DOE/EIS-0200-SA03

Supplement Analysis for the Treatment of Transuranic Waste at the Idaho National Laboratory

February 2008

U.S. Department of Energy
Carlsbad Field Office

This page intentionally blank

TABLE OF CONTENTS

ACRONYMS AND ABBREVIATIONS

ANL	Argonne National Laboratory
BAPL	Bettis Atomic Power Laboratory
BW	Babcock and Wilcox
CFR	Code of Federal Regulations
CH	contact-handled
DOE	U.S. Department of Energy
GE-VNC	General Electric Vallecitos Nuclear Center
EIS	Environmental Impact Statement
INTEC	Idaho Nuclear Technology and Engineering Center
KAPL	Knolls Atomic Power Laboratory
KAPL-NFS	Knolls Atomic Power Laboratory, Nuclear Fuel Services
LANL	Los Alamos National Laboratory
LBNL	Lawrence Berkeley National Laboratory
LCF	latent cancer fatality
LLNL	Lawrence Livermore National Laboratory
MFC	Materials and Fuels Complex
NEPA	National Environmental Policy Act
NTS	Nevada Test Site
PGDP	Paducah Gaseous Diffusion Plant
RH	remote-handled
ROD	Record of Decision
SEIS-II	*Waste Isolation Pilot Plant Disposal Phase Final Supplemental Environmental Impact Statement*
SNL	Sandia National Laboratories
SPRU	Separations Process Research Unit
SRS	Savannah River Site
TRU	transuranic (waste)
TRUPACT	Transuranic Package Transporter
WIPP	Waste Isolation Pilot Plant
WM-PEIS	*Waste Management Programmatic Environmental Impact Statement*

Supplement Analysis for the Treatment of Transuranic Waste at the Idaho National Laboratory

1.0 INTRODUCTION

This Supplement Analysis (SA) addresses a Proposed Action to centralize the treatment and characterization of transuranic (TRU) waste from several U.S. Department of Energy (DOE) sites at DOE's Idaho National Laboratory (INL), prior to disposal at the Waste Isolation Pilot Plant (WIPP).

TRU waste is waste that contains alpha particle-emitting radionuclides with atomic numbers greater than uranium (92) and half-lives greater than 20 years in concentrations greater than 100 nanocuries per gram of waste. TRU waste is categorized as either contact-handled (CH-TRU) or remote-handled (RH-TRU), based on the radiation level at the surface of the waste container. The WIPP, located near Carlsbad, New Mexico, is the only facility permitted to dispose of DOE's TRU waste generated by defense activities.

In the *Record of Decision for the Department of Energy's Waste Management Program: Treatment and Storage of Transuranic Waste*, 63 Fed. Reg. 3629 (WM-PEIS ROD, 1998), DOE decided that, with one exception[1], sites that generate TRU waste would treat and store the wastes they generate until the waste could be disposed of at WIPP. The WM-PEIS ROD also stated that DOE may make future decisions to ship TRU wastes from sites where it is impractical to prepare them for disposal to sites having such capability. INL, Hanford, Oak Ridge National Laboratory (ORNL), and the Savannah River Site (SRS) were identified in the ROD as sites that could receive this waste. DOE has prepared this SA of the *Final Waste Management Programmatic Environmental Impact Statement for Managing, Treatment, Storage, and Disposal of Radioactive and Hazardous Waste* (DOE/EIS-0200-F, May 1997) (WM-PEIS), to determine whether a supplemental WM-PEIS is needed, in accordance with Council on Environmental Quality and DOE implementing regulations under the National Environmental Policy Act (NEPA) at 40 CFR 1502.9 (c) and 10 CFR 1021.314. This SA estimates potential impacts from the Proposed Action and compares them to estimates in the WM-PEIS and the *Waste Isolation Pilot Plant Disposal Phase Final Supplemental Environmental Impact Statement* (DOE/EIS-0026-S-2, September 1997) (WIPP SEIS-II).

2.0 PURPOSE AND NEED FOR ACTION

In order to dispose of TRU waste at WIPP, DOE needs to characterize the waste to determine that it meets WIPP Waste Acceptance Criteria, treat and package the waste as necessary, and transport it to WIPP. DOE has a continuing need to minimize operating costs of its TRU Waste Management Program, while preserving high quality characterization, treatment, and disposal operations. A number of DOE sites have small amounts of TRU waste and/or lack the costly facilities necessary to process the waste in compliance with State of New Mexico, U.S. Environmental Protection Agency, and WIPP requirements. DOE needs to use existing,

[1] Waste at the Sandia National Laboratories (SNL) would be shipped to the Los Alamos National Laboratory (LANL) for treatment and storage under the WM-PEIS ROD.

specialized facilities at INL to prepare the waste from other sites for disposal at WIPP, because setting up duplicative characterization or other necessary facilities at other sites would not be practical or cost effective.

3.0 PROPOSED ACTION

DOE proposes to ship RH- and CH-TRU waste from sites that do not have the capability to process this waste, and CH-TRU from the Hanford site that requires special facilities for volume reduction, to INL for treatment and characterization. Table 1 shows the sites and volumes of waste that would be involved. The waste would be shipped to INL in TRUPACT-II, HalfPACT, 10-160B, or RH-72B transportation containers, which have been certified by the Nuclear Regulatory Commission (NRC), or the TRUPACT-III transportation container, which is currently in the NRC certification process. Four sites (the Hanford Site, INL, Oak Ridge Reservation, and the SRS) were identified in the 1998 ROD to potentially receive TRU waste from other sites. INL has the capabilities to process this TRU waste.

Table 1. CH-TRU and RH-TRU Waste Volumes to be Shipped to INL

Waste Generator Sites	TRU Waste Volume (cubic meters) [a]	
	CH-TRU	RH-TRU
Argonne National Laboratory (ANL), IL	88	43
Bettis Atomic Power Laboratory (BAPL), PA	70	4
Babcock & Wilcox (BW), Lynchburg, VA	46	
General Electric – Vallecitos Nuclear Center (GE-VNC), Sunol, CA	35	105
Hanford Reservation, WA	6,500	
Knolls Atomic Power Laboratory (KAPL), Schenectady, NY		83
Knolls Atomic Power Laboratory – Nuclear Fuel Services (K-NFS), TN	130	
Lawrence Berkeley National Laboratory (LBNL), CA	1	
Lawrence Livermore National Laboratory (LLNL), CA	1,125	
Nevada Test Site (NTS), NV	670	
NRD L.L.C., (NRD), Grand Island, NY	15	
Paducah Gaseous Diffusion Plant	4	
SNL, Albuquerque, NM	30	20
Separations Process Research Unit (SPRU), Schenectady, NY	50	
Total	8,764	255

[a] Source: Inventory data gathered for 2009 WIPP Compliance Recertification Application update. Only the portion of the Hanford waste inventory that could be expected to move to INL is included for Hanford.

3.1 INL Treatment and Characterization

DOE would move up to approximately 327 shipments of CH-TRU waste and up to approximately 188 shipments of RH-TRU waste from ANL, BAPL, GE-VNC, KAPL-NFS, KAPL, LBL, LLNL, PGDP, NTS[2], SPRU, and SNL, Albuquerque, NM (SNL-NM), to INL for treatment and characterization. This waste would be shipped in TRUPACT-II or TRUPACT-IIIs.

DOE could also move up to approximately 1,730 shipments of CH-TRU waste in containers larger than a standard waste box using TRUPACT-IIIs and other waste overpacked in 85-gallon drums using TRUPACT-IIs from Hanford to INL for treatment and characterization.

DOE would also move up to approximately 9 shipments of CH-TRU waste in the future from BW and NRD to INL for treatment and characterization, only if that waste is determined to meet waste acceptance criteria for treatment at INL and be defense waste eligible for disposal at WIPP as specified in the WIPP Land Withdrawal Act.

Although DOE expects that most of the waste would be sent to INL for treatment and characterization, DOE may, when feasible, characterize waste at these generator sites under the provisions of the modified WIPP Hazardous Waste Facility Permit that allow characterization based solely on process knowledge. DOE would ship that waste directly to WIPP or in the case of SNL send waste to Los Alamos National Laboratory for characterization, in accordance with the original ROD.

At INL, the CH-TRU waste would be treated by compaction at the Advanced Mixed Waste Treatment Facility (AMWTF) to reduce the volume of the waste, and characterized for shipment to WIPP. The RH-TRU waste would be treated during repackaging to remove prohibited items, and characterized for shipment to WIPP at the Idaho Nuclear Technology and Engineering Center (INTEC), which is located on the INL site.[3]

Once treated and characterized, the off-site TRU wastes would be shipped from INL to WIPP for disposal. Approximately 795 shipments would be required to transport the treated CH-TRU waste to WIPP and approximately 621 shipments would be required to transport the treated RH-TRU waste to WIPP. The number of outbound RH-TRU shipments to WIPP would be larger than the number of inbound RH-TRU shipments to INL because, for purposes of this analysis,

---

[2] For purposes of this analysis, the portion of the waste from NTS, which is stored in oversized boxes at this time, is assumed to move to INL in TRUPACT-III containers. If, for practical reasons, this waste is repackaged and shipped in TRUPACT-IIs, fewer shipments from NTS to INL would be required as compared to the number of shipments analyzed here.

[3] DOE/EIS-0203-F-SA-03, DOE/EIS-0290-SA-01, *Supplement Analysis Regarding Remote-Handled Transuranic Waste Identified in the Department of Energy Programmatic Spent Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement and the Advanced Mixed Waste Treatment Project Final Environmental Impact Statement*, January 2006, examines the impacts of processing RH-TRU waste for disposal at WIPP in the INTEC, rather than the AMWTF, as originally planned. The Supplement Analysis concluded that DOE's proposed activities for RH-TRU waste, including those at INTEC would not have significantly different impacts from those previously analyzed.

waste is assumed to move to WIPP in RH-72B casks, which hold a smaller volume of waste than the 10-160B transportation containers that would be used primarily for transportation inbound to INL. The WIPP RH waste handling process is designed to handle waste packaged in an RH-72B without using the hot cell, a facility designed to handle the waste by remote control. Limitations on the amount of waste that can be handled in the WIPP hot cell in the WIPP hazardous waste facility RH waste permit will limit the use of the 10-160B for shipments to WIPP, since waste shipped in the 10-160B must be repackaged into a facility canister in the WIPP hot cell prior to disposal.

Waste would be accepted at INL for treatment and characterization only if that could be done in accordance with the provisions of the settlement agreement in *Public Service Company of Colorado v. Batt* (the Settlement Agreement with the DOE and the State of Idaho entered into in 1995, hereinafter referred to as the Idaho Settlement Agreement) and the Site Treatment Plan. The Idaho Settlement Agreement allows TRU waste from other DOE sites to be treated at INL if it is treated within 6 months of receipt and shipped out of Idaho within 6 months of treatment. Under the Proposed Action, DOE would continue to remove TRU waste currently stored at INL in accordance with the terms of the Idaho Settlement Agreement.

3.2 Benefits of the Proposed Action

Using the existing INL CH-TRU and INL RH-TRU waste program and facilities would avoid the time and expense of establishing a TRU waste treatment and characterization program at sites that do not currently have an existing program or facilities. The AMWTF at INL would reduce the volume of some CH-TRU waste (e.g., waste containers overpacked in larger containers that have a relatively small volume of waste when compared with the container volume), thus reducing the number of shipments needed to transport waste to WIPP for disposal. This volume reduction would also allow WIPP to more efficiently use its TRU waste disposal capacity, which is limited by the WIPP Land Withdrawal Act.

The use of the TRUPACT-III transportation container for some shipments from Hanford to INL would allow DOE to avoid repackaging of some waste at Hanford to fit into the currently available CH-TRU waste transportation containers, TRUPACT-II or HalfPACT, due to the larger volume capacity of the TRUPACT-III. This would avoid the expense and worker radiation exposure associated with repackaging to fit into presently available transportation containers. In other words, the TRUPACT-III would permit DOE to transport CH-TRU waste stored in large boxes to INL, where the volume of the waste would be reduced for subsequent shipment to WIPP.

4.0 EXISTING EIS ANALYSES

In the WM-PEIS, DOE examined the environmental impacts of various alternatives for treating and temporarily storing TRU waste until it could be disposed of at WIPP. In the WIPP SEIS-II, DOE analyzed the potential environmental impacts associated with disposing of TRU waste at WIPP. DOE's Proposed Action in the WIPP SEIS-II was to open WIPP and dispose of up to 175,600 cubic meters of defense TRU waste. DOE announced its decision to implement the

Proposed Action in the *Record of Decision for the Department of Energy's Waste Isolation Pilot Plant Disposal Phase*, 63 Fed. Reg. 3623 (1998) (WIPP ROD).

Both the WM-PEIS and the WIPP SEIS-II analyzed the impacts associated with shipment, treatment and characterization of CH-TRU and RH-TRU wastes at INL. The WIPP SEIS-II examined the impacts of shipping these wastes from INL to the WIPP and disposing of them there.

The current Proposed Action for characterizing waste at INL is similar to the WM-PEIS Regionalized Alternative 3, where about 17,800 cubic meters of TRU waste was assumed to be shipped to INL from Energy Technology Engineering Center, Canoga Park, CA (ETEC), LANL, NTS, Rocky Flats Environmental Technology Site (RFETS), and SNL-NM. These Proposed Action volumes are approximately 50 percent of the volumes of waste assumed to move to INL in the WM-PEIS analysis.

The WIPP SEIS-II Action Alternative 2B corresponds to the WM-PEIS Regionalized Alternative 3. Action Alternative 2B analyzed a Basic and Additional Inventory volume of about 47,000 cubic meters of CH-TRU waste that was assumed to be shipped to INL for treatment, characterization and packaging for shipment to WIPP. This amount is larger than that currently proposed for shipment to INL by a factor of more than four.

In this SA, the impacts of the WM-PEIS Regionalized Alternative 3 or the WIPP SEIS-II Action Alternative 2B were compared with those of the Proposed Action to determine whether a supplemental WM-PEIS is required. In this analysis, DOE considered whether the Proposed Action presents significant new circumstances or information relevant to environmental concerns and bearing on the actions or impacts previously analyzed.

None of the activities proposed for the generator sites, INL, or WIPP would require any new excavation or facility construction. Although some of the particular sites included within the Proposed Action differ from those in the waste management configurations analyzed in the WM-PEIS and WIPP SEIS-II, DOE would be processing a smaller portion of the waste volumes analyzed in the WM-PEIS and the WIPP SEIS-II for all of the sites affected by the Proposed Action, rather than the entire volume. Therefore, DOE's previous estimates of potential impacts to geological and hydrological resources, land use, biological resources, cultural resources, socioeconomics, and noise would remain unchanged.

To determine whether the human health impacts (worker and public) of the current Proposed Action are consistent with the impacts reported in the WM-PEIS and/or the WIPP SEIS-II, DOE examined the impacts that could be associated with the Proposed Action during transportation, routine operations, and facility accidents. DOE also compared the Proposed Action to the Advanced Mixed Waste Treatment Project Final Environmental Impact Statement (AMWTP EIS, DOE/EIS-0290, 1999), in which DOE analyzed the impacts of treating up to 120,000 cubic meters of waste from INL and other sites.

5.0 ENVIRONMENTAL IMPACTS

5.1 Transportation Impacts

5.1.1 Shipment of Waste to INL

Under the Proposed Action, a total of about 2,067 shipments of CH-TRU waste (about 8,764 cubic meters) and about 188 shipments of RH-TRU waste (about 255 cubic meters) would move to INL for treatment. The SEIS-II Action Alternative 2B examined the impacts of transporting about 46,700 cubic meters of CH-TRU waste in 8,000 shipments to INL for treatment from LANL, NTS, ETEC, SNL, RFETS, Ames Laboratory, and U.S. Army Materiel Command. Shipments under the Proposed Action would be expected to result in 4.9×10^{-2} traffic fatalities, 8.2×10^{-3} fatalities from air pollution, 5.8×10^{-2} latent cancer fatalities (LCFs) among workers, and 1.8×10^{-2} LCFs to members of the public. All of these impacts are lower than 5.9×10^{-1} traffic fatalities, 4.0×10^{-2} fatalities from air pollution, 6.0×10^{-2} LCFs among workers, and 3.7×10^{-1} LCFs to members of the public associated with shipments to INL under the SEIS-II Action Alternative 2B (derived from Tables E-8 and E-12 of the SEIS-II).

5.1.2 Shipment of Waste from INL to WIPP

Under the Proposed Action, a total of about 795 shipments of CH-TRU waste and 621 shipments of RH-TRU waste would move from INL to WIPP for disposal in TRUPACT-II or HalfPACT transportation containers or RH-72B canisters. The SEIS-II Action Alternative 2B examined the impacts of transporting about 57,000 cubic meters of CH-TRU waste in almost 23,000 shipments from INL to WIPP. About 8,300 of those 23,000 shipments would have consisted of offsite waste treated at INL. The proposed number of shipments is within the number of shipments from INL to WIPP analyzed in the WM-PEIS as well as the SEIS-II. Shipments under the Proposed Action would be expected to result in 6.7×10^{-2} traffic fatalities, 8.6×10^{-3} fatalities from air pollution, 8.5×10^{-2} LCFs to workers, and 3.0×10^{-2} LCFs to members of the public. All of these impacts are lower than the approximately 1.2 traffic fatalities, 4.0×10^{-2} fatalities from air pollution, 7.0×10^{-2} LCFs among workers, and 4.0×10^{-1} LCFs to members of the public associated with shipments of TRU waste from other sites shipped from INL to WIPP under the SEIS-II Action Alternative 2B. While the worker impacts are slightly higher (derived from Tables E-8 and E-12 of the SEIS-II) in the current proposed action, the LCF's remain less than one.

5.1.3 Transportation Accidents

A TRUPACT-III transportation accident was analyzed for the Proposed Action. The accident was based on a radionuclide inventory that would produce the highest adverse impacts in an accident situation. The expected impacts of that accident ranged from 1.8 to 2.9×10^{-2} LCFs (depending on whether the accident occurs in an urban or rural area). This is much less than the comparable TRUPACT-II accident analyzed in the SEIS-II (pages 5-22), which predicted 16 LCFs (that accident was assumed to occur in an urban area).

CH- and RH-TRU waste transportation accident impacts for the TRUPACT-II and the RH-72B were analyzed in the SEIS-II. RH-TRU waste transportation accident impacts for the 10-160B

were analyzed in the *Supplement Analysis for the Use of the 10-160B Transportation Cask of RH-TRU Waste Shipments to WIPP (November 2002)*. Those accident analyses continue to be valid for the TRU waste shipments that are part of the Proposed Action herein.

5.2 Site Impacts

5.2.1 Packaging and Loading Operations at Generator Sites and Unloading at INL

The packaging, loading, and unloading activities that will take place under the Proposed Action do not differ substantially from those analyzed in the WM-PEIS except that the use of TRUPACT-III would reduce the impacts by minimizing the need for size reduction of large waste items at the generator sites that would not fit within currently authorized TRU waste transportation containers. Since the amount of waste and the number of shipments that would move to INL under the Proposed Action are less than would move to INL under the WM-PEIS Regionalized Alternative 3, these impacts would be within the scope of the impacts analyzed in the WM-PEIS.

5.2.2 Waste Treatment Operations at INL

DOE examined the impacts of treating up to 120,000 cubic meters of TRU from other DOE sites at the AMWTF. In addition, for the Proposed Action, the impacts of treatment of CH-TRU waste at the AMWTF and RH-waste at the INTEC were evaluated using the same approach as used for the AMWTP EIS. The probability of a LCF from waste treatment operations for CH- and RH-TRU waste combined is estimated to be 9×10^{-4} for the maximally exposed involved worker, 1.7×10^{-9} for the maximally exposed member of the public, and 6.9×10^{-7} for the offsite population. When added to the impacts of treatment calculated in Table 5.12-1 of DOE/EIS-0290, *Advanced Mixed Waste Treatment Project Final Environmental Impact Statement*, (January 1999) (AMWTP EIS), the probability of a LCF would be 1.5×10^{-3} for the maximally exposed involved worker, 2.9×10^{-9} to the maximally exposed member of the public, and 1.1×10^{-6} to the offsite population. The impacts of the Proposed Action and the impacts from the AMWTP EIS are all well below the WM-PEIS impacts from TRU waste treatment operations, which are 8.7×10^{-1} LCFs to the maximally exposed involved worker, 5.1×10^{-6} LCFs to the maximally exposed member of the public, and 1.4×10^{-1} LCFs to the offsite population.

The impacts of the maximum reasonably foreseeable treatment accident for the Proposed Action (windborne missile breach of the AMWTP) would have the consequences (0.12 LCFs to the offsite population). The WM-PEIS bounding accident for Regionalized Alternative 3 would have expected impacts of 0.2 LCFs to the offsite population.

5.2.3 WIPP Site Impacts

There would be no increase in the amount of TRU waste disposed of at WIPP as a result of the Proposed Action. While there could be an increase in the radionuclide density of compacted waste from the AMWTF, that waste would continue to be transported in TRUPACT-II or HalfPACT containers and would meet WIPP waste acceptance criteria. TRU waste handling and disposal operations would be similar to those analyzed in the WIPP SEIS-II and the impacts would be within the impacts analyzed in Regionalized Alternative 2B.

6.0 INTENTIONAL DESTRUCTIVE ACTS

DOE also considered the potential impacts of intentional destructive acts (i.e., acts of sabotage or terrorism) and estimated that the impacts would be no greater than the impacts of an accident as analyzed in this SA because the initiating forces and resulting quantities of radioactive or hazardous material potentially released by an intentional destructive act would be similar to those for severe accidents analyzed in this SA.

7.0 CONCLUSION

Table 2 compares the predicted impacts of the Proposed Action with comparable impacts predicted by the WM-PEIS or SEIS-II. The table shows that all of the estimated potential impacts of the Proposed Action are less than those reported in the WM-PEIS and WIPP SEIS-II, except for LCF to workers which increased slightly. Nevertheless, the LCF's remain less than one. DOE therefore concludes that the impacts of the proposed action would not exceed those analyzed in WM-PEIS and SEIS-II.

Table 2 – Comparison of Environmental Impacts

Impact Category	Impacts of Proposed Action	Comparable WM-PEIS, SEIS-II Impacts
Shipment of Waste to INL	2,254 shipments	8,140 shipments
Traffic fatalities	4.9×10^{-2}	5.9×10^{-1}
Fatalities from pollution	8.2×10^{-3}	4×10^{-2}
Latent Cancer Fatalities (workers)	5.8×10^{-2}	6×10^{-2}
Latent Cancer Fatalities (public)	1.8×10^{-2}	3.7×10^{-1}
Shipment of Waste from INL to WIPP	1,416 shipments	8,300 shipments
Traffic fatalities	6.7×10^{-2}	1.2
Fatalities from pollution	8.6×10^{-3}	4×10^{-2}
Latent Cancer Fatalities (workers)	8.5×10^{-2}	7×10^{-2}
Latent Cancer Fatalities (public)	3.0×10^{-2}	4×10^{-1}
Transportation (total impacts)		
Traffic fatalities	1.2×10^{-1}	1.8
Fatalities from pollution	1.7×10^{-2}	8.0×10^{-2}
Latent Cancer Fatalities (workers)	1.4×10^{-1}	1.3×10^{-1}
Latent Cancer Fatalities (public)	4.8×10^{-2}	7.7×10^{-1}
TRUPACT-III Transportation Accidents (Latent Cancer Fatalities)	$1.8 \text{ to } 2.9 \times 10^{-2}$	16
Packaging at Generator Sites and	Less than WM-PEIS due to	

Impact Category	Impacts of Proposed Action	Comparable WM-PEIS, SEIS-II Impacts
Unloading at INL	smaller waste volume	
Waste Treatment at INL (LCFs)		
Maximally Exposed (worker)	1.5×10^{-3}	8.7×10^{-1}
Maximally Exposed (public)	2.8×10^{-9}	5.1×10^{-6}
Offsite Population	1.1×10^{-6}	1.4×10^{-1}
Treatment Accident (Offsite Population)	1.2×10^{-1}	2×10^{-1}
WIPP Site Impacts (LCFs)	No change to existing impacts because the same amount of TRU waste will be disposed (cannot exceed regulatory limit of 175,600 cubic meters)	

8.0 DETERMINATION

Based on the analyses of the potential impacts of the Proposed Action as discussed in this SA, DOE has determined that the Proposed Action is not a substantial change to the proposals analyzed in prior NEPA documents that are relevant to environmental concerns. Further, there are no significant new circumstances or information relevant to environmental concerns and bearing on the Proposed Action or its impacts. Therefore, a supplement to the WM-PEIS or a new EIS is not needed.

Approved in Washington, D.C. on this 27 day of February 2008

Inés Triay

Inés R. Triay (Acting for)
Assistant Secretary
for Environmental Management