.1.3 on INEEL flood hazards and "Comments of the use of USGS WRI 96-4163, Estimated 100-Year Flows and Flow Volumes in the Big Lost River and Birch Creek at the Idaho National Engineering Laboratory, Idaho" in the Supplemental Analysis Administrative Record); the INEEL is an internal drainage system; and the nature of flooding and peak flood arrival times is likely to have no impact on RCRA facilities (Guymon to Kelly, 1/18/01, EDF 1747) or allow for hours or days of time to prepare for a flood peak arrival.

8. Changes in Regulatory Environment

There has been no change since 1995 in any of the statutes, but the RCRA regulations have continued to become more specific regarding flooding information in permit applications.

Recent RCRA Permit Applications have included USGS preliminary estimates of the 100-year flood plain and the State of Idaho has asked for certification that RCRA activities are or are not in the 100-year flood plain. In response to this request, INEEL & DOE-ID prepared an engineering design file and analysis (EDF-1747) showing that the Koslow and Van Haaften (1986) 100 year flow and failure of the Mackay dam and resulting flow (24,870 cubic feet per second) and elevation at the INTEC (4,916 feet) did not washout critical RCRA related structures. This response to the State (Guymon to Kelly, 1/18/01, CNN 017515) also notes that studies are ongoing to more rigorously delineate the INEEL 100 year flood.

Several environmental characterization activities required to meet regulatory requirements (such CERCLA) require the delineation of the 100-year flood plain per Federal Emergency Management Agency (FEMA) approved methodology. Several points should be made with respect to the FEMA type 100-year flood at the INEEL. First, there is no recognized procedure for determining a 100-year flood in a regulated system (see Bulletin 17-B). The Big Lost River is regulated for irrigation purposes. Second, the DOE standards are clear that USGS/FEMA type 100-year flood analyses are to be treated as screening analyses indicating the need for more thorough characterization. Third, 100 and 500-year floods have to be determined in the context of DOE standards which require the delineation of flood hazards with a combined probability of 10E-5 (100,000 year return period) for high hazard facilities such as the Advanced Test Reactor.

This last point is critical and suggests the difficulties with establishing unreasonably conservative 100-year flood estimates and the advantages of using the geologic record to establish low frequency flow bounds. For example, if a 100-year flood of 7,260 CFS is accepted, the resulting flow extrapolated out to 100,000-year return periods will result in insurmountable challenges to INEEL facilities.

An additional and most important consideration in performing and assessing flood hazard characterization methods involves the rational allocation of resources. Rigorous risk assessments cannot be performed in the absence of defensible hazard probabilities. The use of conservative or indefensible hazard probabilities could shift scarce resources away from real risk reduction and into the mitigation of less rigorously determined risks. Thus, increasing the net risk to the environment, workers, and public.

9. Other NEPA analysis for INEEL Operations

The WAG 3 RI/FS has been completed for the INTEC. The HLW & FD EIS is now near completion which incorporates WAG 3 RI/FS surface water/groundwater interaction modeling results (by reference). Impacts of Big Lost River flow and flooding on the INTEC perched aquifers and Snake River Plain aquifer have been identified in the WAG 3 RI/FS as a potential concern.

Summary of Major Impacts

Flood hazard characterization in the 1995 EIS was limited to the Mackay dam failure scenario, which is considered to be a bounding accident. Impacts were not rigorously analyzed but structural failures were assumed to be insignificant due to the shallow depth and low flow velocity at the INEEL approximately 45 miles downstream of Mackay reservoir. Because the effects of the Mackay dam failure scenario were assumed to be small, the effects of the 100 and 500-year floods were considered to be insignificant in the 1995 EIS.

Additional flood risk analysis will be required. The flood risk must be assessed consistent with flood hazard analysis prescribed in DOE standards. Specifically the 100-year and 500-year flood plains must be refined for the INEEL. DOE-ID will refine the Flood Plain documentation per 10 CFR 1022. The review determined that the flood plain analysis in 1995 was adequate for safe operation of INEEL facilities.

The analysis in the 1995 EIS was adequate for DOE decisions announced in the ROD. Future DOE decisions on major federal actions on the INEEL, or decisions deferred in the ROD, will require additional analysis for this discipline.

References:

1. Koslow, K. N. and Van Haaften, D. H., “Flood Routing Analysis for a Failure of Mackay Dam”, EGG-EP-7184, dated June 1986.

2. Zukauskas, 1992

3. USGS, “Estimated 100-Year Peak Flows and Flow Volumes in the Bid Lost River and Birch Creek at the Idaho National Engineering Laboratory, Idaho”, WRI 96-4163, dated 1996

4. Ostenaa, D. A., “Phase 2 Paleohydrologic and Geomorphic Studies for the Assessment of Flood Risk for the Idaho National Engineering and Environmental Laboratory, Idaho”, Report 99-7, dated 9/16/99.

5. Letter, R. H. Guymon to K. B. Kelly, “Response to Department of Environmental Quality Request for Additional Floodplain Information for the Idaho National Engineering and Environmental Laboratory”, CCN 017515, dated 1/18/01.

6. Hydrology Subcommittee, “Guidelines for Determining Flood Flow Frequency”, Bulletin #17B, PB86-157278, dated 3/82

Appendix 8-2 EVALUATION OF THE ENVIRONMENTAL DISCIPLINE CHANGE ANALYSIS DOCUMENTS

1. Scope of 1995 Analysis. What was done previously, which facilities/programs were included in the analysis, etc.

2. Changes in the Environmental Discipline

   - Methodology – Any thing that played into the analysis that is not discussed below that will impact the results
   - Assumptions – State the major assumptions regarding the 95 analysis and state which assumptions have changed
   - Analytical methods – What modeling codes were used, Are they adequate
   - Was the data previously used still representative of current conditions
   - Accident scenarios – have accident scenarios significantly changed
   - Accident probabilities – have probabilities of accidents significantly changed
   - Cumulative Impacts – What other disciplines would potentially be affected by these changes
   - Changes in Regulatory Requirements – provide the major regulatory changes in the last five years and a brief analysis of any environmental impacts
   - Other NEPA Analysis – This section should include other NEPA analysis that has been done in the past five years that would provide coverage for this environmental discipline. (HLW EIS, AMWTP EIS, NI PEIS, etc.)

3. Summary of Major Environmental Impacts. Based on your professional opinion, do any of these changes warrant additional analysis or do the environmental impacts described in the 95 EIS provide a bounding analysis for impacts in this environmental discipline. After your personal summary, include one of the two statements given below. Your summary should support your recommendation.

If any of these sections don't make sense for your environmental discipline, simply mark it N/A.

4. Comparison of Appendix 6-3, Program/Environmental Discipline Table with written description.

Documentation of these changes should follow this format.

Name of Environmental Discipline

- **Scope of 1995 Analysis**

  Text

- **Changes in the Environmental Discipline**

  1. Methodology
  2. Assumptions
  3. Analytical methods
  4. Data Adequacy
  5. Accident scenarios
  6. Accident probabilities
  7. Cumulative Impacts
  8. Changes in Regulatory
  9. Other NEPA Analysis for INEEL operations

- **Summary of Major Environmental Impacts**

  Text

  The analysis in the 1995 INEEL Sitewide EIS provides a bounding analysis for the environmental impacts in this discipline. Additional environmental analysis is not required.

  The analysis in the 1995 INEEL Sitewide EIS does not provide a bounding analysis for the environmental impacts in this discipline. Additional environmental analysis is required.

  State: The additional analysis required is …..

Appendix 8-3 CURRENT LAWS AND REGULATIONS

The following is a listing of the most pertinent federal laws, regulations and orders that have as their focus the protection or preservation of cultural and natural resources on or near to the INEEL:

FEDERAL STATUTES

✓ **Archeological Resources Protection Act** [16 USC §§ 470aa et seq.): No significant changes.

✓ **Arts and Artifacts Indemnity Act** [20 U.S.C. §§ 971 et seq.]: No significant changes.

✓ **Atomic Energy Act** [42 USC §§ 2014, 2021, 2022, 2111, 2113, 2114]: No significant changes in the statute itself, but there have been numerous changes in the DOE Orders, as well as the DOE regulations that arise pursuant to this statute. These are discussed in sections on regulations and orders, below.

✓ **Bald Eagle Protection Act** [16 USC § 668] and **Golden Eagle Protection Act** [P.L. 87-884]: No significant changes.

✓ **Clean Air Act** [42 USC §§ 7401 et seq.]: Changes due to the implementation of the new "MACT Rule" are important and are discussed in the overview on air. Because the rule imposes tighter restrictions on emissions of metals in incinerator units, the NWCF and WERF have ceased operations. The environmental impacts of storing these wastes, rather than treating them, was analyzed under the No Action alternative.

✓ **Clean Water Act** (33 USC §§ 1251 to 1387, et seq.]: Changes regarding section 404 and the dredge and fill regulation by the COE is probably not significant, but might merit some technical evaluation.

✓ **Comprehensive Environmental Response, Compensation and Liability Act** (CERCLA; also referred to as "Superfund") and the **Superfund Reauthorization and Amendments Act of 1986** (42 USC §§ 9601 to 9675, et seq.]: Aside from reauthorization, significant changes effecting DOE arise from case law (e.g. *Fort Ord Toxics* case, which provides citizens the right to sue prior to completion of cleanup] but this change should be administrative only. See the ER discussion for technical changes.

✓ **Endangered Species Act** [16 USC §§ 1531to 1544]: Nothing that merits separate technical evaluation.

✓ **Energy Policy Act of 1992** [16 USC 797 note, 106 Stat. 2776]: Nothing that merits separate technical evaluation.

✓ **Energy Reorganization Act of 1974** [42 USC §§ 5801, 5811 to 5820, 5841 to 5849, 5871 to 5879, and 5891]: Nothing that merits separate technical evaluation.

✓ **Emergency Planning and Community Right-to-Know Act** (42 USC §§ 11001 et seq.]: Nothing that merits separate technical evaluation.

- ✓ **Federal Facility Compliance Act** [42 USC §6901 note]: No changes in the statute; any other changes are negotiated by DOE under the STP.

- ✓ **Federal Insecticide, Fungicide and Rodenticide Act** (7 USC §§ 136 to 136y et seq.]: No significant changes.

- ✓ **Federal Water Pollution Control Act** [FWPCA] (33 USC §§ 1251 to 1387]: Nothing that merits separate technical evaluation.

- ✓ **Hazardous Materials Transportation Act** [HMTA] (49 USC §§ 1801 et seq.]: Nothing that merits separate technical evaluation.

- ✓ **Low Level Radioactive Waste Policy Amendments Act** [LLRWPA] [42 USC §§ 2021b to 2021j]: Nothing that merits separate technical evaluation.

- ✓ **National Environmental Policy Act** [42 USC §§ 4321 to 4370e]: No changes in the statute itself, although there have been several changes in the guidance documents developed by both CEQ and DOE regarding the interpretation and implementation of the requirements in the regulations arising from the statute.

- ✓ **National Historic Preservation Act** [16 USC §§ 470a et seq.]: Nothing that merits separate technical evaluation.

- ✓ **Nuclear Waste Policy Act** (42 USC §§10101 to 10270]: Nothing that merits separate technical evaluation.

- ✓ **Occupational Safety and Health Act** (29 USC §§ 651 et seq.]: Nothing that merits separate technical evaluation.

- ✓ **Oil Pollution Control Act of 1990** [33 USC §§ 1301, 2701 to 2761]: Nothing that merits separate technical evaluation.

- ✓ **Pollution Prevention Act of 1990** (42 USC §§ 13101 to 13109]: The INEEL is continuing to enhance its pollution prevention programs and activities, so any additional changes under this statute should have a positive impact to the environment.

- ✓ **Resource Conservation and Recovery Act of 1976** (42 USC §§ 6901 to 6992k]: Although there have been no pertinent changes in the statute since 1995, the 1995 document assumed that RCRA did not apply to SNF because it is not considered "waste." Given further developments in EPA Administrative interpretations of the RCRA statute, however, an area of concern remains that was not addressed in Chapter 6 of the 1995 EIS. This is the RCRA question of whether the SNF at the INEEL contains materials, which, by themselves are "RCRA hazardous waste" (components of the cladding, for example), or whether the storage and eventual disposition of the SNF itself constitutes what is referred to as "speculative accumulation" pursuant to RCRA. Along the same lines, the high level waste at the INEEL, both liquid and calcine, contains RCRA hazardous materials. The possible environmental significance of this legal issue is the following. In the 1995 EIS, the assumption was that both the SNF and the High Level Waste would be transported to Yucca Mountain for permanent disposal or dispositioning. At the present time, the Yucca Mountain project plans do not contemplate obtaining a RCRA permit for the disposal of RCRA-hazardous waste materials at the Yucca Mountain facility. From an environmental standpoint, it is possible that SNF and HLW previously designated as going to Nevada would in fact remain at the INEEL until a RCRA-compliant HLW and SNF geologic repository is open in the future.

- ✓ **Safe Drinking Water Act** (42 USC §§ 300f to 300j] and the **Safe Drinking Water Act Amendments of 1996** [42 USC §§ 300f to 300j]: Nothing that merits separate technical evaluation.

- ✓ **Toxic Substances Control Act** (15 USC §§ 2601 to 2692]: Both the statute and the regulations apply to toxic substances that are part of the activities carried out by the INEEL. On the Site itself, the two predominant substances are asbestos and PCB's. At the in-town IRC facility, the biological warfare agents are subject to TSCA restrictions.

- ✓ **Uranium Mill Tailings Radiation Control Act** [42 USC 42 USC §§ 7901 to 7942]: Nothing that merits separate technical evaluation.

- ✓ **Water Resources Development Act of 1992** [106 Stat. 4797]: Nothing that merits separate technical evaluation.

- ✓ **Water Resources Research Act of 1984** [42 USC §§ 10301 to 10309; 98 Stat. 97]: Nothing that merits separate technical evaluation.

- ✓ **Waste Isolation Pilot Plant Land Withdrawal Amendment Act of 1996** [110 Stat. 2851]: WIPP is now open and accepting mixed and hazardous waste from INEEL, which is a direct outgrowth of this amendment to the WIPP Land Withdrawal Act. In 1995, the Act itself required that before mixed TRU wastes from the INEEL could be disposed at WIPP the DOE had to comply with a much more stringent RCRA requirement regarding certain listed hazardous wastes. When the Amendments became effective, the ability for WIPP to accept the INEEL's mixed waste became more definite.

Federal Regulations

- ✓ **10 CFR Parts 51.20** [Nuclear Regulatory Commission's regulations on compliance with NEPA]: Because of the change in DOE policy to encourage NRC licensing of various facilities and operations on the INEEL, these regulations are pertinent because they describe the requirements of NRC to prepare Environmental Reports and other NEPA documents. The environmental impacts to the INEEL of having the NRC required to perform additional NEPA studies should be beneficial overall to the understanding at the INEEL of the possible environmental impacts of operations and activities.

- ✓ **10 CFR 51.40 et seq.** [Nuclear Regulatory Commission's regulations on licensing the construction and operation of privately owned and operated nuclear facilities]: Because of the DOE policy of privatization, these regulations now apply to several different privately owned and/or operated facilities on the INEEL. No significant environmental impacts from application of these regulations are anticipated.

- ✓ **16 CFR Parts 1500 et seq**. [Asbestos Labeling]

- ✓ **29 CFR Part 1910** [Occupational Safety and Health]: Even with the change in DOE's policy of now encouraging private sector owning and/or operating facilities at the INEEL, the Occupational Safety and Health Administration does not exercise jurisdiction on the Site.

Worker Safety and Health continues to be the responsibility of the DOE, as set out in the Atomic Energy Act. This should not cause any significant change to worker safety and health, as analyzed in the 1995 EIS.

- ✓ **40 CFR Part 50 et seq.** [Clean Air Act]: One important change in the regulations since 1995 is the adoption of the Maximum Achievable Control Technology ("MACT rule") for hazardous waste combustors/thermal treatment units. The result of this regulatory change is that the Waste Experimental Reduction Facility if no longer able to treat certain types of waste. Instead, that waste is being sized, sorted and repackaged for disposal on the INEEL site. Whether this has any significant environmental impact is discussed in another section of the Supplement Analysis.

- ✓ **40 CFR Part 100 et seq.:** Nothing that merits separate technical evaluation.

- ✓ **40 CFR part 141 et seq** [Safe Drinking Water Act]: The Snake River Plain Aquifer has been designated a "Sole Source Aquifer," which was not a factor analyzed in the 1995 EIS to the greater depth that the regulations require. Whether the impacts to a sole source aquifer would be determined to be significant when subject to the more rigorous analytical requirements of the regulations is not clear.

- ✓ **40 CFR part 152, et seq.** [Federal Insecticide, Fungicide and Rodenticide Act]: Nothing that merits separate technical evaluation.

- ✓ **40 CFR part 240 et seq**. [Resource Conservation and Recovery Act] -- See RCRA statute discussion.

- ✓ **40 CFR parts 280 - 282** [Underground Storage Tanks]: Nothing that merits separate technical evaluation.

- ✓ **40 CFR part 300 et seq.** [CERCLA]

- ✓ **40 CFR parts 300, 355, 370 and 372** [Emergency Planning and Community Right-to-Know Act]: Nothing that merits separate technical evaluation.

- ✓ **40 CFR parts 370 through 372** [Pollution Prevention]: Nothing that merits separate technical evaluation.

- ✓ **40 CFR part 700 et seq.** [Toxic Substances Control Act]: Changes in the regulations with respect to management of PCB contaminated debris and materials allows for increased disposal of the materials directly on the INEEL rather than treatment and removal to an offsite disposal area. Technical evaluation of amount of additional materials that would be disposed materials onsite should be evaluated.

- ✓ **49 CFR part 171 et seq.** [Hazardous Materials Transportation]: Nothing that merits separate technical evaluation.

Federal Constitution

- ✓ **Commerce Clause –** [This clause prohibits enforcement of any state or local law that would interfere with "interstate commerce." Cases regarding the Commerce Clause have concluded that most state or local laws that prohibit the shipment of radioactive materials are unconstitutional and therefore void. This is applicable for all of those activities planned that involve shipments of radioactive materials or waste either to the INEEL, or from the INEEL to another location outside Idaho.]: Nothing that merits separate technical evaluation.

Native American (Tribal) Laws

✓ **Shoshone-Bannock Tribes Ordinance** [This ordinance prohibits the shipment of radioactive materials across the Fort Hall Reservation.]: Nothing that merits separate technical evaluation.

Executive Orders (Orders by the President)

✓ **EO 11514, National Historic Preservation**: Nothing that merits separate technical evaluation.

✓ **EO 11988, Floodplain Management:** Ongoing evaluations are considered in the technical discussion.

✓ **EO 11990, Protection of Wetlands**: Nothing that merits separate technical evaluation.

✓ **EO 12114, Environmental Effects Abroad of Major Federal Actions:** Nothing that merits separate technical evaluation.

✓ **EO 12344, Naval Nuclear Propulsion Program:** Nothing that merits separate technical evaluation.

✓ **EO 12898, Right to Know and Pollution Prevention**: Nothing that merits separate technical evaluation.

✓ **EO 12898, Environmental Justice:** Nothing that merits separate technical evaluation.

✓ **EO , Protection of Children:** Although this EO was passed after the 1995 EIS was completed, the technical guidance for implementation is very poorly developed. The HLW EIS on this topic should be reviewed to determine if there are any significant technical issues.

Additional Obligations, Requirements or Agreements

✓ **Settlement Agreement with the Public Service Company of Colorado:** Segments of SNF from the Fort St. Vrain reactor are now to remain in Colorado rather than to be shipped to Idaho, as anticipated in 1995. Although probably not significant, the overall environmental impacts to the INEEL from this agreement should be beneficial.

✓ **Long Term Stewardship:** The role of the INEEL in LTS activities is poorly understood to date; proposed definition of roles and responsibilities is in progress, and it is possible that additional responsibilities undertaken in Idaho will have impacts, but a separate NEPA evaluation is recommended.