

1 of 4

**ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
SITE-SPECIFIC PLAN FOR THE OAK RIDGE RESERVATION**

FY93

**N. Frolio, DOE Site-Specific Plan Project Manager
DOE Field Office, Oak Ridge, Waste Management Division**

**A.T. Manion, DOE Site-Specific Plan Project Manager
DOE Field Office, Oak Ridge, Environmental Restoration Division**

**M.F.P. DeLozier, Director
Environmental Restoration Division**

**K.G. Kahl, Director
Program Integration and
Administration Division**

**C.E. Frye, Director
Central Waste Management Division**

**A.P. Malinauskas, Director
Waste Research and Development Program**

Date Issued - January 15, 1993

**Prepared by
Science Applications International Corporation
Oak Ridge, TN 37831
under subcontract 95K-TK690C**

**Prepared for
U.S. Department of Energy
Office of Environmental Restoration and Waste Management
under budget and reporting code EW 20 and EW 30**

**MARTIN MARIETTA ENERGY SYSTEMS, INC.
managing the
Oak Ridge National Laboratory, Oak Ridge Y-12 Plant and Oak Ridge K-25 Site Diffusion Plant
under contract DE-AC05-84OR21400
and the
Paducah Gaseous Diffusion Plant and Portsmouth Gaseous Diffusion Plant
under contract DE-AC05-76OR00001
for the
U.S. DEPARTMENT OF ENERGY**

MASTER

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

**Science Applications International Corporation
Oak Ridge, Tennessee**

**contributed to the preparation of this document and
should not be considered an eligible contractor for its
review.**

This report has been reproduced directly from the best available copy.

**Available to DOE and DOE contractors from the Office of Scientific
and Technical Information, P.O. Box 62, Oak Ridge, TN 37831; prices
available from 615-576-8401, FTS 626-8401.**

**Available to the public from the National Technical Information Service,
U.S. Department of Commerce, 5285 Port Royal Rd., Springfield, VA
22161.**

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

Preface

This Site-Specific Plan for the Oak Ridge Reservation has been prepared as a summary of projects being funded by the Department of Energy. The subject matter is complicated, but every effort has been made to improve its readability without altering the purpose or meaning. This was done by providing charts and listings rather than text when possible. The list below provides you with helpful information for increased understanding:

- The Site-Specific Plan Introduction explains the purpose of the document and offers descriptions of each site on the Oak Ridge Reservation.
- A Table of Contents appears at the beginning of the Site-Specific Plan to assist in finding specific information quickly.
- A list of acronyms is included at the beginning of the Site-Specific Plan for your convenience. Acronyms are also defined when discussing a new site.
- A glossary has been added to assist you in defining specific terms. It can be found in Appendix A.
- As you read the Site-Specific Plan, you will see that each section provides information on one specific Activity Data Sheet (ADS). Each section is divided into an overview, a list of milestones and objectives for specific fiscal years through FY98, and a funding table.

The U.S. Department of Energy has provided additional information to the Site-Specific Plan. This can be found in copies of all the Activity Data Sheets located at the following address:

The Information Resource Center
105 Broadway Avenue
Oak Ridge, Tennessee 37830

ADSs are the documents used to record the project description, milestones, and funding for Congressional review. ADSs are divided into two volumes, (1) Corrective Activities and Waste Management and (2) Environmental Restoration.

TABLE OF CONTENTS

	ACRONYMS	xi
1.0	INTRODUCTION	1-1
1.1	PURPOSE	1-1
1.2	THE OAK RIDGE RESERVATION	1-1
	1.2.1 The Oak Ridge Y-12 Plant	1-1
	1.2.2 The Oak Ridge National Laboratory	1-5
	1.2.3 The Oak Ridge K-25 Site	1-11
2.0	REQUIREMENTS FOR IMPLEMENTATION	2-1
2.1	FEDERAL AND STATE REGULATIONS	2-1
	2.1.1 Resource Conservation and Recovery Act (RCRA)	2-1
	2.1.2 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)	2-2
	2.1.3 National Environmental Policy Act (NEPA)	2-3
	2.1.4 Toxic Substances Control Act (TSCA)	2-3
	2.1.5 Clean Air Act (CAA)	2-3
	2.1.6 Clean Water Act (CWA)	2-4
	2.1.7 Tennessee Water Quality Control Act (TWQCA)	2-4
	2.1.8 Safe Drinking Water Act (SDWA)	2-4
	2.1.9 Land Disposal Restriction (LDR) Federal Facility Compliance Agreement (FFCA)	2-5
	2.1.10 Department of Transportation (DOT) Regulations	2-5
	2.1.11 Nuclear Regulatory Commission (NRC) Regulations	2-5
	2.1.12 Summary	2-6
2.2	DEPARTMENT OF ENERGY ORDERS	2-6
	2.2.1 DOE NEPA Implementing Procedures; 57FR15144, (1992)	2-6
	2.2.2 DOE Order 1540.1	2-6
	2.2.3 DOE Order 1540.2	2-6
	2.2.4 DOE Order 1540.4	2-6
	2.2.5 DOE Order 5400.1, General Environmental Protection Program (11/9/88)	2-7
	2.2.6 DOE Order 5400.2A, Environmental Compliance Issue Coordination (1/31/89)	2-7
	2.2.7 DOE Order 5400.3, Hazardous and Radioactive Mixed Waste Management (2/22/89)	2-7
	2.2.8 DOE Order 5400.4, Integration of NEPA and CERCLA	2-7
	2.2.9 DOE Order 5400.5, Radiation Protection of the Public and Environment	2-7
	2.2.10 DOE Order 5440.1D, NEPA Compliance Program (2/22/91) ..	2-7
	2.2.11 DOE Order 5480.1B, Environment, Safety, and Health Program for DOE Operations (9/23/86)	2-7

TABLE OF CONTENTS (continued)

2.2.12	DOE Order 5480.3	2-8
2.2.13	Draft DOE Order 5480.X, Onsite Packaging and Transportation Safety of Hazardous Materials, Substances, and Wastes (11/15/91)	2-8
2.2.14	DOE Order 5480.14	2-8
2.2.15	DOE Order 5480.19, Conduct of Operations Requirements for DOE Facilities (7/9/90)	2-8
2.2.16	DOE Order 5700.6C, Quality Assurance	2-8
2.2.17	DOE Order 5820.2A, Radioactive Waste Management (9/26/88)	2-8
2.3	FEDERAL AND STATE AGREEMENTS	2-9
2.3.1	Memorandum of Understanding (MOU) Between DOE, EPA, and TDEC for The Oak Ridge Y-12 Plant (5/26/83)	2-10
2.3.2	Federal Facility Compliance Agreement (FFCA)	2-10
2.3.3	Agreement in Principle Between DOE and the State of Tennessee (5/1991)	2-11
2.3.4	Federal Facility Agreement (FFA)	2-12
2.4	STATE ORDERS	2-12
2.4.1	Tennessee Department of Environment and Conservation (TDEC) Order/Division of Water Quality Control, No. 83-228 (9/15/83)	2-12
2.4.2	TDEC Order (9/15/83)/Division of Water Quality Control, No. 83-228 (12/6/84)	2-13
2.4.3	TDEC Order for Correction/Division of Solid Waste Management, No. 84-374-11 (12/6/84)	2-13
2.4.4	TDEC Order for Correction/Division of Solid Waste Management, No. 84-374, 84-2121AG (12/6/84)	2-13
2.4.5	TDEC Order/Division of Solid Waste Management, No. 87-3310 (3/17/88)	2-14
2.4.6	TDEC Order/Division of Solid Waste Management, No. 91-3205 (9/17/91)	2-14
3.0	ORGANIZATION/MANAGEMENT	3-1
3.1	ORGANIZATION	3-1
3.1.1	Corrective Activities (CA) and Waste Management (WM) Operations	3-3
3.1.2	Environmental Restoration (ER)	3-3
3.1.3	Technology Development (TD) and Transportation Management (TM)	3-5
3.2	MANAGEMENT	3-6

TABLE OF CONTENTS

(continued)

4.0	CORRECTIVE ACTIVITIES	4-1
4.1	Y-12 PLANT	4-1
	4.1.1 Steam Plant Ash Disposal Facility, Line Item Facility	4-2
	4.1.2 Corrective Activities	4-3
	4.1.3 General Plant Projects, Corrective Activities	4-4
4.2	OAK RIDGE NATIONAL LABORATORY	4-6
	4.2.1 Bethel Valley Liquid Low Level Waste - Collection and Transfer System Upgrade	4-6
	4.2.2 Melton Valley LLLW-CAT System Upgrade	4-9
	4.2.3 Corrective Activities - Defense	4-10
	4.2.4 Corrective Activities - Nondefense	4-11
4.3	K-25 SITE	4-12
	4.3.1 K-25 Corrective Activities and General Plant Projects, CA	4-12
5.0	ENVIRONMENTAL RESTORATION	5-1
5.1	Y-12 PLANT	5-2
	5.1.1 Chestnut Ridge	5-3
	5.1.2 Bear Creek Valley	5-5
	5.1.3 Upper East Fork Poplar Creek	5-7
	5.1.4 Closure Activities and Post-Closure Activities - Phase I	5-10
	5.1.5 Closure Activities and Post-Closure Activities - Phase II	5-12
	5.1.6 Surveillance and Maintenance	5-15
	5.1.7 Program Management	5-16
	5.1.8 Lower East Fork Poplar Creek	5-18
5.2	OAK RIDGE NATIONAL LABORATORY	5-20
	5.2.1 ORNL WAG 1 Environmental Restoration	5-22
	5.2.2 ORNL WAG 2 Environmental Restoration	5-24
	5.2.3 ORNL WAG 3 Environmental Restoration	5-26
	5.2.4 ORNL WAG 4 Environmental Restoration	5-28
	5.2.5 ORNL WAG 5 Environmental Restoration	5-29
	5.2.6 ORNL WAG 6 Environmental Restoration	5-31
	5.2.7 ORNL WAG 7 Environmental Restoration	5-33
	5.2.8 ORNL WAG 8 Environmental Restoration	5-34
	5.2.9 ORNL WAG 9 Environmental Restoration	5-36
	5.2.10 ORNL WAG 10 Environmental Restoration	5-37
	5.2.11 ORNL WAG 11 Environmental Restoration	5-38
	5.2.12 ORNL WAG 13 Environmental Restoration	5-39
	5.2.13 ORNL Inactive LLLW Task Systems	5-41

TABLE OF CONTENTS (continued)

	5.2.14 Surveillance and Maintenance	5-43
	5.2.15 ORNL Program Management	5-45
	5.2.16 White Oak Creek Embayment	5-47
5.3	K-25 SITE	5-48
	5.3.1 Main Plant Area	5-49
	5.3.2 Process Plant Area Remedial Action	5-51
	5.3.3 K-25 External Plant Area	5-53
	5.3.4 Pond Waste Management Project	5-55
	5.3.5 K-25 Site Groundwater Protection Program	5-56
	5.3.6 Surveillance and Maintenance of Inactive Waste Sites	5-59
	5.3.7 Landlord Capital Equipment	5-61
	5.3.8 Landlord Capital Construction	5-62
	5.3.9 ER Program Management	5-64
5.4	DECONTAMINATION AND DECOMMISSIONING (D&D)	5-65
	5.4.1 Y-12 Plant Facilities Decontamination and Decommissioning ...	5-65
	5.4.2 ORNL Facilities Decontamination and Decommissioning	5-67
	5.4.3 K-25 Facilities Decontamination and Decommissioning	5-71
5.5	CENTRAL ENVIRONMENTAL RESTORATION ORGANIZATION	5-77
	5.5.1 Contract Management Support and Environmental Restoration Waste Management	5-77
	5.5.2 Technical Integration	5-84
5.6	OFF-SITE	5-85
	5.6.1 Clinch River - Watts Bar Reservoir	5-85
6.0	WASTE MANAGEMENT OPERATIONS	6-1
6.1	Y-12 PLANT	6-1
	6.1.1 Facility Operations and Maintenance	6-2
	6.1.2 Site-Wide Activities	6-9
	6.1.3 Production Waste Storage Facility	6-16
	6.1.4 Industrial Waste Compaction Facility	6-17
	6.1.5 Drain Waste Water Treatment Upgrade	6-18
	6.1.6 New Facilities	6-19
6.2	OAK RIDGE NATIONAL LABORATORY	6-23
	6.2.1 Facility Operations and Maintenance - Defense and Nondefense	6-26
	6.2.2 NSF Storage Project	6-30
	6.2.3 Site-Wide Activities-Defense and Nondefense	6-32

TABLE OF CONTENTS (continued)

6.2.4	General Plant Projects - Defense and Nondefense	6-37
6.2.5	Process Waste Treatment Plant	6-41
6.2.6	Federal Facility Agreement Liquid Low Level Waste Tank Compliance	6-43
6.2.7	New Facility Planning-Defense and Nondefense	6-46
6.2.8	Sanitary Waste System Upgrade	6-53
6.2.9	Landlord Operations	6-54
6.3	K-25 SITE	6-57
6.3.1	Sewage Collection System Rehabilitation, Waste Management	6-57
6.3.2	Facility Operations and Maintenance	6-58
6.3.3	Site-Wide Activities	6-62
6.3.4	Disposal of K-1515 Sanitary Waste Treatment Plant Waste	6-65
6.3.5	Toxic Substances Control Act Incinerator	6-67
6.3.6	Filter Test Facility	6-69
6.3.7	General Plant Projects, Waste Management, Defense	6-71
6.3.8	New Facility Planning	6-73
6.4	CENTRAL WASTE MANAGEMENT DIVISION	6-75
6.4.1	Reservation Support	6-75
6.4.2	Waste Minimization Planning	6-84
6.4.3	Land Disposal Restrictions Federal Facility Compliance Agreement Treatment Development and Implementation	6-86
6.4.4	New Facility Planning	6-87
6.4.5	Oak Ridge Storage Facilities	6-89
7.0	TECHNOLOGY DEVELOPMENT AND TRANSPORTATION MANAGEMENT	7-1
7.1	TECHNOLOGY DEVELOPMENT AND TRANSPORTATION MANAGEMENT	7-1
7.2	Y-12 PLANT	7-4
7.2.1	Description	7-4
7.2.2	Resources	7-4
7.2.3	Schedule and Milestones	7-5
7.2.4	FY93 Funding	7-5
7.2.5	Accomplishments	7-5
7.3	OAK RIDGE NATIONAL LABORATORY	7-5
7.3.1	Description	7-6
7.3.2	Resources	7-8

TABLE OF CONTENTS **(continued)**

	7.3.3 Schedule and Milestones	7-8
	7.3.4 FY93 Funding	7-9
	7.3.5 Accomplishments	7-9
7.4	K-25 SITE	7-10
	7.4.1 Description	7-11
	7.4.2 Resources	7-11
	7.4.3 Schedule and Milestones	7-11
	7.4.4 FY93 Funding	7-11
	7.4.5 Accomplishments	7-11
8.0	COMPLIANCE WITH THE NATIONAL ENVIRONMENTAL POLICY ACT	8-1
8.1	ACTIONS RELATIVE TO NEPA	8-3
9.0	REPORTING AND DATA MANAGEMENT	9-1
	9.1 REQUIRED REPORTS	9-1
	9.1.1 Clean Air Act - General Reports	9-1
	9.1.2 Clean Air Act - Asbestos-Related Reports	9-2
	9.1.3 Clean Water Act - Effluent Data Reports	9-2
	9.1.4 Clean Water Act - National Pollutant Discharge Elimination System Permits Monitoring Programs	9-2
	9.1.5 Resource Conservation and Recovery Act and Toxic Substances Control Act	9-2
	9.1.6 Specialized Reports - DOE Orders/Compliance Orders, Spills/Unusual Event	9-3
	9.1.7 Technology Development Reports	9-4
	9.2 MAINTENANCE OF RECORDS	9-4
	9.3 SAMPLING AND ANALYSIS	9-6
10.0	QUALITY ASSURANCE	10-1
	10.1 ENERGY SYSTEMS QUALITY ASSURANCE	10-1
	10.2 ENVIRONMENTAL RESTORATION QUALITY ASSURANCE ...	10-1
11.0	FEDERAL, STATE, AND LOCAL INTERACTIONS	11-1
	11.1 OVERVIEW	11-1
12.0	U.S. DEPARTMENT OF ENERGY/OAK RIDGE FIELD OFFICE - DIRECT ACTIVITIES	12-1
	12.1 WASTE MANAGEMENT PROGRAM	12-2

TABLE OF CONTENTS
(continued)

12.2	ENVIRONMENTAL RESTORATION PROGRAM	12-2
12.3	FEDERAL, STATE, AND LOCAL INTERACTIONS	12-3
12.4	FY93 FUNDING	12-3
13.0	OAK RIDGE ASSOCIATED UNIVERSITIES	13-1
13.1	OAK RIDGE ASSOCIATED UNIVERSITIES	13-1
13.1.1	Description	13-1
13.1.2	Status of FY92 SSP Objectives	13-2
13.1.3	FY93 Objectives	13-3
13.1.4	FY94-98 Objectives	13-3
13.1.5	List of FY93 Scheduled Milestones	13-4
13.1.6	FY93 Funding	13-4
14.0	NON-FEDERAL FACILITY AGREEMENT PROJECTS	14-1
14.1	NON-FEDERAL FACILITY AGREEMENT PROJECTS	14-1
14.1.1	Description	14-1
14.1.2	Status of FY92 Objectives	14-2
14.1.3	FY93 Objectives	14-3
14.1.4	FY94-98 Objectives	14-3
14.1.5	List of FY93 Scheduled Milestones	14-3
14.1.6	FY93 Funding	14-3
APPENDIX A GLOSSARY		A-1
APPENDIX B LIST OF AGREEMENTS AND ORDERS		B-1
APPENDIX C MAPS OF OAK RIDGE RESERVATION		C-1
APPENDIX D PUBLIC COMMENTS AND RESPONSES		D-1

LIST OF TABLES AND FIGURES

<u>Tables</u>	<u>Page</u>
1.1 Y-12 Waste Management Facilities	1-3
1.2 ORNL Waste Management Facilities Liquid and Gaseous Waste Operations Department	1-8
1.3 ORNL Waste Management Facilities Solid Waste Operations Department	1-9
1.4 K-25 Waste Management Facilities	1-14
1.5 Fiscal Year Funding Summary by Program, ORR Planning Level (\$000)	1-17
8.1 NEPA Documents in Preparation or Planned Fiscal Year 1993	8-3
B-1 Federal and State Agreements Oak Ridge Reservation	B-1
B-2 Unilateral Environmental Orders Oak Ridge Reservation	B-2
B-3 Enforcement Actions Against DOE Management and Operating (M&O) Contractors	B-3

Figures

3.1 Martin Marietta Energy Systems, Inc. Environmental Restoration and Waste Management Program	3-2
3.2 DOE Oak Ridge Field Office Environmental Restoration and Waste Management	3-7
8.1 NEPA Review Process	8-2
Maps of Oak Ridge Reservation — Appendix C	C-1

LIST OF ACRONYMS

ACL	alternate concentration limits
ADS	activity data sheet
A-E	architect-engineer
AIP	Agreement In Principle
ALARA	as low as reasonable achievable
AMERWM	Assistant Manager for Environmental Restoration and Waste Management
AR	administrative record
ARARS	applicable or relevant and appropriate requirements
AVLIS	Atomic Vapor Laser Isotope Separation
BCBG	Bear Creek Burial Ground
BCV	Bear Creek Valley
BMAP	biological monitoring and abatement program
CA	corrective activities
CAA	Clean Air Act
CAPCA	closure activities and post-closure activities
CAT	collection and transfer
CDC	Center for Disease Control
CDR	conceptual design report
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CH	contact-handled
CMS	corrective measures study
CNF	central neutralization facility
COGS	Central Off-Gas Scrubber
COR	contracting office representative
CPCF	central pollution control facility
CRADA	cooperative research and development agreement
CWA	Clean Water Act
CWAM	crated waste assay monitor
CWMD	Central Waste Management Division
CWMO	Central Waste Management Office
CWSA	containerized waste storage area
CX	categorical exclusion
D&D	decontamination and decommissioning
DARA	disposal area remediation action
DETM	data evaluation technical memorandum
DMR	discharge monitoring report
DNAPL	dense nonaqueous phase liquids
DOD	Department of Defense

DOE	Department of Energy
DOE/HQ	Department of Energy Headquarters
DOE/OR	Department of Energy, Oak Ridge Field Office
DP	defense programs
DSMS	direct sampling mass spectrometer
DT&E	demonstration, testing, and evaluation
DUOF	depleted uranium oxidation facility
EA	environmental assessment
EE/CA	engineering estimate/cost analysis
EFPC	East Fork Poplar Creek
EIS	environmental impact statement
EM	Environmental Restoration and Waste Management Program/Organization
EM-50	Office of Technology Development
Energy Systems	Martin Marietta Energy Systems, Inc.
EPA	Environmental Protection Agency
ER	environmental restoration
ERIS	environmental restoration information system
ERP	environmental restoration program
ESA	environmental and safety activities
ES-ERD	Energy Systems-Environmental Restoration Division
ES&H	environment, safety, and health
EW	Environmental and Waste Management Defense Programs
EX	Environmental and Waste Management Non-Defense Programs
FFA	Federal Facility Agreement
FFCA	Federal Facility Compliance Agreement
FONSI	finding of no significant impact
FS	feasibility study
FUSRAP	Formerly Utilized Sites Remedial Action Program
FY	fiscal year
FYP	U.S. Department of Energy, <u>Environmental Restoration and Waste Management Five-Year Plan</u>
GCD	greater confinement disposal
GDP	gaseous diffusion plant
GPP	general plant project
GWTF	groundwater treatment facilities
HAZWDDD	Hazardous Waste Development, Demonstration, and Disposal
HAZWRAP	Hazardous Waste Remedial Actions Program
HEPA	high-efficiency particulate air filter
HEU	high-enriched uranium
HFIR	High Flux Isotope Reactor
HLW	high level radioactive waste

HSWA	Hazardous and Solid Waste Amendments
ICM	interim corrective measure
ID	integrated demonstration
IDB	integrated data base
IDS	information data systems
INEL	Idaho National Engineering Laboratory
IP	integrated program
IROD	interim record of decision
ISV	in situ vitrification
ITE	in-tank evaporation
IWCF	industrial waste compaction facility
IWMF	interim waste management facility
K-25	Oak Ridge K-25 Site
LDR	land disposal regulations
LEU	low-enriched uranium
LGWOD	liquid and gaseous waste operations department
LLW	low level waste
LLW-CAT	LLW collection and transfer
LLLW	liquid low level waste
LLWDDD	LLW disposal, demonstration, and development
LLWDF	LLW disposal facilities
LWBT	liquid waste bottling and transport
LWCT	liquid waste collection and transfer
MCS	monitoring control station
MED	Manhattan Engineering District
MOU	Memorandum of Understanding
MOX	mixed oxide
MSDS	material safety data sheets
MTF	materials treatment facility
MVST	Melton Valley storage tank
NCP	national contingency plan
NE	nuclear energy
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFA	no further action
NFS	Nuclear Fuel Services
NHP	New Hope Pond
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NQA-1	Nuclear Quality Assurance "Quality Assurance Requirements for Nuclear Facilities" sponsored by the American National Standards Institute/American Society of Mechanical Engineers (ANSI/ASME)

NRWTP	Nonradiological Wastewater Treatment Plant
NSPS	New Source Performance Standards
OD	oil dike
OHF	old hydrofracture facility
OLF	Oil Landfarm
OMB	Office of Management and Budget
OR	Oak Ridge Field Office
ORAU	Oak Ridge Associated Universities
ORFTF	Oak Ridge Filter Test Facility
ORGDP	Oak Ridge Gaseous Diffusion Plant
ORISE	Oak Ridge Institute for Science and Education
ORNL	Oak Ridge National Laboratory
ORP	Oil Retention Pond
ORR	Oak Ridge Reservation
OSHA	Occupational Safety & Health Act
OSTF	oils and solvents treatment facility
OTD	Office of Technology Development
OU	operable unit
P&A	plugging and abandonment
PA/SI	preliminary assessment/site inspection
PB&C	planning, budget, and control
PCB	polychlorinated biphenyl
PCSF	packaging, certification, and staging facility
PDTSU	plant drainage and treatment systems upgrade
PGDP	Paducah Gaseous Diffusion Plant
PIP	Performance Improvement Project
PORTS	Portsmouth Gaseous Diffusion Plant
PRTF	plating rinsewater treatment facility
PSAR	preliminary safety analysis report
PW	process waste
PWA	process waste assessments
PWCT	process waste collection and transfer
PWSF	production waste storage facility
PWTF	production waste treatment facility
PWTP	process waste treatment plant
PVC	polyvinyl chloride
QA	quality assurance
QC	quality control
RAP	Remedial Action Program
RCRA	Resource Conservation and Recovery Act
RCSB	retrieved cask storage bunker
R&D	research and development
RD&D	research, development, and demonstration

RDDT&E	research, development, demonstration, testing, and evaluation
RFA	RCRA facilities assessment
RFI	RCRA facility investigation
RFP	request for proposal
RH	remote-handled
RI	remedial investigation
RI/FS	remedial investigation/feasibility study
ROD	record of decision
RSW	radioactive solid waste
RWMD	Reservation Waste Management Division
S&M	surveillance and maintenance
SAP	sampling and analysis plan
SARA	Superfund Amendments and Reauthorization Act
SCS	site characterization summary
SDWA	Safe Drinking Water Act
SEN	Secretary of Energy Notice
SI	site inspection
SLLW	solid low-level waste
SNM	special nuclear materials
SOW	statement of work
SPAD	Steam Plant Ash Disposal
SRD	systems requirement document
SSF	solid storage facility
SSP	Site-Specific Plan
SWMU	solid waste management unit
SWSA	solid waste storage area
SWTF	sanitary wastewater treatment facility
TARA	test area for remedial action
TD	technology development
TDEC	Tennessee Department of Environment and Conservation
TDHE	Tennessee Department of Health and Environment-forerunner of TDEC
TEC	total estimated cost
TM	transportation management
TMI 2	Two Mile Island
TMS	trash monitoring station
TPM	technical program manager
TPO	technical program officer
TRU	transuranic
TSCA	Toxic Substances Control Act
TSD	treatment, storage, and disposal
TTP	technical task plan
TWQCA	Tennessee Water Quality Control Act
TWRF	transported waste receiving facility

UCOF	uranium chip oxidation facility
UE	uranium enrichment
UEFPC	Upper East Fork Poplar Creek
UMTRAP	Uranium Mill Tailings Remedial Action Program
UST	underground storage tank
WAC	waste acceptance criteria
WAG	waste area grouping
WBS	work breakdown structure
WCCF	waste characterization and certification facility
WCPF	waste coolant processing facility
WCRF	waste contaminant removal facility
WDF	waste demonstration facility
WEAF	waste examination and assay facility
WETF	West End Treatment Facility
WFMPF	Waste Feed Material Preparation Facility
WHPP	Waste Handling and Packaging Plant
WIN	Waste Information Network
WIP	Walk-In-Pits
WIPP	Waste Isolation Pilot Plant
WM	waste management
WMC	waste minimization coordinator
WMD	Waste Management Division
WMPF	waste material preparation facility
WOCC	waste operations control center
WOCE	White Oak Creek Embayment
WRDP	waste research and development program
WSSRAP	Weldon Spring Site Remedial Action Project
Y-12	Oak Ridge Y-12 Plant

1.0 INTRODUCTION

1.1 PURPOSE

The United States Department of Energy (DOE) is committed to achieving and maintaining environmental regulatory compliance while responding to public concerns and emphasizing waste minimization. DOE publishes the Environmental Restoration and Waste Management Five-Year Plan (FYP) annually to document its progress towards these goals.

The purpose of this Site-Specific Plan (SSP) is to describe the activities undertaken to implement the FYP goals at the DOE Oak Ridge Field Office (DOE/OR) installations and programs specifically for the Oak Ridge Reservation (ORR) and surrounding areas.

This SSP addresses activities and goals to be accomplished during FY93 even though the FYP focuses on FY94. The numbering scheme for Activity Data Sheets (ADSs) changes from FY93 to FY94; thus, both numbers are provided [i.e., (FY94 ADS; OR-XXXX) (FY93 ADS; OR-XXX)].

1.2 THE OAK RIDGE RESERVATION

The Oak Ridge Reservation (ORR) is made up of three major Department of Energy (DOE) installations constructed in the early to mid 1940s as research, development, and process facilities in support of the Manhattan Project. These installations include the Y-12 Plant (Y-12), the Oak Ridge National Laboratory (ORNL), and the K-25 Site (formerly the Oak Ridge Gaseous Diffusion Plant). In addition to the three installations, the ORR also includes areas outside the installations, land used by the Oak Ridge Associated Universities (ORAU), and waterways that have been contaminated by releases from DOE installations.

1.2.1 The Oak Ridge Y-12 Plant

1.2.1.1 Introduction

The Oak Ridge Y-12 Plant (Y-12) was built in the 1940s as part of the Manhattan Project to attempt separation of uranium isotopes using electromagnetic fields. After World War II, Y-12's role was changed to developmental engineering and manufacturing. At that time the plant included:

- production of nuclear weapon components and subassemblies,
- development and fabrication of test hardware for weapon design laboratories,
- fabrication support for other Energy Systems plants, and
- related support of other federal agencies.

With the new focus of the Y-12 Plant, Y-12's mission is to serve as a manufacturing technology center for key processes. Y-12 helps to ensure that capabilities are maintained for safe, secure, and reliable management of nuclear weapons and other applications of national importance.

In handling unique and special materials, Y-12 must control radioactive and toxic materials to protect the employees and the public. A high degree of security is necessary to protect the processes and the materials produced at the site from sabotage or theft.

1.2.1.2 Overview

Soil and groundwater contamination at the 811-acre Y-12 facility includes hazardous materials, low-level radioactive materials (primarily uranium), and mixed wastes, resulting primarily from the various weapons production processes. The contaminated sites in need of environmental restoration (ER) include past-practice waste disposal sites, waste storage tanks, spill sites, and contaminated inactive facilities. In addition, significant amounts of mercury are present, both on-site and off-site, in the East Fork Poplar Creek (EFPC) floodplain soils and sediments as a result of past spills and contaminated migration via creek waters.

Potential health risks exist from off-site migration of contamination, principally mercury. Health and safety risks posed by certain contaminants at some solid waste management units (SWMUs) and the public's concern for several key units, particularly EFPC, have increased the need for immediate action. A 1985 conducted study by the Centers for Disease Control and the Tennessee Department of Environment and Conservation (TDEC) concluded that residents of Oak Ridge are not likely to be at increased risk from significantly higher mercury levels in the local environment. Mercury concentrations found in urine and hair samples during the study were determined to be within background range (that which would be expected to be found even if the man-made contamination zone under study did not exist).

The conduct of waste management (WM) programs at Y-12 demands an integrated approach to a number of different but interrelated activities. The overall goal is full compliance with all current regulations and planning for compliance with future regulations while providing full support for Y-12 programmatic activities. WM Program activities include those associated with treatment, storage, and disposal of industrial, hazardous, radioactive, and mixed waste as well as those activities required for program continuity. A list of Y-12 WM facilities is provided in Table 1.1.

Table 1.1 Y-12 Waste Management Facilities

<u>Facility</u>	<u>Bldg. No.</u>	<u>Waste Category</u>
TREATMENT		
Central Poll. Control Facility	9623	mixed, liquid mopwaters & non-nitrate bearing acidic and caustic waste
Plating Rinsewater Treat. Facility	9623	mixed, liquid rinsewaters containing heavy metals
West End Treatment Facility	9616-7	mixed, liquid nitrate-bearing wastes
Waste Coolant Process Facility	9983-78	low-level, liquid machine coolant
Uranium Chip Oxidation Facility	9401-5	low-level, solid natural uranium machine turnings
Waste Material Prep. Facility	9401-4	low-level, solid diversified uranium-contam. scrap
STORAGE		
West Tank Farm		mixed, sludge
Uranium Oxide Storage Vaults		low-level, solid depleted uranium oxide
RCRA Staging and Storage Fac.	9720-31	hazardous, PCB interim storage of drums before offsite disposal
Organic Liquid Storage	OD-7	mixed, PCB, liquid
Waste Oil Solvent Drum Storage	9811-1	mixed, hazardous, PCB, liquid
Organic Liquid Storage Area	OD-9	mixed, hazardous, PCB, liquid
Organic Liquid Storage Area	OD-10	waste oil, recyclables, hazardous, liquid
Containerized Waste Storage Area		solid mixed
Classified Waste Storage Area	9720-25	low-level, mixed, solid
PCB Waste Storage	9404-7	PCB, mercury, mixed uranium contam.
Mixed/PCB Waste Storage	9720-9	mixed, PCB
Interim Drum Yard		hazardous, mixed outdoor gravel pad solvent contam. debris
RCRA/PCB Container Storage Area	9720-58	PCB, solid
Non-SNM Warehouse	9720-12	low-level
Non-Uranium Contam. Salvage Yard		clean metals, sell not recycle
Waste Materials Prep. Fac.	9720-28	low-level, solid diversified uranium-contam. scrap
DISPOSAL		
Bear Creek Burial Ground (closed)		low-level, solid
Sanitary/Industrial Landfill II		solid for ORR Industrial Landfill IV classified waste
CONTINUITY OF OPERATIONS		
Trash Monitor. Station	9828-6	solid, monitors uranium & other radioactive isotopes in solid, LLW

Y-12 generates and manages low-level radioactive waste (LLW), mixed waste, hazardous waste, and industrial/sanitary waste. Radioactive and mixed process wastewaters are treated on-site. In the past solid LLW was either disposed of on-site or stored, depending on radionuclide concentration and waste form. Solid LLW disposal on-site ceased in 1991.

Now solid LLW and mixed waste are being stored on-site until either commercial or on-site treatment capabilities become available. Hazardous and polychlorinated biphenyl (PCB) wastes are shipped off-site for commercial disposal. Industrial/sanitary solid wastes are disposed of on-site in permitted landfills.

WM priorities at Y-12 include:

- reduction in the quantity of hazardous and mixed solid and liquid wastes generated (emphasis will be placed on the reduction or elimination of waste at the source, thereby reducing the need for treatment/storage/disposal);
- establishment and implementation of division specific waste minimization plans;
- improvement in segregation and control of waste at the source;
- incorporation of requirements for handling liquid and solid waste into waste generators' procedures;
- reduction in handling cycle time to meet the Plant standard of 75 days maximum storage at accumulation areas;
- increased use of statistical process control for measured waste data; and
- conducting WM activities within DOE, state, and federal requirements.

Major objectives for Y-12 are listed below.

Corrective Activities (CA)

- Bring Y-12 into compliance with its National Pollutant Discharge Elimination System (NPDES) Permit and federal, state, and local water regulations.
- Treat and dispose of fly ash and bottom ash to bring levels into compliance.

Environmental Restoration (ER)

- Investigate and remediate the contaminated sites at Y-12.
- Address concerns for off-site contamination of EFPC and vicinity.
- Continue surveillance and maintenance (S&M) of inactive contaminated facilities.

Waste Management (WM)

- Minimize the risk of contaminating the environment from ongoing operations.
- Minimize both employee and public risk by continuing to implement DOE as-low-as-reasonably-achievable (ALARA) policy.

- Comply with established regulations, DOE Orders, and quality assurance (QA) requirements.
- Prepare for compliance with proposed regulations and DOE Orders.
- Minimize waste generation through modifications at the sources of generation within the plant.
- Segregate wastes according to waste treatment, storage, and/or disposal facility acceptance criteria.
- Reduce the volume and hazards of waste through improved treatment.
- Conduct long-range planning for facilities to treat existing waste and future generated waste.
- Focus on pollution prevention, treatability, and low-level radioactive waste management.
- Evaluate recycling potential for various alloys within the DOE system.

1.2.2 The Oak Ridge National Laboratory

1.2.2.1 Introduction

The Oak Ridge National Laboratory (ORNL) was constructed in 1943 as part of the Manhattan Project. The original purpose of the site was to design and build the Graphite Reactor and an associated nuclear fuel reprocessing pilot plant to obtain information. The information was needed in the design of the Hanford (Washington) production reactors and associated fuel processing operations. While early site development focused on direct support of defense programs during and after World War II, the unique facilities formed an excellent nucleus for the multidisciplinary research laboratory that now exists. Since the start of operations at ORNL, significant changes have occurred in the scope of research and development (R&D) missions and the necessary supporting waste management requirements.

Today, ORNL conducts R&D activities for other U.S. government agencies, as well as for private industry and institutional organizations. Currently, these research efforts focus on the areas of:

- magnetic fusion,
- nuclear fission,
- biological and environmental research,
- conservation and renewable energy,
- fossil energy, and
- physical sciences.

ORNL involves industry in its programs and encourages cooperative use of its facilities, formally through users' groups and informally through professional contacts and participation. Universities and secondary schools are also provided with ready access to major research facilities, state-of-the-art research capabilities, training facilities for faculty and students, and opportunities for collaborative research.

These programs and the complement of research facilities that support these activities present diverse environmental, waste management, safety, and health protection challenges.

Control and treatment of waste streams from the ORNL facilities have been continuing since the beginning of ORNL operations. Effluent monitoring aids WM operations and ensures safety.

The ORNL Transportation Management (TM) activities support all DOE facilities in accomplishing the mission of providing safe, efficient, and economical transportation of DOE-owned materials, including radioactive and hazardous materials. Efforts are made through the various projects to ensure compliance with applicable federal, tribal, state, local, and internal DOE requirements that govern the packaging, handling, transportation, and storage of DOE materials and waste. Program support is also provided in the areas of operations and outreach. Currently ORNL's transportation activities include logistics and operations training, packaging engineering and analysis, automation, and regulatory compliance.

1.2.2.2 Overview

Most of ORNL's environmental contamination results from past waste management practices. A wide variety of liquid and solid wastes, primarily radioactive or mixed wastes, have been disposed of on-site. Over 300 contaminated sites have been identified on the 2900-acre site.

The major sources of waste have been:

- radioisotope production,
- experimental reactors,
- hot cells and pilot plants (chemical separations or fuel reprocessing),
- research (physical, chemical, and biological),
- nuclear particle accelerators, and
- analytical laboratories.

Solid wastes from other sites contributed a large fraction of both the materials and the radioactivity buried in solid waste storage areas between 1955 and 1963. During this time, ORNL served as the Southern Regional Burial Ground of the Atomic Energy Commission.

A number of ORNL sites are known, or suspected, to contain buried transuranic (TRU) wastes. However, site contaminants appear to be dominated by fission products (strontium-90), cesium-137, tritium, and activation products (e.g., cobalt-60) rather than by TRU wastes (or uranium).

Waste management and remedial actions are complicated by unfavorable environmental conditions, including:

- high seasonal rainfall,
- the shallow groundwater table,
- elevated levels of calcium and magnesium in water, and
- complex hydrogeology.

Because of the large number of sites to be considered and the hydrogeologic complexity of the ORNL area, the remedial action strategy has been segregated into groups. These groups, called Waste Area Groupings (WAGs) within one Operable Unit (OU), may contain several sites. The sites have been placed within 20 such groups, defined by small distinct drainage areas within which similar contaminants were introduced.

A significant number of facilities at ORNL have been declared surplus because the programs for which they were built have been completed. Because the potential exists for release of radioactivity to the environment, these facilities will be decontaminated and decommissioned. Until decommissioning is complete, the facilities that contain substantial amounts of residual radioactive material must be monitored and maintained to ensure containment. The inventory of surplus contaminated facilities includes experimental reactors, technology support facilities, hot cells, isotope processing facilities, research laboratories, and decontamination facilities. To meet the objective of adequate containment and site control, a structured program of S&M has been established to collectively manage all activities relating to surplus contaminated facilities.

Effects on the environment at ORNL are routinely monitored and reported to relevant state and federal regulatory agencies. Programs to determine operational impacts on the atmosphere, surface water, and groundwater are conducted by ORNL. Results have indicated that ORNL does not emit or release materials off-site that significantly reduce the quality of the air, surface water, or groundwater.

The mission of WM at ORNL is to provide a quality waste management capability in compliance with regulations and other applicable requirements. This mission is carried out through strategic planning; waste minimization; waste certification; development of new or upgraded facilities; and routine waste collection, treatment, storage, and disposal.

All wastes are managed by the WM component. Waste forms include gaseous, liquid, sludge, and solid. WM operates 34 facilities which are listed in Tables 1.2 and 1.3 with locations shown on the ORR map in Appendix C.

Table 1.2 ORNL Waste Management Facilities
Liquid and Gaseous Waste Operations Department

<u>Building</u>	<u>Operations</u>
LLLW	
LWCT (1)	• Collection and Monitoring Tanks/Transfer System (hard-piped) Covers system from source generators to VB#1 (2)
LWBT (3)	• Above Ground Transport of LLLW Bottling and trucking
2537	• Five 50,000-gal Tanks at Evaporator (C-1, C-2, W-21, W-22, and W-23)
2531	• Evaporator System Process Equipment
7830	• Melton Valley Storage Tanks (W-24 through W-31)
7877	• LLLW Solidification Facility
7860	• New Hydrofracture Facility
Process Waste/Non-Rad System	
3544	• Process Waste Treatment Plant Process Equipment
2600/ 7961	• Six Process Waste Collection Tanks (including New Pumping Station P-4001)
3608	• Non-Rad Wastewater Treatment Plant (Building 3608)
PWCT (4)	• Collection, Monitoring, Transfer System Covers system from source generator to new tanks or pump stations
Off-Gas and Cell-Ventilation System	
3039	• 3039 Stack Area
Miscellaneous	
7935	• Equipment Cleaning Facility

- (1) Liquid Waste Collection and Transfer
(2) Valve Box No. 1
(3) Liquid Waste Bottling and Trucking
(4) Process Waste Collection and Transfer
-

**Table 1.3 ORNL Waste Management Facilities
Solid Waste Operations Department**

<u>Building</u>	<u>Operations</u>
7823	Underground storage building used for storage of solid LLW, TRU waste, and mixed waste
7824	Waste Examination Assay Facility - used for the nondestructive assay of SLLW and TRU waste
7826 & 7834	Retrievable Waste Storage Facility for CH-TRU waste
7827 & 7829	Retrievable storage wells provide retrievable storage of RH-TRU waste, LLW exceeding shallow land disposal limits, fuel elements, or reactor components
7831	Waste Compactor Facility
7841	Contaminated equipment storage area
7822	SWSA 6: <u>7842</u> - Storage Facility <u>Tumulus I & II and TWMP</u> - SLLW disposal facilities <u>Silos, wells, trenches</u> - SLLW (low range and high range), fissile, asbestos, biological, and suspect waste disposal <u>7878</u> - SWSA 6 storage area
7855	RH-TRU Cask Storage Facility
7879	TRU/LLW Staging Facility
7651	Clean oil storage
7652	Hazardous bulk liquids and solids
7653	Lab Pack chemicals, explosives, and water reactive metals and chemicals
7654	Mixed waste
7507W	Mixed waste
7507	PCBs
7934	Photographic waste
7659 (Sandia Site)	Leaking gas cylinder storage
7667	Detonation Facility

Waste Management Priority at ORNL include:

- developing and implementing waste management strategies,
- conducting routine waste management operations,
- demonstrating improved waste operations through technological development, and
- executing a formal ORNL waste reduction program.

Activities are underway to provide for the treatment and off-site disposal of contact-handled (CH) and remote-handled (RH) TRU waste stored at ORNL. Expanded storage capacity will be provided for radioactively contaminated mixed polychlorinated biphenyl (PCB) and hazardous waste, Class L-III, and L-IV solid low-level waste (SLLW). Solid industrial waste is disposed of in the Y-12 Centralized Sanitary Landfill. Hazardous wastes are sent off-site for commercial treatment and disposal. Liquid process wastes are treated on-site, and the effluent is discharged in accordance with NPDES permit requirements.

Major objectives for ORNL are listed below.

Corrective Activities

- Complete construction of the Bethel Valley LLLW CAT system upgrades.

Environmental Restoration

- Complete WAG 6 Feasibility Study/Environmental Assessment, Interim Proposed Remedial Action Plan, and Interim Record of Decision.
- Complete WAG 6 Source Control Interim Action.
- Develop and maintain a comprehensive monitoring program for remediation sites.
- Identify and implement interim corrective measures to protect human health and the environment prior to final site remediation.
- Characterize, assess risk, evaluate removal alternatives, and implement interim corrective measures associated with inactive liquid low-level waste (LLLW) tank contents.
- Complete Phase I Remedial Investigations and Proposed Plans, identify operable units, and initiate remedial actions associated with several WAGs.
- Continue surveillance and maintenance of inactive contaminated facilities.

Waste Management

- Continue operation of waste facilities in compliance with all applicable requirements and regulations.
- Upgrade liquid radioactive waste collection and treatment capability.
- Continue use of enhanced SLLW disposal technologies.
- Comply with provisions of the pending Federal Facility Agreement.
- Coordinate central aspects of Laboratory-wide waste reduction program.

Technology Development (TD)

- Development of direct sampling ion trap mass spectrometry in conjunction with the U.S. Army toxic and Hazardous Materials Agency.
- In situ remediation of soils and groundwater contaminated with PCBs, volatile organic chemicals, and radioisotopes.
- Support of the In Situ Remediation Integration and Mixed Waste Integrated Programs.

Transportation Management (TM)

- Evaluate the capabilities and limitations of the DOE site infrastructure used to transport hazardous materials on all identified DOE field sites.
- Integrate transportation and packaging into DOE-wide programs and management systems.
- Continue to assess, oversee, coordinate, and conduct the training activities being performed on behalf of EM-561.
- Develop an operationally efficient multi-use Type A package for radioactive materials to support various Environmental Restoration and Waste Management Programs (EM) and DOE programs.
- Expand application of the Expert Motor Carrier Selection System to other DOE sites.
- Develop and maintain an expert computerized system to ensure consistent and error-free application of the hazardous materials regulations.
- Continue to operate and maintain the Shipment Mobility/Accountability Collection database which collects, processes, stores, and retrieves data on shipments made to and from DOE facilities.
- Continue to provide DOE with updated information identifying the location and status of selected shipments by operating and maintaining the Transportation Tracking and Communications System.

1.2.3 The Oak Ridge K-25 Site

1.2.3.1 Introduction

The Oak Ridge K-25 Site (K-25), formerly the Oak Ridge Gaseous Diffusion Plant, was constructed as part of the Manhattan Project between 1943 and 1945. Major additions and upgrades to the process were made during the 1950s and 1970s. The original mission was to produce enriched uranium hexafluoride for defense purposes and later for commercial power reactors. Because of declining demand, the gaseous diffusion uranium enrichment process at K-25 was placed on standby in 1985 and shut down in 1987. Another uranium enrichment process using gas centrifuge technology was terminated in 1985. These shut down gaseous diffusion site facilities require S&M until the facilities are either modified for resumption of production efforts or plans are developed and compiled for decontamination and decommissioning.

enrichment process using gas centrifuge technology was terminated in 1985. These shut down gaseous diffusion site facilities require S&M until the facilities are either modified for resumption of production efforts or plans are developed and compiled for decontamination and decommissioning.

Centrifuge facility cleanup and decontamination are currently planned so that the buildings can be used for other purposes.

Today, K-25 has a multipurpose mission.

Environmental Restoration (ER)

- Perform safe storage activities and surveillance and maintenance of shutdown gaseous diffusion and gas centrifuge facilities; plan for and implement decontamination and decommissioning of these facilities.
- Manage ER activities at all Energy Systems sites.
- Perform K-25 environmental remedial actions and monitoring.
- Apply the unique capabilities in the Oak Ridge Complex to address activities for DOE and other federal agencies.

Waste Management (WM)

- Operate facilities and provide services for the treatment, storage, and disposal of hazardous wastes for DOE.
- Manage WM activities for all Energy System sites, including planning and implementing major centralized waste management sampling and analysis services.
- Provide comprehensive environmental and waste treatment systems and environmental restoration technologies.
- Apply the unique capabilities of the Oak Ridge Complex to address hazardous materials management problems for DOE and other federal agencies.
- Facilitate technology exchange among DOE, other federal agencies, academia, and the private sector.

Support to Other Programs

- K-25 also supports implementation of programs of the United States Uranium Enrichment Enterprise; Energy Systems Engineering, Computing, and Business operations; Data Systems Research and Development; and other K-25 tenants.

1.2.3.2 Overview

Operation of K-25 has created facilities and sites that contain hazardous materials and wastes (Table 1.4). The sites include:

- burial grounds,
- storage facilities,
- underground storage tanks (USTs),
- surface impoundments,
- treatment facilities,
- process equipment and lines,
- accumulation areas, and
- other areas having the potential for releasing hazardous constituents into the environment.

ER activities at the site are focused in three major units including the main plant area, the process plant area, and the external plant area. The units are further broken down into operable units (OUs) and study areas. Each OU and study area is made up of one or more sites which are believed to have contained hazardous or radioactive materials. OUs and study areas both undergo the CERCLA process.

A total of 156 Solid Waste Management Units (SWMUs) within 15 OUs have been identified at K-25. A multiple facility activity is underway to address contamination with radionuclides, metals, and organic compounds of off-site public surface waters (predominately the Clinch River).

The gaseous diffusion facilities include several very large buildings and a number of smaller buildings with a combined under-roof area of about 140 acres. These facilities contain extensive amounts of asbestos insulation, potential Resource Conservation and Recovery Act (RCRA) regulated oils and chemicals, PCBs, special nuclear materials, and residual radionuclides.

The PCBs were contained in the insulating fluids of large pieces of electrical equipment and in the gaskets in the ventilation ducts of several process buildings. Lubricating oil entrained in the ventilation ducts during past operations leaches the PCBs from the gaskets as the oil passes through the gaskets and drips onto the floor and equipment below the ducts. The gasket and oil drips containing PCBs are noncompliant with Toxic Substances Control Act (TSCA) regulations. Removal of the gaskets is included in the TSCA Federal Facility Compliance Agreement between DOE and the Environmental Protection Agency (EPA). The gas centrifuge buildings, with 325,000 square feet of floor space, contain classified contaminated centrifuge equipment and process materials.

Table 1.4 K-25 Waste Management Facilities

<u>Facility</u>	<u>Operations</u>
K-1025-C	Hazardous/Mixed Waste Storage Building
K-1302	Gas Cylinder Storage Unit
K-1232	Hazardous Waste Treatment Unit Hazardous/Mixed Waste Storage Unit
K-311-1	Radiogenic Lead Storage Vault
K-1425	Waste Oil/Hazardous Waste/Mixed Waste/PCB Storage Unit Waste Oil/Hazardous Waste/PCB Storage Tanks
K-1435	TSCA Incinerator PCB/Hazardous/Mixed Waste Storage Unit
K-1419	Sludge Fixation Unit Sludge Fixation Unit Storage Tanks
K-1417	Concrete Block Casting and Storage Area
K-1420-A	Flammable Liquid Storage Unit
K-306-1	PCB/Hazardous/Mixed Waste Container Storage Unit
Vault 23-A	Hazardous/Mixed Waste Storage Unit
Vault 4A	Hazardous/Mixed Waste Storage Unit
Vault 19	Hazardous/Mixed Waste Storage Unit
K-711	PCB/Hazardous/Mixed Waste Storage Unit
K-1202	Hazardous/Mixed Waste Storage Unit
K-310-1	Hazardous/Mixed Waste Storage Unit
Vault 2A	Hazardous/Mixed Waste Storage Unit
K-309-3	Hazardous/Mixed Waste Storage Unit
K-302-4	PCB/Hazardous/Mixed Waste Storage Unit
Vault 8A	PCB/Hazardous/Mixed Waste Storage Unit
K-302-5	PCB/Hazardous/Mixed Waste Storage Unit
K-303-1	Hazardous/Mixed Waste Storage Unit
K-306-1	PCB/Hazardous/Mixed Waste Storage Unit
K-301-2	PCB/Hazardous/Mixed Waste Storage Unit
K-301-1	PCB/Hazardous/Mixed Waste Storage Unit
K-305-6	Hazardous/Mixed Waste Storage Unit
K-1036-A	Hazardous/Mixed Waste Storage Unit
K-306-2	Hazardous/Mixed Waste Storage Unit
K-303-2	Hazardous/Mixed Waste Storage Unit
K-306-3	Hazardous/Mixed Waste Storage Unit
K-306-4	Hazardous/Mixed Waste Storage Unit
K-726	PCB/Radioactive Container Storage Unit
K-303-4	PCB/Radioactive Container Storage Unit
Vault 3A	PCB/Radioactive Container Storage Unit

Table 1.4 K-25 Waste Management Facilities

Vault 15A	LLW Storage Unit
Vault 16A	LLW Storage Unit
K-306-7	LLW Storage Unit
K-303-3	LLW Storage Unit
K-309-2	LLW Storage Unit
K-310-2	LLW Storage Unit
Vault 1X	LLW Storage Unit
K-310-3	LLW Storage Unit
K-1420 (Mezzanine)	LLW Storage Unit
Vault 31X	LLW Storage Unit
K-1407-H	CNF Wastewater Treatment Unit
K-1423	Hazardous/Mixed Waste Storage Unit

Personnel exposure to friable, asbestos-bearing materials is a concern in and around the gaseous diffusion facilities. Shutdown facilities containing asbestos are routinely monitored, with asbestos removal or repair occurring as warranted. The other radioactive and hazardous materials in the shutdown facilities are also routinely monitored to minimize the potential for off-site releases.

Waste Management Priority at ORNL include:

- developing and implementing waste management strategies,
- conducting routine waste management operations, and
- demonstrating improved waste operations through technological development, and expansion of permitted hazardous and mixed waste storage facilities.

Waste management activities at K-25 include generation, minimization, treatment, storage, and disposal of low-level, classified, hazardous, mixed, PCB, and sanitary wastes. The storage program will continue to grow with the addition of refurbished vaults in the K-25 Building for mixed waste storage, the conversion areas within the K-31 and K-33 Buildings for pond sludge storage, and the construction of two new storage facilities for pond sludge storage. These facilities will be added throughout the FY92-94 timeframe. New waste disposal facilities will be prepared for managing SLLW generated on the ORR. These facilities will include both above- and below-grade facilities. The TSCA Incinerator treats RCRA hazardous and TSCA wastes, including mixed wastes. The Oak Ridge Filter Test Facility will be operated to provide QA inspection and testing of every High Efficiency Particulate Air Filter procured for all DOE facilities east of the Mississippi River.

Major objectives for K-25 include the following list.

Corrective Activities (CA)

- Reduce steam plant toxicity.
- Rehabilitate sewage collection system.

Environmental Restoration (ER)

- Complete fixation of sludges from surface impoundments.
- Complete centrifuge equipment disposal.
- Complete design and remediation of USTs.
- Begin removal of PCB-impregnated gaskets.
- Continue S&M of shutdown facilities.

Waste Management (WM)

- Provide regulatory-compliant operation of K-25 liquid WM facilities and multiplant waste storage facilities.
- Implement waste certification and consolidated waste storage plans.
- Design and construct LLW disposal facilities.
- Continue full operation of the TSCA Incinerator.
- Provide regulatory-compliant operation of TSCA Incinerator.
- Design and construct central waste treatment, storage, and disposal facilities for waste generated from ER projects.

Technology Development (TD)

- Complete R&D technical report draft for test loop and long-term low temperature lab testing on the Advanced Gas Phase Decontamination Technology Project.

The major objective for Technology Development (TD) and Transportation Management (TM) is to develop and demonstrate advanced technologies and provide technical assistance in support of the site environmental restoration and waste management activities. Technical areas of expertise include:

- characterization,
- bioremediation,
- pollution prevention,
- robotics,
- treatment/storage/disposal,
- D&D,
- transportation, and
- technology transfer.

See Table 1.5 for summary of fiscal year funding.

**Table 1.5 Fiscal Year Funding Summary by Program, ORR
Planning Level (\$000)**

Program/Site	1993
CA	
Y-12	1,030
ORNL	16,400
K-25	<u>554</u>
Total	17,984
ER	
Y-12	58,850
ORNL	77,967
+ K-25	<u>235,035</u>
Total	371,852
WM	
Y-12	61,034
ORNL	89,458
* K-25	<u>98,079</u>
Total	248,571
TD	
Y-12	-0-
ORNL	30,300
K-25	<u>3,800</u>
Total	34,100

+ Includes Central ER Division, DOD-OR ER Direct and Uranium Enrichment Program contribution of \$100,900.

* Includes Central WM and DOE-OR WM Direct.

2.0 REQUIREMENTS FOR IMPLEMENTATION

2.1 FEDERAL AND STATE REGULATIONS

Legal requirements are discussed in this section. The requirements include those of the Atomic Energy Act, other federal and state statutes and regulations, and Department of Energy (DOE) Orders, as well as the consent decrees, court orders, and agreements relevant to the Oak Ridge Reservation (ORR). Interagency agreements, compliance agreements, and consent orders between ORR installations and federal, state, and local regulatory agencies are also discussed in Chapter 11. The major federal and state statutes applicable to corrective activities (CA), environmental restoration (ER), and waste management (WM) are summarized below.

2.1.1 Resource Conservation and Recovery Act (RCRA)

RCRA as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA), regulates hazardous waste management. The primary objective of RCRA is to protect human health and the environment. The secondary objective is to conserve valuable material and energy resources by providing assistance to state and local governments for achieving goals in:

- waste minimization,
- resource conservation,
- resource recovery, and
- recycling.

RCRA provides cradle-to-grave tracking of hazardous wastes from generation to transport to treatment, storage, or disposal. The disposal sites that were closed or abandoned before November 19, 1980 (effective date of the RCRA regulations) are regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

Everyone, including operators of federal facilities, must comply with RCRA. Compliance starts with notifying the U.S. Environmental Protection Agency (EPA) or authorized states about activities involving hazardous wastes or hazardous waste-derived fuels. Activities may include:

- generation/production,
- marketing and distribution,
- transport,
- treatment,
- burning (fuel),

- storage,
- disposal, and
- storage of hazardous materials in underground tanks.

As amended by HSWA, RCRA Sec. 3004(u) requires corrective actions for releases of hazardous constituents. RCRA Sec. 3004(v) mandates off-site corrective actions. The RCRA provisions for corrective actions overlap to some degree with CERCLA provisions, creating the need for coordination of RCRA and CERCLA activities. RCRA will impact all major categories of tasks covered by this plan, including CA, ER, and WM.

The State of Tennessee is authorized to administer its own RCRA program in lieu of the federal program, except for those RCRA provisions imposed by HSWA. Also, Tennessee has RCRA authorization to regulate mixed, hazardous, and radioactive wastes.

The Tennessee Hazardous Waste Management Act and regulations enforcement are administered by the Tennessee Department of Environment and Conservation (TDEC). Tennessee is in Region IV of EPA, which administers the federal RCRA program, including the HSWA provisions.

2.1.2 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

CERCLA, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), provides a federal mechanism to respond to the hazards posed by abandoned disposal sites. It provides federal authority to respond to current uncontrolled releases of hazardous and radioactive substances (since May 1989) from a vessel (including transportation vehicles) or from any on-shore or off-shore facilities. The act imposes strict liabilities on a broad class of potentially responsible parties. It establishes funding ("Superfund") for the government either to order the responsible parties to clean up the spill or to seek reimbursement from the responsible parties after the government has completed cleanup.

CERCLA also requires owners and operators of currently operating vessels and facilities to file reports. Any releases of a specific quantity of "hazardous substances" must be reported, and the responsible party must clean it up. A "hazardous substance" is anything included on a "list of lists" compiled by referring to four other major environmental statutes under which toxic or hazardous substances are identified. EPA is authorized to expand the CERCLA list by adding compounds or mixtures which, when released into the environment, may present substantial danger to public health, welfare, or the environment.

Section 105 of CERCLA states that the government's cleanup activity must be conducted in accordance with the National Contingency Plan (NCP). The NCP establishes a blueprint for cleaning up releases into the water, land, or air and assigns response authority to federal

and state governments and private parties. The NCP details response procedures, including both immediate removal and long-term remedial actions. Section 105 also authorizes EPA to designate sites for inclusion on the National Priorities List (NPL) of sites requiring remedial action. The ORR was placed on the NPL on December 21, 1989.

SARA amended CERCLA by adding provisions which, among other things, are specifically aimed at federal facilities and which increase EPA enforcement authority. CERCLA, as amended by SARA, provides the framework for determining cleanup standards, schedules, and evaluating remedies.

2.1.3 National Environmental Policy Act (NEPA)

NEPA requires every federal agency to consider the environment in its decision making process and to publicly address the environmental impact of major federal actions that may significantly affect the environment before such actions are initiated. Potential environmental impacts and issues of concern are addressed in environmental assessments or environmental impact statements, which are made available to the public and are circulated to other interested agencies and individuals. DOE Order 5440.1D establishes internal DOE responsibilities and procedures for implementing NEPA. DOE Order 5400.4 establishes DOE policy on integrating NEPA and CERCLA processes on ER projects. DOE has also established DOE NEPA Implementing Procedures; 57 FR 15144, (1992).

2.1.4 Toxic Substances Control Act (TSCA)

TSCA regulates, among other things, the use and disposal of materials containing more than 50 parts per million of polychlorinated biphenyls (PCBs). TSCA applies to CA, ER, and WM projects that deal with PCBs. PCB-related projects may also be regulated by CERCLA and RCRA.

2.1.5 Clean Air Act (CAA)

CAA is a comprehensive and complex federal statute designed to prevent and control air pollution from stationary and mobile sources. It authorizes EPA to establish national standards for air quality that must be met by the states through compliance with EPA-approved State Implementation Plans. These plans must contain standards for preventing significant deterioration of air quality in areas where the ambient standards are already being met. Permits are required for specific air emissions. CAA requirements may become applicable or relevant and appropriate requirements (ARARS) for CERCLA cleanups. Radionuclides are also regulated under CAA.

The revised CAA was passed by Congress on November 15, 1990. It contains sections which revise the permitting program for operating sources and impose regulations on 189 that are

designated air toxins. The ORR is seeking approval of its compliance plan for meeting monitoring requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAP) for radionuclides.

Air emissions from ORR facilities are managed in accordance with DOE Orders (5480.1A, 5480.4, and 5820.2A, described in Section 2.2) and guidelines of CAA as regulated by the TDEC Division of Air Pollution Control. TDEC has the primary responsibility for ensuring compliance with CAA within the State of Tennessee and for protecting and maintaining Tennessee ambient air quality standards pursuant to the Tennessee Air Quality Control Act. TDEC's Division of Air Quality administers the air permits program.

2.1.6 Clean Water Act (CWA)

CWA sets standards for and regulates discharges into surface waters and sets pretreatment standards for discharges into publicly owned treatment works. Facilities that directly discharge wastewater must obtain a National Pollutant Discharge Elimination System (NPDES) permit. CWA regulations address:

- technology-based effluent limitations,
- water quality-based effluent limitations,
- new source performance standards,
- control strategies for toxic pollutants,
- thermal discharges, and
- storm water runoff limitations.

Water quality criteria established under the CWA may become ARARS for CERCLA cleanups.

2.1.7 Tennessee Water Quality Control Act (TWQCA)

At the state level, water pollution is controlled through the TWQCA and implementing regulations. The NPDES permit program is administered by the Division of Water Quality Control within TDEC.

2.1.8 Safe Drinking Water Act (SDWA)

SDWA sets regulatory standards for organic chemicals and other pollutants in drinking water through two regulatory programs, National Drinking Water Standards for Public Water Systems and Underground Well Injection. SDWA Primary Drinking Water Standards are frequently used to establish groundwater protection standards pursuant to RCRA and CERCLA.

2.1.9 Land Disposal Restriction (LDR) Federal Facility Compliance Agreement (FFCA)

An FFCA has been established between EPA Region IV and DOE that sets a schedule of activities by which DOE will attain capacity for treatment of LDR wastes. The FFCA requires development of waste minimization plans and strategies for waste treatment, conducting treatability studies, and development of treatment technologies. The FFCA will have a major impact on Waste Management activities in FY93 and beyond.

2.1.10 Department of Transportation (DOT) Regulations

The DOT regulations governing the preparation and transportation of hazardous materials are published in 49 CFR Sections 171 - 177. These regulations include requirements on:

- Immediate notice of certain hazardous materials incidents,
- Shipping papers,
- Marking,
- Labeling,
- Placarding,
- Hazardous materials preparation,
- Radioactive materials preparation,
- Rail carriers,
- Water carriers,
- Motor carriers,
- Motor carrier highway route controlled quantity (HRCQ) routing and training,
- Motor carrier loading and unloading,
- Motor carrier accident reporting, and
- Relationship between routing regulations in Part 177 with State and local regulations.

2.1.11 Nuclear Regulatory Commission (NRC) Regulations

The NRC is primarily concerned with the design and certification of Type B packages for shipping materials such as spent nuclear fuel (SNF) and high-level waste (HLW), and the in-transit safeguards for SNF shipments. The NRC regulations governing the packaging and handling of SNF and HLW are published in 10 CFR Sections 20, 71, and 73. These regulations include provisions that address:

- Package design, testing, and approval standards;
- Radiation surveys;
- Personnel monitoring;
- Procedure for picking up, receiving, and opening packages;
- Personnel instruction;
- Personnel monitoring reports;

- Compliance with DOT 49 CFR 170-189;
- Application for package approval; and
- Physical protection of irradiated reactor fuel in transit.

2.1.12 Summary

CERCLA/SARA, RCRA, and TSCA are the principal laws for undertaking environmental restoration. The Atomic Energy Act, CAA, CWA, and SDWA determine the rigor of the response required to protect human health and the environment. For major federal environmental actions, NEPA also defines the process by which decisions are made and implemented.

2.2 DEPARTMENT OF ENERGY ORDERS

Department of Energy (DOE) and DOE contractors are subject to the requirements of DOE Orders in addition to the requirements of federal and state regulatory agencies. Therefore, DOE Orders will impact the corrective activities (CA), environmental restoration (ER), and waste management (WM) processes as well. Significant DOE Orders for these tasks are summarized below.

2.2.1 DOE NEPA Implementing Procedures; 57 FR 15144, (1992)

DOE NEPA Implementing Procedures establish the procedures to be followed in fulfilling DOE's NEPA responsibilities.

2.2.2 DOE Order 1540.1

DOE Order 1540.1 establishes the DOE policies and procedures for the management of materials transportation activities.

2.2.3 DOE Order 1540.2

DOE Order 1540.2 establishes administrative procedures for the certification and use of radioactive and other hazardous materials packaging by DOE.

2.2.4 DOE Order 1540.4

DOE Order 1540.4 establishes the DOE policy for the physical protection of unclassified irradiated reactor fuel in transit.

2.2.5 DOE Order 5400.1, General Environmental Protection Program (11/9/88)

DOE Order 5400.1 establishes the environmental protection program for DOE operation.

2.2.6 DOE Order 5400.2A, Environmental Compliance Issue Coordination (1/31/89)

DOE Order 5400.2A establishes DOE requirements for coordinating significant environmental compliance issues by creating a process within DOE for resolving conflicting compliance issues.

2.2.7 DOE Order 5400.3, Hazardous and Radioactive Mixed Waste Management (2/22/89)

DOE Order 5400.3 establishes DOE hazardous and radioactive mixed waste policies and requirements. The Order clarifies DOE's interpretation of the definition of "byproduct material" (10 CFR 962) as it relates to RCRA regulation of mixed wastes, and establishes the lines of authority at DOE/headquarters for RCRA implementation.

2.2.8 DOE Order 5400.4, Integration of NEPA and CERCLA

DOE Order 5400.4 establishes DOE policy on integrating NEPA and CERCLA processes for ER projects.

2.2.9 DOE Order 5400.5, Radiation Protection of the Public and Environment

DOE Order 5400.5 establishes requirements for the control of radioactivity in discharges such as liquid wastewater effluents. It also establishes criteria for residual levels of radioactivity in soils or on equipment that is being released back into the public domain.

2.2.10 DOE Order 5440.1D, NEPA Compliance Program (2/22/91)

DOE Order 5440.1D establishes internal DOE responsibilities and procedures for implementing NEPA. It directs DOE line management to incorporate NEPA requirements early in the planning process by proposed actions.

2.2.11 DOE Order 5480.1B, Environment, Safety, and Health Program for DOE Operations (9/23/86)

DOE Order 5480.1B outlines (1) environmental protection and safety and (2) health protection policies and responsibilities.

2.2.12 DOE Order 5480.3

DOE Order 5480.3 establishes the requirements for the packaging and transportation of hazardous materials.

2.2.13 Draft DOE Order 5480.X, Onsite Packaging and Transportation Safety of Hazardous Materials, Substances, and Wastes (11/15/91)

Draft DOE Order 5480.X requires that onsite packaging and transportation activities associated with hazardous materials, substances, and wastes be performed in a manner that ensures safety, health, and environmental protection.

2.2.14 DOE Order 5480.14

CERCLA requirements are now addressed in DOE Order 5480.14; however, a draft Order (5400.yy) is in circulation which will replace 5480.14. The draft Order provides DOE policy resolving RCRA/CERCLA overlap issues, integrating NEPA with RCRA/CERCLA processes, and resolving organizational conflict of interest issues for RCRA/CERCLA contractors.

2.2.15 DOE Order 5480.19, Conduct of Operations Requirements for DOE Facilities (7/9/90)

DOE Order 5480.19 establishes requirements and guidelines for departmental elements to use in developing directives, plans, and/or procedures relating to the conduct of operations at DOE facilities.

2.2.16 DOE Order 5700.6C, Quality Assurance

DOE Order 5700.6C requires that Quality Assurance be maintained by using the applicable requirements of American National Standards Institute/American Society of Mechanical Engineers Nuclear Quality Assurance 1989 (ANSI)/ASME NQA 1, "Quality Assurance Program Requirements for Nuclear Facilities."

2.2.17 DOE Order 5820.2A, Radioactive Waste Management (9/26/88)

DOE Order 5820.2A establishes policies, guidelines, and minimum requirements for managing radioactive and mixed wastes. This order requires that DOE LLW be managed to protect public health and safety and to preserve the environment. Waste management systems performance assessment of all aspects of waste generation is required. These include:

- waste reduction, segregation, minimization, and characterization;
- waste acceptance criteria;

- waste treatment, storage, shipment, and disposal; and
- disposal site selection, design, operation, and closure/post-closure.

Chapter V of DOE Order 5820.2A sets forth requirements for decommissioning radioactively contaminated facilities. Planning for facility decommissioning must be initiated during the design phase for new facilities and before termination of operations for existing facilities. Also, planners must consider the two-year budget cycle to ensure adequate funding availability.

Decommissioning project activities include facility characterization, the environmental review process (NEPA, RCRA, CERCLA, SARA), and technical engineering planning, which includes a Decommissioning Project Plan. Status reports on project activities must be prepared in accordance with DOE Order 1332.1A or 4700.1.

Post-decommissioning activities involve final chemical and radiological surveys and preparation of a final project report. The responsible field organization will compile a Project Data Package. Long-term maintenance, surveillance, and other safety controls will be provided by the responsible program organization. The decommissioned property may be released from DOE ownership according to the requirements of DOE Order 4300.1B. DOE Order 5700.6B requires that Quality Assurance be maintained by using the applicable requirements of American National Standards Institute/American Society of Mechanical Engineers Nuclear Quality Assurance 1989 (ANSI)/ASME NQA 1, "Quality Assurance Program Requirements for Nuclear Facilities."

2.3 FEDERAL AND STATE AGREEMENTS

As mentioned earlier, the State of Tennessee has authorization to administer its own Resource Conservation and Recovery Act (RCRA) program in lieu of the federal program [except for those provisions of RCRA imposed by the Hazardous and Solid Waste Amendments of 1984 (HSWA)]. Tennessee also has the authority to regulate mixed hazardous and radioactive wastes. The Tennessee Hazardous Waste Management Act and its implementing regulations are administered by the Tennessee Department of Environment and Conservation (TDEC). Region IV of the Environmental Protection Agency (EPA) administers the federal RCRA program, including the HSWA provisions.

The following agreements are major site-specific requirements, which serve as bases for tasks discussed in this Site-Specific Plan.

2.3.1 Memorandum of Understanding (MOU) Between DOE, EPA, and TDEC for The Oak Ridge Y-12 Plant (5/26/83)

This MOU clarifies compliance objectives agreed upon by the U.S. Department of Energy (DOE), EPA, and TDEC during a meeting held on April 8, 1983. The MOU provides the actions agreed upon by the parties as constituting preliminary measures towards DOE achievement of full compliance with all federal and state pollution control laws at the Y-12 Weapons Plant (Y-12). The MOU outlines actions that DOE is required to take. It pertains to discharges to Upper East Fork Poplar Creek (UEFPC) and Bear Creek by pollutants discharged from:

- New Hope Pond,
- Chestnut Ridge Sediment Disposal Basin,
- S-3 ponds,
- Oil Retention Ponds,
- Chestnut Ridge Security Pits,
- Walk-in pits, and
- Oil Land Farm.

The MOU also includes:

- contamination of EFPC and Bear Creek,
- a groundwater study for Y-12, and
- a comprehensive monitoring plan for the plant.

2.3.2 Federal Facility Compliance Agreement (FFCA)

2.3.2.1 FFCA/EPA, DOE (Paducah, Portsmouth, K-25) (2/20/92)

An FFCA on management of certain polychlorinated biphenyl (PCB) wastes was signed by DOE and EPA on February 20, 1992. The FFCA covers specific PCB wastes at the two operating and one former gaseous diffusion plants (GDPs), specifically the Paducah Gaseous Diffusion Plant near Paducah, Kentucky, the Portsmouth Gaseous Diffusion Plant near Piketon, Ohio, and the Oak Ridge K-25 Site near Oak Ridge, Tennessee. Since these sites span multiple EPA regional jurisdictions, the FFCA was approved by both DOE and EPA Headquarters organizations.

The FFCA describes the process and timetable for the GDPs to come into compliance with two aspects of the Toxic Substances Control Act (TSCA) requirements: disposal of PCB electrical equipment and removal of PCB-contaminated gaskets from equipment used in the gaseous diffusion process. The gaskets which are to be removed are large sealing joints in the GDP process buildings. The electrical equipment, in general, has been removed from

service and is stored pending treatment or disposal. All activities under this FFCA are to be completed by 2015.

2.3.2.2 FFCA/EPA Region IV, DOE (Y-12) (3/9/85)

This FFCA assures DOE compliance with the Clean Water Act (CWA) and implementing regulations at Y-12. The agreement includes a compliance schedule and reporting requirements specifically designed to correct deficiencies in wastewater treatment at Y-12. The compliance schedule, which is Attachment A to the FFCA, lists and describes construction projects and includes dates for completion. Attachment B to the FFCA contains plans for Category III discharge elimination.

An amendment to the FFCA (3/26/85) extends the schedule for the central pollution control facility and establishes a schedule for the proper control and disposal of fly ash from the steam plant. A second amendment (9/12/86) modifies the schedule for the central pollution control facility and the West End treatment facility.

ORR and Paducah Gaseous Diffusion Plant agreements for Radionuclide National Emission Standards for Hazardous Air Pollutants were signed May 27, 1992. These agreements bring both DOE facilities into compliance with monitoring provisions of the Clean Air Act and its implementing regulations in 40 CFR Part 61, Radionuclides from DOE facilities.

2.3.2.3 FFCA/EPA Region IV, DOE (ORR) (6/12/92)

This FFCA assures DOE compliance with the Land Disposal Restrictions (LDR) of RCRA. The agreement sets forth the schedule and process for the identification of LDR wastes and the development of technologies to treat these wastes. Among the near-term deliverables are a Waste Minimization Plan, a Waste Storage Plan, a Waste Treatment Strategy Plan, and a Waste Treatment Methods Plan. As treatment options are identified for LDR wastes, treatability studies will be conducted leading to construction of treatment facilities.

2.3.3 Agreement in Principle Between DOE and the State of Tennessee (5/1991)

DOE agreed to provide grants to the State of Tennessee for the TDEC's independent oversight of environmental programs at the Oak Ridge Reservation (ORR). The grants support TDEC personnel to review and respond to Federal Facility Agreement documents, including remedial investigations, feasibility studies, remedial designs, and records of decision. The state will also conduct independent monitoring and sampling, both on-site and off-site.

2.3.4 Federal Facility Agreement (FFA)

An FFA between EPA Region IV, TDEC, and DOE has been approved and was implemented on January 1, 1992, for the ORR site. The FFA is intended to satisfy the requirements for an interagency agreement under section 120 of CERCLA. The agreement establishes a procedural framework and schedule for developing, coordinating, implementing, and monitoring response actions at the site. The activities covered by the Agreement will do the following:

- achieve compliance with CERCLA,
- satisfy the corrective action requirements of 3008(h) of RCRA for interim status facilities, and
- meet or exceed all applicable or relevant and appropriate federal and state requirements to the extent required by 121 of CERCLA.

The FFA specifically identifies the inactive remediation units on the ORR site. Operable units are identified from the remediation units listing prior to the implementation of the final remedial action(s) for the site. The agreement establishes the requirements for performing remedial investigation and feasibility studies (RI/FSs) and identifies the nature, objective, and schedule of response actions.

Also addressed within the Agreement are the requirements for active and inactive underground liquid low-level radioactive waste (LLLW) tank systems to ensure structural integrity, containment, and detention of releases. The FFA establishes source control for all LLLW tank systems pending final remedial action of the tanks as they are identified as inactive and removed from service.

2.4 STATE ORDERS

2.4.1 Tennessee Department of Environment and Conservation (TDEC) Order/Division of Water Quality Control, No. 83-228 (9/15/83)

The U.S. Department of Energy (DOE) agreed to the following relief measures in this complaint and Order pertaining to Bear Creek:

- cease disposal and/or discharge into the S-3 ponds of all materials, except for those necessary to treat the S-3 ponds;
- cease disposal of solid wastes in the current burial ground disposal pits;
- submit to the TDEC a plan and a schedule for the rehabilitation of Bear Creek;
- submit a report which characterizes wastewater discharged from the burial ground oil pond;

- apply for National Pollutant Discharge Elimination System (NPDES) permit for the discharges;
- report inventorying waste deposited in the burial ground oil pond watershed; and
- provide a written proposal and schedule for remedial action for the Bear Creek watershed area.

2.4.2 TDEC Order (9/15/83)/Division of Water Quality Control, No. 83-228 (12/6/84)

This order requires that DOE submit a report to TDEC which includes a map of all discharge pipes from Y-12 into Upper East Fork Poplar Creek (UEFPC), an effluent description of these discharges, and a determination of which discharge points will be eliminated. DOE is further required to provide:

- an effluent sampling proposal,
- NPDES permit application for those effluents,
- plans for managing process waste streams,
- characterization of wastes deposited at New Hope Sludge Disposal Area,
- report on the United Nuclear Corporation disposal site,
- report on unclassified material in the Classified Burial Ground, and
- characterization of waste in all other classified disposal sites in the UEFPC watershed area.

DOE is also required to cease any remaining process or area source discharges for which application for NPDES permits have not been made.

2.4.3 TDEC Order for Correction/Division of Solid Waste Management, No. 84-374-11 (12/6/84)

This order for correction requires DOE to submit Resource Conservation Recovery Act (RCRA) Part A Permit applications and closure and post-closure plans for the S-3 ponds, New Hope Pond, Bear Creek burial grounds, and the Oil Land Farm.

2.4.4 TDEC Order for Correction/Division of Solid Waste Management, No. 84-374, 84-2121AG (12/6/84)

This order requires DOE to comply with the interim status standards of Tennessee hazardous waste regulations for all mixed waste facilities until hazardous waste permits are issued by TDEC. DOE is further required to comply with the conditions of hazardous waste permits issued by TDEC and to submit a schedule to TDEC for submittal of all RCRA Part B Permit applications for mixed waste facilities.

2.4.5 TDEC Order/Division of Solid Waste Management, No. 87-3310 (3/17/88)

DOE is ordered to remove (and overpack, if necessary) all drums of hazardous waste from any standing water within Y-12. DOE is further required to take all required measures to ensure that no releases of untreated runoff water contain hazardous waste constituents. DOE is required to close the remaining active portion of the S020 container storage area in accordance with the Order.

A listing of federal and state agreements and Unilateral Environmental Orders is also presented in Appendix B. Funded activities are in place to address all agreements and Orders.

2.4.6 TDEC Order/Division of Solid Waste Management, No. 91-3205 (9/17/91)

DOE and Martin Marietta Energy Systems are ordered to implement Phase I and Phase II of the Draft Action Plan for the management of K-1407-B and -C waste ponds at the Oak Ridge K-25 Site and are to pay a Civil Penalty of \$96,004.

3.0 ORGANIZATION/MANAGEMENT

3.1 ORGANIZATION

The three sites on the Oak Ridge Reservation (ORR) are managed for the U.S. Department of Energy (DOE) by Martin Marietta Energy Systems, Inc. (Energy Systems). As the managing contractor, Energy Systems manages the environment, safety, and health (ES&H) programs at the sites and supports the DOE/Oak Ridge Field Office (OR) organization in the management of the overall ES&H program. Energy Systems has a strong environmental management organization and has further reorganized to parallel recent changes in the DOE/OR Environmental Restoration (ER) and Waste Management (WM) Organization (EM).

Within Energy Systems, total oversight of all ES&H activities, as well as interface roles on behalf of Energy Systems, is the responsibility of Environmental and Safety Activities (ESA). The ESA is a central staff organization reporting directly to the president of Energy Systems. All oversight, policy, and regulatory interaction within Energy Systems is the responsibility of this organization. ESA has direct interface with the DOE/OR assistant manager for safety and environment and with the assistant manager for ER and WM (AMERWM).

At each site, ES&H organizations are charged with ensuring that the site meets the goals of full compliance with all current regulations. In addition, ES&H organizations should anticipate, participate in, and plan for compliance with future regulations. Although these organizational units report to the respective Energy Systems site manager, they also report in a matrix manner to the central ESA organization. An organizational overview for the Energy Systems ER, WM, and Technology Development (TD) program is shown in Figure 3.1.

DOE/OR has placed the management responsibility for all ER and WM activities under the AMERWM. There are four divisions within the AMERWM organization: ER, WM, Former Sites Restoration, and the Weldon Spring Site. The Former Sites Restoration and the Weldon Spring Site activities are independent of the activities covered under this site-specific plan. In addition, the Paducah and Portsmouth Gaseous Diffusion Plants, also operated by Energy Systems, are addressed in separate Site-Specific Plans (SSPs).

**MARTIN MARIETTA ENERGY SYSTEMS, INC.
ENVIRONMENTAL RESTORATION AND
WASTE MANAGEMENT PROGRAM**

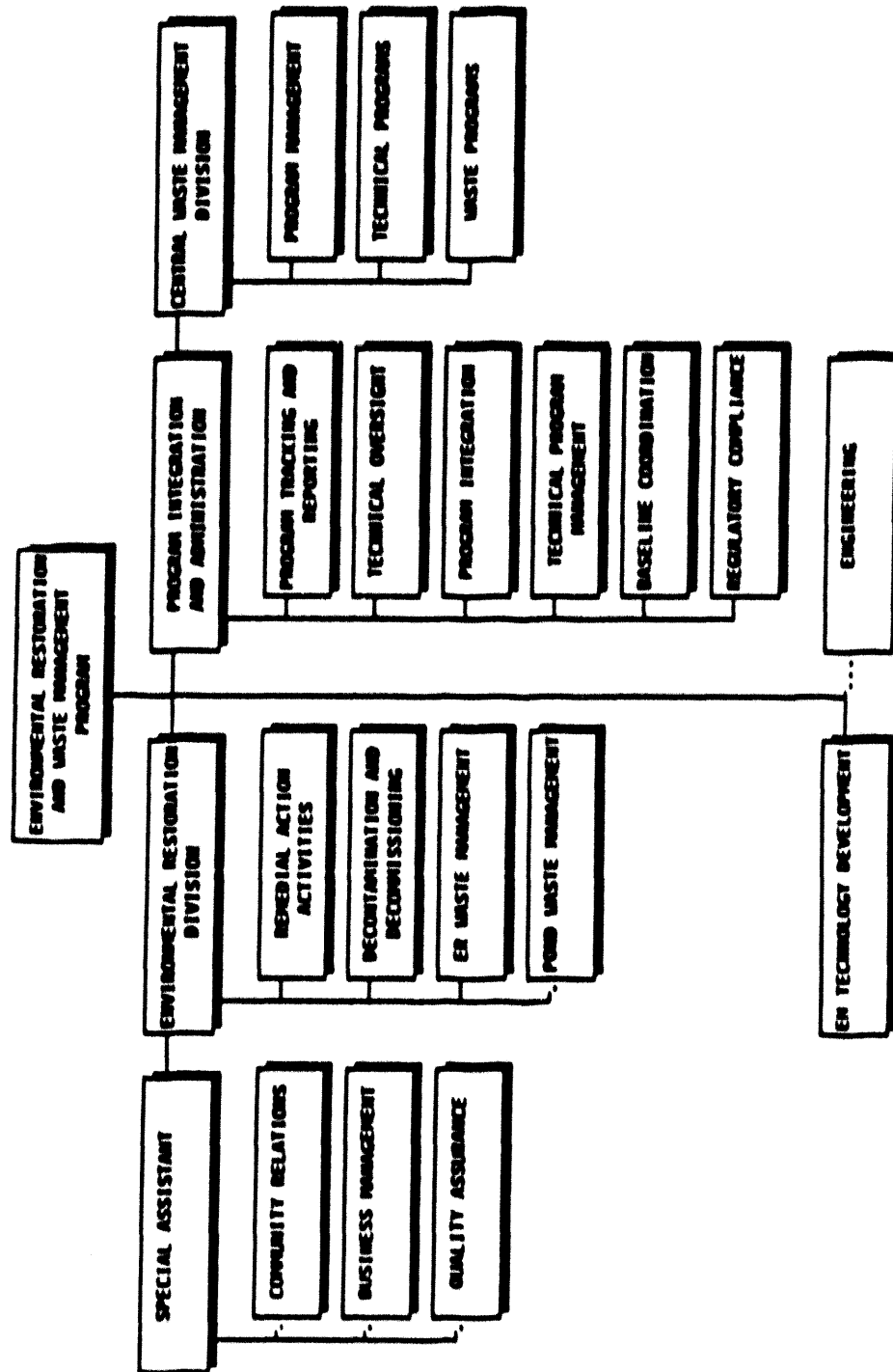


Figure 3.1.

3.1.1 Corrective Activities (CA) and Waste Management (WM) Operations

DOE/OR WM Division under the AMERWM is responsible for the following activities at all EM-owned facilities:

- overall planning,
- budget development,
- programmatic management, and
- execution of CA and waste operations.

These activities are implemented by the Energy Systems site manager. The DOE Site Office at each site continues to be responsible for facilities at that site that are owned by its respective DOE program.

Energy Systems has established the Central Waste Management Division (CWMD) with the responsibility of implementing WM and CA programs for ORR. The mission of CWMD covers these broad areas:

- ORR-wide WM programs coordination;
- program planning and technical support for all radioactive, hazardous, medical and infectious, mixed, and sanitary waste operations;
- waste reduction at the Energy Systems facilities;
- developing, coordinating, and operating centralized waste treatment, storage, and disposal facilities;
- budget planning; and
- program reporting for CA and WM.

Reducing the generation of waste continues to be a current goal of line management at WM. Energy Systems ESA is responsible for the policy and regulatory interaction oversight of CA and WM.

3.1.2 Environmental Restoration (ER)

Energy Systems Environmental Restoration Division (ES-ERD) is responsible for ER activities. It is a centralized organization reporting to the Energy Systems vice-president for Technical Operations and is the integration contractor responsible for program management and implementation of ER activities. ES-ERD is responsible for:

- K-25 Site (K-25),
- Y-12 Plant (Y-12),
- Oak Ridge National Laboratory (ORNL),
- the Paducah Gaseous Diffusion Plant in Kentucky, and
- the Portsmouth Gaseous Diffusion Plant in Ohio.

Responsibilities of ES-ERD also include programmatic implementation of remedial investigations and technical and financial reporting. The DOE/OR organization responsible for implementation of ER activities is the ERD under the AMERWM.

The Energy Systems Decontamination and Decommissioning (D&D) Program Office also reports to the vice-president of Technical Operations. It is now part of ER and is responsible for the management oversight of D&D programs at the three sites. Management oversight includes:

- developing strategies,
- prioritizing budgets,
- ensuring consistency of approaches,
- focusing communication, and
- compiling progress/status reports.

Plant management at the sites is responsible for activities that include maintenance and surveillance of inactive sites and facilities as well as D&D of surplus facilities.

The ES-ERD interfaces with plant management at the sites on activities for which it has implementation responsibility via an on-site program manager.

ES-ERD's responsibilities are:

- conducting a groundwater monitoring program for sampling and analyzing groundwater wells that support remedial investigations;
- establishing priorities and allocating funds between sites for remedial investigations, interim corrective measures, and final remediations;
- identifying new treatment/storage facilities required exclusively for remediation; and
- ensuring that subcontractors engaged in remedial investigations and remediations have effective health and safety procedures in place.

Energy Systems' responsibilities are:

- continuing routine maintenance, surveillance, and compliance monitoring of inactive sites before and after remedial actions are completed;
- completing Resource Conservation and Recovery Act closures that were in progress in FY89;
- overseeing overall health, safety, and environmental activities during all work conducted at the site;
- overseeing ES-ERD subcontractors engaged in remedial investigations and remediation at the site; and
- implementing D&D activities.

The total oversight of all environmental programs, as well as management of the regulatory interface and interaction on behalf of Energy Systems, is the responsibility of the Central Environmental and Safety Activities organization.

3.1.3 Technology Development (TD) and Transportation Management (TM)

The ORNL Waste Research and Development (R&D) Programs Office manages the research and development portions of the Environmental Restoration and Waste Management (ERWM) programs for all operating units of Energy Systems. The director of the Waste R&D Programs Office reports directly to the Vice President for ERWM at Energy Systems, through whom all funding and tasks are passed by DOE/OR from DOE/Headquarters.

The Waste Research and Development Programs (WRDP) Office is responsible for ensuring milestones and commitments are met within the established funding levels. Management at each site is responsible for managing the people and facilities associated with TD projects.

The Office of Technology Development has designated a Technical Program Officer (TPO) at each Field Office to have the overall responsibility for TD activities. The Energy Systems counterpart to the TPO is the Technical Program Manager (TPM), who is also the director of WRDP. The TPO and TPM regularly interact in the management of the TD/TM program. The TPO is in the AMERWM organization at DOE/OR.

The TPM interfaces with the ERD and CWMD to ensure that development activities address Energy Systems' needs, as well as benefitting DOE. The TPM participates in regular meetings with other TPMs and TPOs, to ensure that results obtained are exchanged with other DOE sites.

The purpose of the TM program is to resolve transportation issues economically, safely, and promptly. To accomplish this goal, the program manages and coordinates policies and procedures for all of DOE's unclassified shipping activities to foster a safe, efficient, and cost-effective transportation system. TM is functionally located within DOE's Office of Environmental Restoration and Waste Management. Support is provided through DOE/OR. A Transportation Manager has been appointed to coordinate all DOE/OR activities.

DOE/OR activities support TM's missions to provide safe, efficient, and economical transportation of DOE-owned materials, including radioactive and hazardous materials. Efforts are made through the various projects to ensure compliance with applicable federal, tribal, state, local, and internal DOE requirements that govern the packaging, handling, transporting, and storing of DOE materials and waste. Program support is also provided in the areas of operations and outreach.

3.2 MANAGEMENT

The assigned technical personnel of the Energy Systems site environmental, Waste Management (WM) organizations, the central Energy Systems-Environmental Restoration Division (ES-ERD), and waste organizations coordinate the activities to be performed under the plan. The Central Waste Management Division (CWMD) is responsible for management and implementation of the WM and Corrective Activities (CA) programs for Oak Ridge Reservation (ORR). These activities include program and budget planning and reporting. The site WM organizations continue to have line responsibilities for current operations. Environmental Restoration (ER) activities are coordinated through the ES-ERD organization that has the responsibility for program implementation at each of the following sites:

- K-25 Site (K-25),
- Oak Ridge National Laboratory (ORNL),
- Y-12 Plant (Y-12),
- East Fork Poplar Creek, and
- Bear Creek.

The environmental and safety activities (ESA), ERD, and site staff work closely with the individual site representatives to ensure that appropriate documentation is in place for activities conducted at each of the sites.

Energy Systems quality organization is responsible for overall appraisal activities for environment, safety, and health (ES&H) functions. Technical and staff support for the appraisal activities is provided through ESA. The central ESA organization and the site organizations are responsible for audits and surveillance of ES&H activities at the sites.

Management of these activities includes ensurance that:

- work to be done has been identified, planned, scheduled, and budgeted before authorization and that
- there is proper control over initiation of, or changes to, authorized activities.

Management provides for planned procurement and contracting activities and realistic contingency planning. Performance is monitored through use of standard procedures for collecting and reporting costs, schedules, and technical performance data. These reports are transmitted monthly to the DOE/Oak Ridge Field Office assistant manager for ER and WM.

See Figure 3.2 for an organizational overview of OR Environmental Restoration and Waste Management.

DOE OAK RIDGE FIELD OFFICE
ENVIRONMENTAL RESTORATION AND
WASTE MANAGEMENT

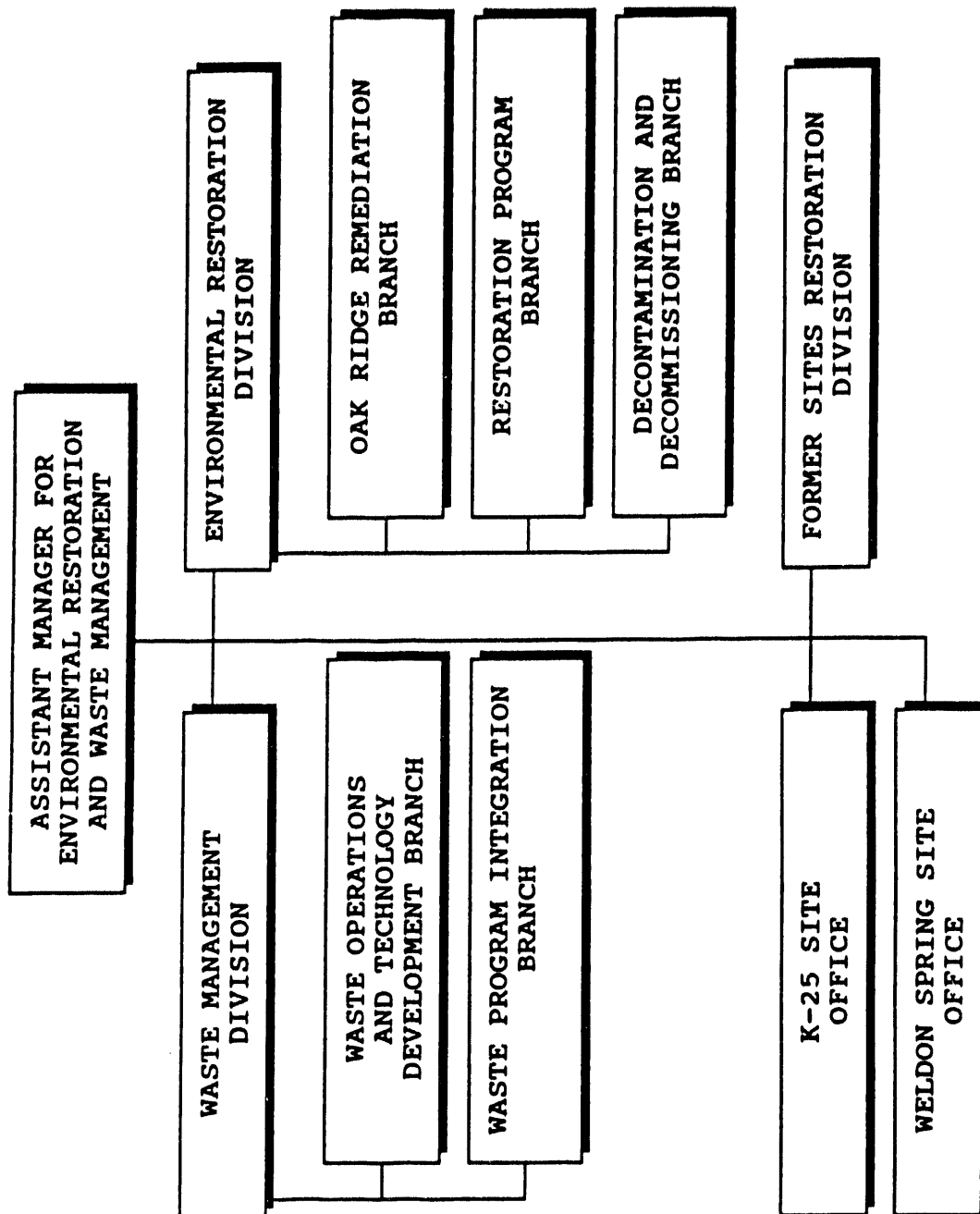


Figure 3.2.

4.0 CORRECTIVE ACTIVITIES

The Department of Energy (DOE) is required to comply with all federal, state and local regulations. However, if an out-of-compliance condition is cited by regulators, DOE would conduct Corrective Activities (CA). CA are discrete and focused efforts which are made to amend out-of-compliance conditions. This category includes identification, evaluation, funding, implementation, and closeout. Routine activities or long-term programmatic efforts are not a part of CA.

All Oak Ridge Reservation (ORR) facilities have CA designed to identify and correct practices that violate current regulations and to minimize the potential for future violations. CA being carried out to bring ORR facilities into compliance include:

- changing processes to reduce pollutants,
- constructing new waste treatment facilities,
- improving pollution control systems, and
- improving monitoring and sampling of waste streams.

All CA projects by definition are Priority 1 activities. The interim waste management (WM) priority system defines Priority 1 projects as those activities that are necessary to prevent near-term adverse impacts to workers, the public, or the environment. Priority 1 projects are also ongoing activities required to maintain safe conditions or prevent significant program and/or resource impacts.

DOE-headquarters (DOE/HQ) has modified the definition of CA so that only activities currently receiving an official notice of violation from a regulatory body can be classified as a CA. As a result, projects previously identified in the FY92 Site-Specific Plan (SSP) but currently not receiving notice of violations have been transferred to WM funding beginning in FY93. Such projects are identified in the following text.

4.1 Y-12 PLANT

The Y-12 Plant demands an integrated approach to a number of different but interrelated problems. The overall goal is full compliance with all current regulations and anticipation of, participation in, and planning for compliance with future developing regulations. The Y-12 Plant's Corrective Activities are managed by the Clean Water Program within the Environmental Management Department (EMD).

EMD provides oversight and coordination service to all Y-12 Plant managers to ensure that every activity conducted on the site is environmentally acceptable and is in compliance with all applicable DOE, state, and federal regulations. The services are provided in accordance with Energy Systems policies and contract commitments and within the framework of DOE supported programs and resources at the Y-12 Plant.

To comply with requirements of the Clean Water Act (CWA), the Y-12 Plant has developed an environmental strategy for water pollution control that combines the use of state-of-the-art technology with conventional means of pollution control. Each pollutant source is traced from initiation to final discharge, and all studies, countermeasures, and monitoring activities associated with it are identified.

4.1.1 Steam Plant Ash Disposal Facility, Line Item Facility
(FY94 ADS: OR-2101)
(FY93 ADS: OR-204)

4.1.1.1 Description

The Steam Plant Ash Disposal Facility line item project's purpose is to bring the disposal of coal ash from the Y-12 Steam Plant into environmental compliance and to provide additional landfill capacity for disposal of industrial wastes generated by the three Oak Ridge facilities.

4.1.1.2 Status of FY92 SSP Objectives

Steam Plant Ash Disposal Facility -- A permit application was submitted to the State of Tennessee for Construction/Demolition Landfill VII and Industrial Landfill V. Designs were completed for all remaining subprojects. Construction began on the landfills and dewatering system.

4.1.1.3 FY93 Objectives

Steam Plant Ash Disposal Facility -- Complete construction on the two landfill subprojects.

4.1.1.4 FY94-98 Objectives

Steam Plant ash Disposal Facility -- Complete all construction activities and begin operation of the landfills and the Bottom Ash Dewatering System.

4.1.1.5 List of FY93 Scheduled Milestones

- **Begin Operation of the Industrial Waste Landfill V and submit letter report to DOE/HQ (EM-321).**

07/93

4.1.1.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
2101	\$ 0

4.1.2 Corrective Activities

(FY94 ADS: 2102)

(FY93 ADSs: OR-245CA, OR-247CA, OR-250CA)

4.1.2.1 Description

Treatment Plant Discharges project provides modifications and improvements to the Y-12 on-site wastewater treatment facilities to ensure compliance with discharge permit requirements.

The Non-Point Source Pollution Control task assesses non-point sources to define scope for a proposed line item project to reduce pollutant loading runoff or groundwater migration through contaminated areas. This includes:

- **refinement of stream management analysis programs,**
- **flow calculations, and**
- **development of a prioritization system for pollutant removal feasibility studies and stormwater management.**

The Cooling Towers activity provides for procurement and installation of ozonation units for recirculatory cooling towers at Y-12. Ozonation is needed to significantly reduce blowdown to East Fork Poplar Creek (EFPC) and to bring the towers into compliance with the National Pollutant Discharge Elimination System (NPDES) permit.

4.1.2.2 Status of FY92 SSP Objectives

Treatment Plant Discharges -- Feasibility studies are being conducted to determine the appropriate number of additional treatment units needed to comply with NPDES permit requirements and as low as reasonably achievable (ALARA) considerations initiated. The

conceptual design report (CDR) for the line item project will be initiated following the feasibility study.

Non-Point Source Pollution Control -- Stormwater best management practices were developed. A preliminary feasibility study for treatment options for areas of contamination is being conducted. A systems requirement document is also being prepared.

Cooling Towers -- Procurement specifications and installation drawing were developed. National Environmental Policy Act (NEPA) documentation was completed. Equipment is in the process of being procured and installation will begin on the first unit.

4.1.2.3 FY93 Objectives

Cooling Towers -- Ozonation units for three towers will be purchased and installed.

4.1.2.4 FY94-98 Objectives

Cooling Towers -- Ozonation units for ten towers will be purchased and installed.

4.1.2.5 List of FY93 Scheduled Milestones

- Complete conceptual design report for Cooling Water Discharge Project. 12/92
- Begin conceptual design report for Treatment Plant Discharge Project (Line Item). 02/93
- Complete environmental documentation for Non-Point Source Pollution Control Project. 09/93

4.1.2.6 FY93 Funding

<u>ADS No.</u>	<u>\$</u> <u>x 1000</u>
2102	\$ 600

4.1.3 General Plant Projects, Corrective Activities

(FY94 ADS: OR-2103)
(FY93 ADSs: OR-244CA,
OR-246CA, OR-260CA,
OR-261CA)

4.1.3.1 Description

The Non-Permitted Plant Drains activity is for rerouting sinks, drains, and sumps from the Y-12 Plant storm drain system to the sanitary sewer system for on-site treatment. The project also includes a program to plug or abandon floor drains that are currently routed into EFPC. The activity includes:

- planning efforts in support of general plant projects and line item projects,
- minor drain rerouting as expense projects, and
- capital improvements as general plant projects.

The Cooling Water Discharge project addresses reduction of chlorine and temperature in discharges of once-through cooling waters into EFPC. The activity provides line item planning, NEPA documentation, and general plant projects for installation of dechlorination stations, and recycle projects.

The Sanitary Sewer Rehabilitation project provides for the design and construction of a new sanitary sewer monitoring station and a phased program for the elimination of the inflow of extraneous clean water into the sanitary sewer system. The activity covers planning, NEPA documentation, expense-type corrections, and general plant projects for realignment of sewer lines.

4.1.3.2 Status of FY92 SSP Objectives

Non-Permitted Plant Drains -- Drain studies continue to determine the sources of water entering the storm and sanitary drain systems. Designs have been conducted for general plant projects for rerouting of drain lines. NEPA documentation was initiated. Expense projects for minor repairs were conducted.

Cooling Water Discharges -- A pilot dechlorination station was installed and tested. Assessment of the need for additional dechlorinations systems was conducted. The conceptual design report for the Cooling Water line item project was completed.

Sanitary Sewer Rehabilitation -- An engineering design report was completed and submitted to the City of Oak Ridge and the Tennessee Department of Environment and Conservation for review and concurrence. Rehabilitation of sewer lines to eliminate cross-connections between the storm and sanitary sewer systems continues.

4.1.3.3 FY93 Objectives

Non-Permitted Plant Drains -- Planning for the line item, general plant projects, and expense repairs will continue. Reconnection of sinks and drains will be accomplished.

Treatment Plant Discharges -- The CDR for the line items project will be completed.

Cooling Water Discharges -- The CDR for the line item project will be completed.

Sanitary Sewer Rehabilitation -- The monitoring station installation will be complete.

4.1.3.4 FY94-98 Objectives

None.

4.1.3.5 List of FY93 Scheduled Milestones

- Complete conceptual design report for Non-Point Source Pollution Control Project (Line Item). 12/92
- Begin drain reroute GPP construction (Bldg. 9202, 9203, and 9995). 04/93
- Complete dechlorination units GPP design. 04/93
- Complete construction of GPP #1 for Non-Permitted Plant Drains. 09/93
- Complete sanitary sewer expense CA field work. 09/93

4.1.3.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
2103	\$ 430

4.2 OAK RIDGE NATIONAL LABORATORY

The four Oak Ridge National Laboratory (ORNL) Corrective Activities described below are intended to mitigate release of contaminants from existing underground pipelines and storage tanks.

4.2.1 Bethel Valley Liquid Low Level Waste - Collection and Transfer System Upgrade (FY94 ADS: OR3101) (FY93 ADS: OR302)

4.2.1.1 Description

Bethel Valley Liquid Low Level Waste - Collection and Transfer System Upgrade (LLLW-CAT) -- The purpose of this project is to upgrade a significant part of the ORNL LLLW CAT system to protect:

- personnel and public safety and health,
- the environment, and
- to meet all applicable regulations in support of the ORNL's research mission.

The existing system must be modified to comply with provisions of the Federal Facility Agreement (FFA), which requires secondary containment, leak detection, and other safety features. The general design criteria for this project are summarized as follows:

1. All pipelines and tanks that handle LLLW shall have an active system for leak detection and shall have double containment to prevent environmental contamination if a leak occurs in the primary containment system;
2. Metal surfaces in contact with soil shall be cathodically protected to reduce the potential for external corrosion; and
3. Transported waste shall meet all ORNL and DOE requirements for transportation of regulated substances.

4.2.1.2 Status of FY92 SSP Objectives

Bethel Valley LLLW-CAT System Upgrade -- The detailed design was completed in January 1991 for the Fixed-Price Construction Package that includes:

- Transported Waste Receiving Facility (TWRF) Building 2649,
- Monitoring Control Station (MCS) for Building 2026, and
- the transfer line and valve box for the upgrade of building 3092.

Other design packages completed include:

- Sampler Recirculation Piping and Control for the MCS for Building 2026,
- MCS for Building 3525,
- Generic Bottled Waste Collection System,
- Waste Transport Bottle,
- Bottle Transport Truck,
- Sampler Assembly,
- Waste Operation Control Center room modifications,
- TWRF Bottle Storage Racks, and
- TWRF Bottle Evacuation and Decontamination Assembly.

A Readiness Review for construction of the fixed-price Construction Package was conducted. Fabrication of the LLLW tanks for the MCS was completed and approximately 300 ft of LLLW piping have been installed.

4.2.1.3 FY93 Objectives

Bethel Valley LLLW-CAT System Upgrade -- Objectives include:

- completion of the TWRF;
- the hot tie-in from the TWRF to the LLLW collection system;
- decontaminate and complete construction of the internal piping in the High Radiation Level Analytical Laboratory (HRLAL) and make hot tie-ins to the LLLW system; and
- complete construction of the Central Off-Gas Scrubber (COGS) (Building 3092) and make hot tie-ins to the LLLW system.

4.2.1.4 FY94-98 Objectives

Bethel Valley LLLW-CAT System Upgrade -- Objectives for this five-year period include Title III for the TWRF and COGS, plus system checkout and testing, as-built drawings, operating procedures, completion of the Systems Safety Analysis, programmatic functions, and an Operational Readiness Review. Decontamination and construction of any remaining work associated with this project will be conducted. In addition, continuation of this project will occur with FY94 funding to perform the 3525 internal and external piping, the 3525 MCS, the bottle truck, sampler room renovations, and continuation of the COGS (3092) construction. Design was completed as part of Phase I; only design reviews will be needed before construction packages can be assembled. Objectives will include design, procurement, decontamination, construction, testing, and operation of the COGS facility, the 3525 piping and MCS, the bottle truck, and the sampling room renovation.

4.2.1.5 List of FY93 Scheduled Milestones

- Complete construction of the TRWF.

09/93

4.2.1.6 FY93 Funding

<u>ADS No.</u>	<u>\$</u> <u>x 1000</u>
3101	\$ 0

Activities in the Corrective Activities (CA) category are transferred to waste management (WM) Activity Data Sheet (ADS) OR-3206 (the old ADS OR-378) in the amount of one million dollars per DOE Guidance (FY93 only). (See Section 6.2.6.6.)

4.2.2 Melton Valley LLLW-CAT System Upgrade (FY94 ADS: OR-3102) (FY93 ADS: OR-304)

4.2.2.1 Description

Melton Valley LLLW-CAT System Upgrade -- This project provides a new and upgraded system for collection and transfer of hazardous LLLW from the Melton Valley waste-generating and processing facilities to the evaporator at ORNL. The existing Melton Valley LLLW system does not have an active leak detection system or full secondary containment except for a few short line segments. The existing system must be modified to comply with provisions of the January 1, 1992, FFA, which requires secondary containment and leak detection and other safety features. The effective date of the agreement is January 1, 1992. The Melton Valley LLLW CAT System Upgrade will serve the High Flux Isotope Reactor (HFIR) and Radiochemical Engineering Development Center complexes and tie into the upgraded central collection system. A shift in category from CA to WM will occur at the end of FY95 but will leave activity levels unchanged. The upgrade of the Melton Valley LLLW-CAT system would consist of seven major components:

- installation of several hundred feet of doubly contained pipe,
- installation of doubly contained transfer piping,
- upgrade and decontamination of the two filter pits,
- construction of a monitor and control station for the treatment and transfer capability to Bethel Valley evaporator,
- installation of an ion exchange facility at HFIR, and
- construction of a storage pad.

4.2.2.2 Status of FY92 SSP Objectives

Melton Valley LLLW-CAT System Upgrade -- The Conceptual Design Report was completed in May 1990. The Risk Analysis was completed in April 1992, and the Readiness Review process was completed prior to the Title I Design. The Value Engineering Study was completed in May 1992. The Configuration Management Plan, Project Management Plan, and WM Plan were completed in 1992. The Engineering Quality Assurance (QA) Plan was completed in July 1992. The Project Records Plan was completed in March 1991. A Preliminary Safety Analysis Report was issued for comment in September 1991. The design criteria was completed in March 1992. The Environmental Assessment was reviewed and commented on in May 1991. Comments were incorporated in January 1992, and is currently under review. The Title I Design was initiated in April 1992 and is currently ongoing.

4.2.2.3 FY93 Objectives

Melton Valley LLLW-CAT System Upgrade -- The objective for FY93 is to have the detailed design 90 percent complete and a Readiness Review initiated for approval and completion of all design activities before start of construction activities. Also, the QA Plan for construction will be amended to the existing QA Plan before construction begins. The detailed design will begin in July 1992 and will be completed by June 1994.

4.2.2.4 FY94-98 Objectives

Melton Valley LLLW-CAT System Upgrade -- Over the next five years, the objective is to have the Melton Valley LLLW System Upgrade designed, constructed, and operational.

4.2.2.5 List of FY93 Scheduled Milestones

- Complete Architect-Engineer Work (Title I Detail Design) 12/92
for the Melton Valley LLLW-CAT System Upgrade.
- Start Architect-Engineer Work (Title II Detail Design) 03/93
for the Melton Valley LLLW-CAT System Upgrade.

4.2.2.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
3102	\$16,400

4.2.3 Corrective Activities - Defense (FY94 ADS: OR-3103)
(FY93 ADS: OR-378)

4.2.3.1 Description

Federal Facility Agreement (FFA) -- Activities associated with this task (ADS OR-3103) implement the requirements of the FFA as they pertain to the active Oak Ridge National Laboratory (ORNL) LLLW tanks and tank systems. Only a portion of the tasks are covered under this area. Work under this ADS has been transferred to ADS OR-3206. (See Section 6.2.6.)

4.2.3.2 Status of FY93 SSP Objectives

No further activity. See Section 6.2.6.

4.2.3.3 FY93 Objectives

No further activity. See Section 6.2.6.

4.2.3.4 FY94-98 Objectives

No further activity. See Section 6.2.6.

4.2.3.5 List of FY93 Scheduled Milestones

No further activity. See Section 6.2.6.

4.2.3.6 FY93 Funding

No further activity. See Section 6.2.6.

4.2.4 Corrective Activities - Nondefense (FY94 ADS: OR-3104) (FY93 ADS: OR-310AA)

4.2.4.1 Description

Subtitle I Tanks -- Capital equipment is provided for the replacement of leaking underground storage tanks at ORNL in order to meet requirements of Resource Conservation and Recovery Act Subtitle I.

4.2.4.2 Status of FY92 SSP Objectives

Subtitle I Tanks -- The objective for FY92 is to replace four tanks (3125, 4500S, 2519, and 2026).

4.2.4.3 FY93 Objectives

Subtitle I Tanks -- Activities are discussed in ORNL's Landlord Operations ADS OR-3401.

4.2.4.4 FY94-98 Objectives

Subtitle I Tanks -- Responsibility for this activity is shifted to Energy Research and will not be reported in this Site-Specific Plan.

4.2.4.5 List of FY93 Scheduled Milestones

Activities are discussed in ORNL's Landlord Operations ADS OR-3401.

4.2.4.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
3104	\$ 0

4.3 K-25 SITE

The K-25 Site has three corrective activities (CA) projects necessary to bring K-25 into compliance with the anticipated National Pollutant Discharge Elimination System (NPDES) permit: Toxicity Reduction, Sewage Collection System Rehabilitation, and NPDES Monitoring Equipment.

4.3.1 K-25 Corrective Activities and General Plant Projects, CA (FY94 ADSs: OR-4102, OR-4103) (FY93 ADSs: OR-403, OR-404, OR-433)

4.3.1.1 Description

The intent of the toxicity reduction project is to reduce flows to the Central Neutralization Facility (CNF) in order to avoid noncompliance with the anticipated NPDES permit. Storm drain lines from the coal storage yard area by the K-25 Steam Plant will be rerouted from the CNF once the coal is completely removed and the coal yard is restored to its natural state. This will prevent overloads at the CNF during periods of heavy rainfall. Modification of the K-1501 Steam Plant water treatment softener transfer lines to gravity flow underground lines will eliminate the potential for freezing and resulting leaks associated with the existing overhead lines.

The intent of the sewage collection system rehabilitation project is to eliminate nonconformance to the NPDES permit due to water infiltration into the sewage collection system. Currently, heavy rainfall over an extended period of time results in flow to the

K-1203 sewage treatment plant exceeding its treatment capacity. Nonconformances to the NPDES permit result from these conditions. This project was originally scoped as a general plant project but has since been upgraded to a line item and will move from CA to waste management (WM).

The NPDES monitoring equipment project was to provide equipment and instruments necessary to monitor storm drains at the K-25 Site. The monitoring was to include Ph and conductivity measurements, flow metering, and flow proportional composite sampling. It has since been determined that this equipment is not needed, and the funds have been reprogrammed.

4.3.1.2 Status of FY92 SSP Objectives

The coal pile elimination design work was completed and construction activities have begun in FY92. The softener effluent reroute project will be completed this fiscal year. Sewage collection system activity is discussed under the WM section.

4.3.1.3 FY93 Objectives

The coal pile elimination work will be completed this year, and the storm drain rerouted from CNF.

4.3.1.4 FY94 - FY98 Objectives

There are no corrective activities scheduled for the outyears.

4.3.1.5 List of FY93 Scheduled Milestones

- Complete storm drain rerouting. 12/92

4.3.1.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
4102	\$ 0
4103	<u>\$ 554</u>
Total K-25 CA	\$ 554

5.0 ENVIRONMENTAL RESTORATION

Environmental Restoration (ER) projects assess and clean up U.S. Department of Energy (DOE) sites and facilities that are no longer active in ongoing operations. Waste of various types has accumulated at the Oak Ridge Reservation (ORR) sites from defense and research operations spanning nearly five decades. ER is divided into four areas of activity:

1. assessment of the nature and extent of environmental contamination;
2. Remedial Actions to clean up inactive waste sites that have the potential for releasing contaminants;
3. Decontamination and Decommissioning (D&D) to clean up surplus facilities; and
4. Research, Development, and Demonstration (RD&D) to apply new technology to enhance restoration activities.

It is ORR policy to comply with both the letter and spirit of all applicable federal, state, and local regulations and with DOE policies governing environmental protection. Historical practices at many DOE sites, although consistent with the standards of their time, did not fully recognize the potential hazards of certain materials. Many of these past practices are considered inadequate by modern standards. ER activities are conducted to ensure that all inactive ORR facilities meet current requirements for environmental cleanup and waste management.

The fundamental goal of ER is to ensure that contaminants at inactive or surplus facilities, and sites are either eliminated or reduced to prescribed, safe levels. Risks from these restored sites should be low enough to not endanger human health and safety or the environment. This goal is achieved by meeting separate strategic objectives established for remedial action and D&D. The six objectives identified for remedial action are:

1. Identify inactive, contaminated facilities and sites at ORR installations.
2. Assess these facilities and sites to determine the nature and extent of contamination.
3. Confine and contain existing contamination to the extent necessary to minimize further spread.
4. Coordinate with regulatory authorities for negotiated agreements specifying the requirements and schedule for cleaning up the identified facilities and sites.
5. Ensure that cleanup strictly complies with these agreements.
6. Provide long-term monitoring to ensure continuing compliance.

The four strategic objectives for D&D are to:

1. Maintain facilities awaiting either decontamination or decommissioning in a manner that limits worker, public, and environmental exposure to potential hazards.

2. Assess ORR facilities to determine the nature and extent of contamination.
3. Decontaminate facilities designated for reuse to the extent necessary for compliance with approved health and safety standards.
4. Decommission all other facilities in accordance with requirements set forth in an approved environmental compliance plan.

Research and development (R&D) activities in ER will be evaluated to emphasize those expected to provide return of benefits in as short a time as possible. R&D in ER has three objectives:

1. Provide an improved technical and economic basis for eliminating or minimizing environmental and health hazards by developing improved, and new, assessment and cleanup technologies.
2. Reduce the potential for worker exposure by developing automated, remote handling technologies.
3. Broaden the available technical base by adapting technologies not previously considered for R&D application in ER.

DOE has established four priority levels for ER reflecting discrete goals:

1. Limit immediate or short-term health risk and contamination.
2. Comply with in-place or pending agreements.
3. Reduce out-year risk, promote out-year compliance, address public concern, and protect DOE missions.
4. Accelerate overall compliance.

ER projects at ORR facilities and major milestones are detailed in the following sections.

5.1 Y-12 PLANT

The Y-12 Plant contains many facilities that have been used for treating, storing, or disposing of hazardous waste and hazardous substances. Examples of the facilities at Y-12 include landfills, drum storage areas, above-ground storage tanks, underground storage tanks, surface impoundments, and treatment facilities. These hazardous wastes include waste acids containing heavy metals, chlorinated solvents, polychlorinated biphenyls (PCBs), other organics, and radiological contaminants.

The first step in the remedial action process is to identify sites that have potential for releasing hazardous wastes into the environment. An assessment or investigation is then performed to determine whether the groundwater, surface water, or soil affected by the facility contains hazardous contaminants. If the investigation shows that the environment

at the facility is not contaminated, the area adjacent to the site is declared clean and the investigation work is documented. If the investigation shows that the environment is contaminated and poses a current or future unacceptable risk to human health or the environment, appropriate remedial actions are developed and implemented. After site remediation, surveillance and maintenance ensures the effectiveness of remediation. The Y-12 ER Program has separated the contaminated areas into source and groundwater Operable Units (OUs) for each of the three hydrogeologic regimes; Chestnut Ridge, Upper East Fork Poplar Creek, and Bear Creek Valley.

**5.1.1 Chestnut Ridge (FY94 ADS: OR-2301)
(FY93 ADSs: OR-277, OR-278)**

5.1.1.1 Description

This task involves the assessment of contamination for which the Y-12 Plant may be responsible within the Chestnut Ridge (CR) area as well as selection and implementation of remedial actions to address the contamination. Activities included field sampling, laboratory analysis, and the design and construction of selected remedial alternatives. These were necessary to support the following Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requirements:

- submittal of Preliminary Assessment/Site Inspection (PA/SI) reports to determine the presence of contamination and to determine if further assessments were required;
- submittal of a Remedial Investigation (RI) Work Plan specifying the efforts necessary to evaluate the nature and extent of contamination;
- conducting of the field assessments and generation of the RI report;
- preparation of the Feasibility Study (FS) to identify remedial alternatives and select a preferred alternative;
- preparation of the Record of Decision (ROD);
- review and approval of the ROD; and
- Remedial Design/Remedial Action (RD/RA). This task also includes preparation of National Environmental Policy Act (NEPA) documentation as a part of the FS process.

The Chestnut Ridge watershed contains four CERCLA Operable Units (OUs) consisting of a PA/SI and RI/FS candidate site. Individual sites are listed below.

- CR OU 1 Chestnut Ridge Security Pits (Groundwater)
- CR OU 2 Filled Coal Ash Pond/McCoy Branch
- CR OU 3 United Nuclear Corporation (UNC) Disposal Site - included in CAPCA I
- CR OU 4 Roger's Quarry/McCoy Branch

The Chestnut Ridge contains two study areas: the Mercury Gulley Spoil Area and Chestnut Ridge Borrow Area Waste Pile.

See Appendix C for a map of the Operable Units.

5.1.1.2 Status of FY92 SSP Objectives

The Draft RI report for OU 2 has been completed and transmitted to the regulators. Regulators comments indicate that an Addendum Sampling Plan will be required for OU 2. Assessment activities for Sanitary Landfill II were canceled and the site was not included in an OU for the Chestnut Ridge Activity Data Sheet (ADS 2301).

5.1.1.3 FY93 Objectives

- Initiate RI Work Plan at OU 1.
- Initiate Phase 2 field activities at OU 2.
- Complete PA/SI field activities for Chestnut Ridge Study Area.
- Submit PA report for Chestnut Ridge Study Area.
- Prepare RI Work Plan for Chestnut Ridge OU 4.

5.1.1.4 FY94-98 Objectives

The following will be accomplished in FY94:

- Submit Draft and Final RI Work Plan for OU 1 to Environmental Protection Agency/Tennessee Department of Environment and Conservation (EPA/TDEC).
- Submit Final RI Report for OU 2.
- Perform RI for CR OU 4.
- Perform OU 2 Feasibility Study.

The following will be accomplished in FY95-98:

- ROD for OU 2 to EPA/TDEC.
- Remedial Design for OU 2.
- Complete field activities at OU 1.
- Construction for Remedial Action at CR OU 2.
- Submit Draft RI report for OU 1 to the regulators.
- Issue Final FS for Chestnut Ridge Study Area to EPA/TDEC.

5.1.1.5 List of FY93 Scheduled Milestones

- Issue Statement of Work for Field Activities OU 2. 03/93
- Submit RI Work Plan for CR OU 4. 09/93

5.1.1.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
2301	\$1,637

5.1.2 Bear Creek Valley (FY94 ADS: OR-2302) (FY93 ADSs: OR-281, OR-282)

5.1.2.1 Description

This task involves the assessment of contamination within the Bear Creek watershed as well as selection and implementation of remedial actions to address the contamination. Activities include field sampling, laboratory analysis, and the design and construction of remedial alternatives necessary to support the following CERCLA requirements:

1. submittal of PA/SI Reports to determine the presence of contamination and if further assessments are required;
2. submittal of an RI Work Plan specifying the efforts necessary to evaluate the nature and extent of contamination;
3. conduct of the field assessments and generation of the RI report;
4. preparation of the FS to identify remedial alternatives and select a preferred alternative;
5. preparation of the Proposed Plan for the preferred alternative;
6. review and approval of the ROD; and
7. Remedial Design/Remedial Action.

This task also includes preparation of NEPA documentation as part of the FS process.

The Bear Creek watershed contains four CERCLA OUs consisting of some PA/SI candidate sites. Individual sites are listed below.

- BC OU 1 S-3 Ponds, Sanitary Landfill 1, Boneyard/Burnyard, the Oil Landfarm, and the Bear Creek Burial Grounds (BCBG) including Oil Retention Ponds 1 and 2
- BC OU 2 Rust Spoil Area, Spoil Area 1, and the SY-200 Yard

- BC OU 3 Bear Creek floodplain sediments
- BC OU 4 All Groundwater within the Bear Creek hydrologic regime

See Appendix C for a map of the Operable Units.

5.1.2.2 Status of FY92 SSP Objectives

A Draft CERCLA Adequacy Summary has been generated for the S-3 Ponds, the BCBG, and the Oil Landfarm. These three documents are under review by Martin Marietta Energy Systems, Inc. The Draft RI report for Spoil Area I, the Rust Spoil Area, and the SY-200 Yard have been incorporated into a single RI report for all sites within OU 2. The Draft RI Work Plan for OU 3 was completed and transmitted to the regulators.

5.1.2.3 FY93 Objectives

- Submit Final RI Work Plan for OU 2 to EPA/TDEC.
- Complete PAs and SIs for the study area.

5.1.2.4 FY94-98 Objectives

- Submit Draft RI Work Plan for BC OU 1 to EPA/TDEC.
- Complete field activities at BC OU 2.
- Submit Draft and Final RI Work Plans for BC OU 3 to EPA/TDEC.
- Proceed with RI for capping remaining uncapped trenches in Bear Creek Valley.
- Submit Final RI Work Plan for BC OU 1 to EPA/TDEC.
- Initiate field activities at BC OU 3.
- Submit Draft and Final RI reports for BC OU 2 to EPA/TDEC.
- Issue Final FS report for BC OU 2.
- Complete field work at BC OU 4.
- Issue ROD for BC OU 2.
- Begin Remedial Design for BC OU 2.
- Issue Proposed Remedial Action Plan for BC OU 2.
- Complete Field Work at BC OU 1.
- Submit Draft and Final RI reports for BC OU 4 to EPA/TDEC.
- Submit Draft and Final RI reports for BC OU 1 to EPA/TDEC.

5.1.2.5 List of FY93 Scheduled Milestones

- Submit Draft RI Work Plan for OU 4 to the EPA/TDEC. 12/92

5.1.2.6 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
2302	\$1,101

5.1.3 Upper East Fork Poplar Creek (FY94 ADS: OR-2303) (FY93 ADSs: OR-279, OR-280)

5.1.3.1 Description

This task involves the assessment of contamination within the Upper East Fork Poplar Creek (UEFPC) watershed and the selection and implementation of remedial actions to address contamination. The UEFPC watershed contains most of the Y-12 Plant area and its flow is completely derived from plant runoff, controlled National Pollutant Discharge Elimination System (NPDES) discharge points, and groundwater input.

Activities impact assessment and remediation within EFPC (ADS OR-9304) since UEFPC serves as the source for contaminants downstream in EFPC. Activities include field sampling, laboratory analyses, and the design and construction of remedial alternatives necessary to support the following CERCLA requirements:

- submittal of PA/SI Reports to determine the presence of contamination and if further assessment is required;
- submittal of RI Work Plan specifying the efforts necessary to evaluate the nature and extent of contamination;
- conducting of the field assessments and generation of RI report;
- preparation of the FS to identify remedial alternatives and select a preferred alternative;
- preparation of the Proposed Plan for the preferred alternative;
- review and approval of the ROD; and
- Remedial Design/Remedial Action.

This task also includes preparation of NEPA documentation as part of the FS process.

The UEFPC watershed contains three CERCLA OUs consisting of some PA/SI and RI/FS candidate sites. Individual sites contained within the OUs follow.

- UEFPC OU 1 Mercury-Use Areas, Storm Sewer System, Y-12 Treatment Facility, and Groundwater Characterization and Remediation

- UEFPC OU 2 Abandoned Nitric Acid Pipeline
- UEFPC OU 3 S-2 Site, Coal Pile Trench, Salvage Yard Oil Storage and Oil/Solvent Drum Storage Area, Machine Coolant Storage Tanks, Salvage Yard Scrap Metal Storage Area, Waste Coolant Processing Facility, Salvage Yard Drum Deheader, and the area around Building 81-10

The Reduction of Mercury in Plant Effluent (RMPE) program will address assessment and remediation of priority mercury discharge points within the UEFPC watershed.

RCRA Closures are being pursued for the Building 9409-5 Tank Storage Area, the Garage Underground Storage Tanks, and the Interim Drum Yard.

RUST Fuel Facility. Although tanks have been removed, contaminated soil must be remediated under the Underground Storage Tank regulations.

Study Areas. Sixty-seven areas have been identified to receive preliminary assessments under CERCLA regulations. It is assumed that some of these areas will require further investigation, which may lead to remediation.

Large quantities of mercury were utilized in processes and subsequently lost to the environment at the Y-12 Plant. The legacy of mercury contamination is evident in soils, facilities, storm sewers, and UEFPC. Efforts are in progress on ORR to understand the relationship of this type of areal contamination of the Y-12 Plant to past and present releases of mercury. The goal of the current effort is to produce an "Integrated Mercury Plan" to serve as an information source and make recommendations concerning cleanup and management of mercury contamination within the plant as well as off site.

5.1.3.2 Status of FY92 SSP Objectives

RI work plans submitted to regulators on the UEFPC Storm Sewer System, Abandoned Nitric Acid Pipeline, and Mercury Use Areas have been approved. Z-Oil System and Lineyard plans have been reviewed and sites changed to PA/SI status. RI plans for each remaining site have been updated and resubmitted for regulatory approval. Completed draft RI reports for S-2 Site and Coal Pile Trench. Completed second phase of sampling for the Plating Shop Container Areas and submitted revised RI report. Closure plans for the Building 9409-5 Tank Storage Unit, the Garage Underground Tanks, and the Interim Drum Yard have been submitted to the regulators. A no further action ROD for a portion of the Plating Shop container areas is expected in September of 1992. The mercury tank remedial action (RA) work plan has been submitted to the regulators in July of 1992.

5.1.3.3 FY93 Objectives

- Complete Phase One surface water sampling, sediment sampling, and air monitoring in UEFPC OU 1.
- Begin Phase Two surface water RI Plan, OU 1.
- Begin Groundwater RI Plan, OU 1.
- Complete UEFPC OU 2 Phase 1 sampling.
- Begin Phase 2 RI Plan, OU 2.
- Complete UEFPC OU 3 RI work plan.
- Begin OU 3 field sampling.
- Begin OU 3 RI report.
- Work elements complete field sampling for RMPE assessment of shallow groundwater and sub-basement soil associated with Mercury Use Buildings.
- Complete redirection of clean water drain lines from the basement sumps to alternate discharge points in Building 9201-2.
- Complete clean-out of tanks 2100-U, 2101-U, and 2104-U.
- Begin construction for Interim Drum Storage Yard.
- Begin construction for the Diked Tank Storage Area.
- Begin and complete construction for the Garage Underground Storage Tanks.
- Begin soil remediation on the Rust Fuel Facility.
- Complete PA/SI Study Area Group 1 sites.
- Begin Title I and II design for Study Area Group 1 site remediation.
- Complete PA report, Group 2 Study Area.
- Begin PA report, Group 3 Study Area.

5.1.3.4 FY94-98 Objectives

The following will be accomplished in FY94:

- Complete UEFPC OU 1 Phase II RI Plan. Begin Phase II surface water sampling.
- Complete final UEFPC OU 2 RI Report.
- Complete field sampling for UEFPC OU 3. Prepare Draft RI Report.
- Continue CERCLA groundwater monitoring in UEFPC OU 1.
- Complete Study Area Group 3 PA/SIs. Begin Group 4.
- Begin FS scoping and preparation of Draft FS Report for UEFPC OU 2.

The following will be accomplished during the period FY95-98:

- Continue activities started in FY93 and FY94.
- Follow CERCLA requirements outlined in Section 5.1.3.1 for all elements of UEFPC.

5.1.3.5 List of FY93 Scheduled Milestones

- Issue OU 3 RI Plan.
- Issue PA Report, study areas, Group 2.

04/93

04/93

5.1.3.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
2303	\$13,746

5.1.4 Closure Activities and Post-Closure Activities Phase I (FY94 ADS: OR-2304) (FY93 ADS: OR-211G1)

5.1.4.1 Description

This activity includes closing 10 Resource Conservation and Recovery Act (RCRA) interim status units and a CERCLA unit.

Four of the 10 units are surface impoundments which are facilities designed to hold an accumulation of liquid or, in the case of Kerr Hollow Quarry, liquid and storage wastes.

These are the:

1. New Hope Pond (NHP),
2. S-3 Ponds,
3. Oil Retention Ponds, and
4. Kerr Hollow Quarry.

Six of the 10 units are land based treatment facilities. These are facilities that have received hazardous materials:

1. Chestnut Ridge Security Pits (CRSP),
2. Chestnut Ridge Sediment Disposal Basin (CRSDB),
3. Oil Landfarm,
4. BCBG A,
5. BCBG C-West, and
6. BCBG Walk-In Pits (WIP).

The United Nuclear cap should be completed in August 1992 under CERCLA. An interim

surface impoundment (Lake Reality) was constructed to replace NHP. Two soil borrow areas were developed along with haul roads to be used in site closures. Nine of the closures required installation of multilayered engineered caps, and two required structural stabilization (S-3 Ponds and NHP).

Also a part of this activity was the United Nuclear Corporation (UNC) Disposal Site (Chestnut Ridge OU 3) located near the crest of Chestnut Ridge, in the southern portion of the Y-12 Plant. Between June 1982 and November 1984, the UNC Disposal Site received 11,000 55-gallon drums of sludge fixed in cement, 18,000 drums of contaminated soil, and 288 wooded boxes of contaminated building and demolition materials. The disposal site consists of a 1.3-acre excavation cut into the side of Chestnut Ridge and ranges in depth from 5 to 30 feet. The drums are stacked no greater than 10 high following the contour of the excavation. Both the drums and boxes have deteriorated, exposing their contents to the environment.

Groundwater transport modeling and risk assessments have indicated that nitrates and SR-90 leached from the UNC Disposal Site present a long-term risk of exposure to groundwater. A ROD has been completed and identified a multilayer/multimedia, modified cap for long-term minimization of infiltration.

5.1.4.2 Status of FY92 SSP Objectives

Closure construction has been completed and certification has been approved for the S-3 Ponds, BCBG A, Oil Landfarm, Oil Retention Ponds, CRSP, CRSDB, and NHP. Closure construction has been completed and certification has been issued for approval for the BCBG C-West site. Closure activities on the Kerr Hollow Quarry (KHQ) site are approximately 65% complete. Design has been completed for the WIP closure project but construction is on hold pending final safety review. Construction of Lake Reality and the two borrow areas has been completed. United Nuclear Corporation cap construction has been completed. Certification for submittal to TDEC is in process.

5.1.4.3 FY93 Objectives

- Continue KHQ closure.
- Initiate KHQ shredded debris management design.
- Complete WIP safety documentation.
- Initiate WIP closure.

5.1.4.4 FY94-98 Objectives

The following will be accomplished in FY94:

- Complete KHQ closure.
- Initiate KHQ shredded debris management construction.
- Initiate KHQ sediment management design.
- Complete WIP closure.

The following will be accomplished during the period FY95-98:

- Complete KHQ shredded debris management construction.
- Complete KHQ sediment management construction.

5.1.4.5 List of FY93 Scheduled Milestones

None.

5.1.4.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
2304	\$16,000

5.1.5 Closure Activities and Post-Closure Activities Phase II (FY94 ADS: OR-2305) (FY93 ADSs: OR-243G1, OR-243G2)

5.1.5.1 Description

Closure Activities and Post-Closure Activities (CAPCA) II addresses RCRA post-closure requirements for eight sites at the Y-12 Plant that have been or will be closed under interim status. Closure of the ten sites is addressed in CAPCA I. The sites are: S-3 Ponds, Oil Landfarm (OLF), BCBG A, BCBG C-West, BCBG Walk-in-Pits (WIP), New Hope Pond (NHP), CRSP, CRSDB, KHQ, and Oil Retention Ponds (ORP). Four of the ten units are surface impoundments, and the other six are land-based units. All sites, with the exception of KHQ and WIP, have been closed with the waste in place. KHQ is currently undergoing closure. The plan calls for clean closure.

Closure of the CAPCA units began before the ORR was placed on the National Priorities List (NPL). When the ORR was placed on the NPL, the issue of whether groundwater remediation would proceed under RCRA interim status standards or follow the CERCLA

process required resolution. Initial funding requests assumed groundwater remediation. This assumption was based on the requirements in the S-3 Ponds Post-Closure Permit. DOE appealed this permit and current plans are to address these units under the risk-based CERCLA process and will be addressed under the Upper East Fork Poplar Creek and Bear Creek Valley ADSs.

Dissolved groundwater contamination at the sites include:

- nitrates;
- metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, beryllium, boron, copper, cobalt, nickel, strontium, and uranium);
- volatile organic compounds (tetrachloroethane, trichloroethene, 1,2-dichloroethene, 1,1,1-trichloroethane, 1,1-dichloroethane, and vinyl chloride); and
- radionuclides (technetium, tritium, uranium, radium, neptunium, americium, strontium). Free product is known to have migrated from BCBG and exists at depth as a Dense Nonaqueous Phase Liquid (DNAPL). The DNAPL associated with BCBG is known to contain PCBs, trichloroethene, tetrachloroethane, and 1,1,1-trichloroethane.

Assessment of the major dissolved groundwater plumes is being addressed by the Y-12 Plant Comprehensive Groundwater Program. Assessment of the DNAPL and costs include monitoring well construction.

As part of closure of the ORP, soils considered to be mixed waste (RCRA, TSCA, LLW) were placed in a facility known as the Disposal Area Remedial Action (DARA) Solid Storage Facility (SSF). A RCRA Part B Permit is currently being requested for this facility. Liquids have been found in the leak detection system, but do not pose an environmental threat. In order to meet Part B Permit requirements, dewatering options are being considered.

5.1.5.2 Status of FY92 SSP Objectives

The presence of the DNAPL below BCBG has been verified and an assessment plan developed. Characterization of the geology and groundwater flow system relevant to the DNAPL occurrence has begun. This characterization includes five deep cores to be fitted with equipment designed to allow vertically discrete sampling and a geophysical study to better define fracture systems in Bear Creek Valley. The Y-12 Plant Comprehensive Groundwater Program is being integrated into the characterization effort for the dissolved plumes associated with the contaminated sites.

A RCRA Postclosure Permit has been issued for the S-3 Ponds. DOE has appealed this permit. Applications for the remaining sites currently closed are being prepared. DOE is holding these applications until resolution of the S-3 Permit appeal. A prototype Alternate

Concentration Limit (ACL) Demonstration for the S-3 Ponds was completed and issued for review to the State of Tennessee. The State of Tennessee returned the document saying that ACLs would not be granted at this time.

Part B permit applications have also been submitted for East CR Waste Pile, Oil Landfarm Soil Containment Pad, and the DARA Solid Storage Facility (SSF) Unit.

A panel of industry experts independent of DOE was commissioned to evaluate the problems associated with obtaining a permit for the DARA SSF. The panel's finding was that the facility should be permitable, but minor modifications may be required. A geotechnical study was also contracted to evaluate soil composition and sump functionality.

5.1.5.3 FY93 Objectives

- Award contracts for DARA SSF facility modification, if required.
- Complete facility modifications required for DARA SSF.
- Begin monitoring groundwater wells for DNAPL Flow.

5.1.5.4 FY94-98 Objectives

No activity in ADS - groundwater work shifted to Bear Creek and UEFPC.

5.1.5.5 List of FY93 Scheduled Milestones

- Complete DNAPL cores and monitoring equipment installation. 10/92
- Award required construction contracts for DARA SSF. 10/92

5.1.5.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
2305	\$500

**5.1.6 Surveillance and Maintenance (FY94 ADS: OR-2306)
(FY93 ADS: None)**

5.1.6.1 Description

This section consists of Surveillance and Maintenance (S&M) activities previously associated with inactive and closed source units and are the focus for the Y-12 ER Program. Groundwater monitoring will be performed at approximately 100 existing monitoring wells in the vicinity of the ER sites, and regulatory reports will be issued summarizing findings.

Seep liquid from the Burial Ground waste sites will be treated in existing facilities to remove contaminants prior to discharge. Previously capped RCRA waste sites will be maintained by performing regular inspections, implementing erosion control, and routine grounds maintenance. Well monitoring and capped waste sites are expected to slightly increase in the outyears. Groundwater monitoring reports for capped units are required under RCRA and will be prepared annually. Special maintenance projects (e.g., erosion control) will be documented each year to meet NEPA requirements. Annual summary reports of S&M activities will be prepared.

5.1.6.2 Status of FY92 SSP Objectives

None, this is a new ADS.

5.1.6.3 FY93 Objectives

Groundwater monitoring will be performed at approximately 100 existing monitoring wells in the vicinity of the ER sites, and regulatory reports will be issued summarizing findings. Seep liquid from the Burial Ground waste sites will be treated in existing facilities to remove contaminants prior to discharge. Previously capped RCRA waste sites will be maintained by performing regular inspections, implementing erosion control, mowing the grass vegetative layer, etc. Groundwater monitoring reports for capped units are required under RCRA and will be prepared annually. Special maintenance projects (e.g. erosion control) will be documented to meet NEPA requirements. Annual summary reports of S&M activities will be prepared.

5.1.6.4 FY94-98 Objectives

FY93 objectives remain the same for FY94-98. Well monitoring and capped waste sites are expected to slightly increase in the outyears.

5.1.6.5 List of FY93 Scheduled Milestones

- Begin sampling of DNAPL Monitoring Wells. 10/92
- Submit Annual RCRA required Groundwater Quality Assessment Report for FY92. 03/93

5.1.6.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
2306	\$3,125

5.1.7 Program Management (FY94 ADS: OR-2501)

(FY93 ADSs: OR-209G1, OR-209G2, OR-211G1, OR-243G1, OR-243G2, OR-277, OR-278, OR-279, OR-280, OR-281, OR-282)

5.1.7.1 Description

Program Management of the Y-12 Environmental Restoration (ER) Remedial Action Program includes all program management and administrative support activities recorded below.

Planning

- Develop Y-12 Plant Life-Cycle Baselines.
- Develop Y-12 Plant revision of ADS (5 Year Plan).
- Develop Y-12 Plant Current Year Work Plans.
- Develop Y-12 Plant revisions to the Site-Specific Plan.
- Ensure consistency/traceability in data from Life Cycle Baseline, ADSs, Current Year Work Plans, and Site-Specific Plans.
- Manage prioritization efforts as required.
- Coordinate/support mid-year review.
- Coordinate/support year-end review.
- Assure legal compliance of activities.

Authorization and Baseline Development

- Coordinate/develop preparation of requests for Program Directive.
- Review Financial Plans (Fin Plans) and Funding Authorization Documents (FADs) when received; request preparation of same to support programmatic needs.

- Coordinate/develop preparation of Program Service Orders (PSOs).
- Ensure completion (and approval) of Cost Account Plans for each participant identified in PSOs.

Execution and Analysis

- Collect costs and provide cost reports (versus budgeted cost) for review/analysis.
- Coordinate/assist in analysis of significant deviations from Cost Account Plans.
- Coordinate/assist in initiating/monitoring corrective actions.
- Define work/issue Statements of Work for contractors and internal divisions.
- Ensure technical validity of work performed for ER.

Baseline Management

- Coordinate formalization of technical, schedule, and cost baselines including development of the Work Breakdown Structure (WBS) and WBS dictionary.
- Ensure traceability of technical, schedule, and cost information through all from Life Cycle Baseline to ADSs to Current Year Work Plans.
- Coordinate/assist in controlling changes to baselines, to reflect revision to Current Year Work Plans, and other changes.

Reporting

- Prepare analysis for reporting performance against baselines.
- Prepare reports as specified and directed by DOE. These reports include the following list:
 1. Progress Tracking System (Monthly)
 2. Cost Performance Reports (Monthly)
 3. Federal Facility Agreement Quarterly Report (Quarterly)
 4. Quarterly In-Depth Reviews (Quarterly)

5.1.7.2 Status of FY92 SSP Objectives

The Oak Ridge ER Program started in 1989 and has developed into a Central Organization with programs at each of the sites within the ORR. Policies and procedures have been and continue to be developed to establish the framework in which ER will accomplish the goal of remediation of the ORR. Energy Systems has established the framework for the role of integrating contractor. ER has also developed cost and schedule control tracking systems and established formats for budgeting and funding requests as outlined by Management Control Systems guidelines.

5.1.7.3 FY93 Objectives

The ER program will meet all PEC and FFA milestones, complete all components of the Five Year Plan and Budget Submission, and will continue to meet technical scope requirements as implemented.

5.1.7.4 FY94-98 Objectives

All technical scope requirements will be accomplished in FY94-98.

5.1.7.5 List of FY93 Scheduled Milestones

- | | |
|-----------------------------------------------------------------------------------------------------|-------|
| • Complete prioritization of Y-12 Remedial Action Projects. | 01/93 |
| • Submit budget requests to DOE-OR. | 03/93 |
| • Complete validation of planning cases to be submitted in ADSs for funding requests. | 05/93 |
| • Present program cost and schedule information from the first half of the FY to DOE-OR and DOE/HQ. | 05/93 |
| • Submit final ADSs to DOE-OR. | 06/93 |
| • Submit Site-Specific Plan to DOE-OR. | 06/93 |
| • Submit Current Year Work Plans to DOE-OR. | 07/93 |
| • Submit Program Directive to DOE-OR. | 08/93 |

Milestones in the Program Management area are repeated annually.

5.1.7.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
2501	\$4,936

5.1.8 Lower East Fork Poplar Creek (FY94 ADS: OR-9304) (FY93 ADSs: OR-209G1, 209G2)

5.1.8.1 Description

Lower East Fork Poplar Creek (EFPC) originates as an on-site surface water drainage system at the Y-12 Plant. EFPC from its point of origin to where it feeds into Lake Reality is referred to as Upper East Fork Poplar Creek (UEFPC). Lower East Fork Poplar Creek begins at the outfall of Lake Reality and travels approximately 14.2 river miles through the City of Oak Ridge, and joins Poplar Creek after it re-enters the ORR. Lower EFPC is only

one operable unit. See Appendix C for map. During plant operation (1943 to present), EFPC has received various treated and untreated discharges from building drains, as well as noncontact process cooling waters and site runoff.

In 1962-1963, NHP was constructed on EFPC near the east boundary of the Y-12 Plant. The pond served as an equalization/settling basin for the final facility effluent discharged to EFPC. NHP was closed under the RCRA regulations, and Lake Reality, which became operational in November 1988, now performs the same function as NHP.

EFPC and its floodplain have become contaminated with materials such as mercury, uranium, thorium, chromium, zinc, and lead. This is the result of Y-12 Plant discharge.

This task provides for the CERCLA process for Lower EFPC and its environs, and the portions of the Oak Ridge Sewerline Beltway (SLB) which received soil from the floodplain as fill and topsoil during construction. Construction of the SLB took place from 1982 to 1983. By design, the CERCLA process will incorporate NEPA requirements.

5.1.8.2 Status of FY92 SSP Objectives

Completed collecting floodplain soil and creek sediment samples. Analytical results have been received for approximately 80% of these samples. Lease agreements have been negotiated with the landowners. A public awareness/participation program has been implemented and a site characteristic summary briefing was presented to the regulators.

The FS has progressed through the Initial Screening of Alternatives. Bench scale treatability studies have begun. An intent to prepare the Environmental Impact Statement (EIS) has been public noticed and is being incorporated into the FS. A conceptual level cost estimate has been prepared for a selected remedial scenario to support planning efforts. The selected scenario has been defined to include selective remediation of sediments and floodplain soils.

5.1.8.3 FY93 Objectives

- Complete Baseline Risk Assessment.
- Complete Draft Remedial Investigation Report.

5.1.8.4 FY94-98 Objectives

- Complete Draft FS/EIS.
- Issue Proposed Plan.
- Obtain Record of Decision.
- Complete Remedial Design Work Plan.

- Begin Remedial Action Work Plan.
- Initiate Remedial Actions.

5.1.8.5 List of FY93 Scheduled Milestones

- Issue Draft Remedial Investigation Report to regulators.

04/93

5.1.8.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
9304	\$7,485

5.2 OAK RIDGE NATIONAL LABORATORY

The remedial action strategy at Oak Ridge National Laboratory (ORNL) is oriented toward waste area groupings (WAGs). The activities for each of these WAGs provide for:

- a remedial investigation/feasibility study (RI/FS);
- interim corrective measures (ICMs) or removal actions, record of decision/interim record of decision (ROD/IROD); and
- final site remediation for the WAG.

The RI/FS process represents the methodology for characterizing the nature and extent of risks posed by WAGs, and for evaluating potential remedial options. This approach is a dynamic, flexible process tailored to the specific circumstances of each of the WAGs. Due to the uncertainties inherent with each of the WAGs (e.g. site hydrogeology, extent of contamination), an "observational approach" workshop was conducted for each WAG. The observational approach is a technique for recognizing and managing uncertainty. It includes:

- obtaining WAG data sufficiency rather than data completeness;
- focusing characterization efforts to support or eliminate potential remedies;
- converging early on remedial action alternative(s) based on probable conditions;
- identifying reasonable deviations from the remedial action alternative(s);
- preparing contingency plans, and
- monitoring the effectiveness of the remedial actions to protect human health and the environment.

Scoping is the initial planning phase of the RI process, and begins with the collection of existing site data. Typical scoping activities include:

- reviewing and analyzing existing data for each of the WAGs;
- determining the remedial action objectives and identifying the data and other information needed to support those objectives;
- preparing the work plan, the sampling and analysis plan, and other project documentation; and
- determining overall project management strategy with the governmental agencies (e.g. EPA, TDEC, and DOE).

A scoping meeting will be held with the regulators prior to initiation of the RI to agree upon the sampling and analysis plan.

Site characterization activities are then initiated soon after the scoping exercise, including field sampling and analysis. This data will be used:

- to characterize the WAG,
- to prepare a risk assessment which identifies the existing or potential risk posed to human health and the environment, and
- to evaluate potential remedial action alternatives.

These alternatives are developed to address the contaminated medium (e.g. groundwater), a specific area of the site (e.g. a waste lagoon or contaminated hot spot), or the entire WAG.

After the remedial action alternatives have been developed and assessed, the FS and associated NEPA documentation will be prepared. During the FS, the development of remedial alternatives are more fully analyzed and screened. The screening process is based on the short- and long-term aspects of three broad criteria: effectiveness, implementability, and cost. The Proposed Remedial Action Plan (PRAP) and the Record of Decision (ROD) are also prepared.

Due to the size and complexity of these WAGs, several will be divided into OUs at the completion of the Phase I RI (i.e., initial site characterization). Each OU will move through a Phase II RI (if required), an FS, ROD, and remediation as a separate unit. Coordination between OUs will be maintained at the WAG level so that remediation strategies for OUs will be compatible with remediation objectives for the WAG as a whole.

Prior to completion of final site remediation, ICMs or removal actions will be conducted, if required, to protect human health and the environment. Contamination resulting from releases of hazardous constituents from contaminated sites in the WAGs will be contained, removed, or treated.

Final site remediation activities, if required, will include:

- preliminary engineering,
- remedial design (RD),
- remedial action (RA),
- verification,
- long-term monitoring, and
- operation and maintenance (O&M).

5.2.1 ORNL WAG 1 Environmental Restoration (FY94 ADS: OR-3301)

(FY93 ADSs: OR-324AA, OR-325AA,
OR-329, OR-330, OR-332AA,
OR-329EX, OR-324XA)

5.2.1.1 Description

These activities provide for a remediation strategy for Waste Area Grouping 1 (WAG 1). It is the Main Plant Area at Oak Ridge National Laboratory (ORNL), and is contaminated with radioactive, hazardous, transuranic, and mixed wastes. WAG 1 contains 115 contaminated sites requiring, or potentially requiring, remediation. The sites consist of:

- liquid low-level waste collection and storage tanks,
- leak and spill sites and contaminated soils,
- ponds and impoundments,
- waste treatment facilities,
- shallow land burial, and
- other miscellaneous chemical and sewage waste facilities.

The nature and location of these sites relative to active ORNL facilities and activities will complicate site remediation.

5.2.1.2 Status of FY92 SSP Objectives

During the period from 10/01/90 through 3/31/92, comments to the WAG 1 Phase I Remedial Investigation (RI) Plan were received from the Environmental Protection Agency (EPA) and Tennessee Department of Environment and Conservation (TDEC), and response to these comments was provided. Phase I RI field sampling activities were completed, and work has been initiated on preparing three major reports [Site Characterization Summary Report, Preliminary Risk Assessment, and the WAG 1 Operable Unit (OU) Strategy Document].

5.2.1.3 FY93 Objectives

Activities scheduled for FY93 include:

- initiation of the RI for the WAG 1 surface impoundments;
- preparation of a WAG 1 Groundwater Monitoring Interim Action Plan followed by initiation of appropriate projects recommended by the plan;
- initiation of the pipelines and trenches OU Phase II RI Work Plan;
- incorporation of regulator comments to three major documents (Site Characterization Summary Report, Preliminary Risk Assessment, and the WAG 1 OU Strategy Document);
- revision of the WAG 1 OU Strategy document to incorporate the effect on the schedules for prioritization of all OUs at ORNL; and
- continued development of a WAG 1 groundwater flow model.

5.2.1.4 FY94-98 Objectives

Activities scheduled for FY94 include:

- submittal of the Feasibility Study (FS) Report for the WAG 1 surface impoundments to EPA and TDEC,
- design and implementation of recommended groundwater monitoring and interim actions,
- completion of the pipelines and trenches OU Phase II RI Work Plan,
- preparation of National Environmental Protection Act (NEPA) documentation for remediation activities at the WAG 1 surface impoundments, and
- continued support for development of a WAG 1 groundwater flow model.

Activities for FYs 95-98 include:

- the Proposed Plan and Interim Record of Decision (IROD) for the WAG 1 surface impoundments, followed by remedial design and remediation field activities;
- initiation of Phase II RI field activities for the pipelines and trenches OU; and
- additional groundwater investigation associated with problem areas.

5.2.1.5 List of FY93 Scheduled Milestones

- Initiate FS Report for WAG 1 surface impoundments.

10/92

5.2.1.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
3301	\$3,565

5.2.2 ORNL WAG 2 Environmental Restoration (FY94 ADS: OR-3302) (FY93 ADSs: OR-324AB, OR-322, OR-323, OR-332AA)

5.2.2.1 Description

ORNL WAG 2 contains White Oak Creek/White Oak Lake (WOC/WOL) and is contaminated with radioactive, hazardous, and mixed wastes. WOC/WOL and its tributaries represent the major drainage system for ORNL and the surrounding facilities.

WAG 2 represents the major surface water drainage system at ORNL through which run-off from most other ORNL WAGs flow. The RI process for WAG 2 will involve three basic phases.

Phase I will involve:

- a review and evaluation of existing data for WAG 2;
- identification of additional data necessary to perform a preliminary risk assessment;
- collection of necessary data through implementation of a Phase I Sampling and Analysis Plan;
- completion of the preliminary risk assessment; and
- identification of potential ICMs and/or surveillance and maintenance (S&M) activities to preclude, reduce, or eliminate contaminant releases in the time period prior to final site remediation.

Phase II of the RI will involve development and implementation of a comprehensive monitoring program to provide information for:

- actual and potential migration of contaminants from upstream WAGs;
- contaminant input, accumulation, transport, and release for WAG 2 pending completion of remediation of upstream WAGs;
- potential ICMs; and
- the effectiveness of remediation activities at upstream WAGs.

Continual monitoring will provide:

- an observation of WAG behavior over time;
- information to support evaluation, development, and implementation of risk-based prioritization methodologies; and
- data to support the RI/FS activities at other WAGs and the Biological Monitoring and Abatement Program.

Phase III of the RI will include identification and collection of additional data necessary to perform a baseline risk assessment and a detailed assessment of potential remedial action alternatives.

The Phase III RI will be followed by:

- completion of the FS and associated NEPA documentation,
- preparation of the Proposed Remedial Action Plan (RAP) and the Record of Decision (ROD), and
- completion of remedial action.

In addition, two ORNL Groundwater Operable Units (OUs) will be proposed as part of the ORNL OU Strategy. When the technical scope of remedial action activities are defined for these OUs, a separate funding plan will be developed.

5.2.2.2 Status of FY92 SSP Objectives

During the period from 10/01/90 through 3/31/92, the WAG 2 RI Plan was submitted to the EPA and TDEC for comment. In addition, the WAG 2 Sampling and Analysis Plan was submitted to the EPA and TDEC for review, comment, and approval. A report providing data and interpretation of potential contaminant migration pathways in fractured bedrock was prepared and submitted to the U.S. Department of Energy, Oak Ridge (DOE-OR). Phase I field sampling was initiated during this period.

The coffercell construction at WOC Embayment was completed. The coffercells are designed to stop the migration of contaminated sediment from WOC/WOL into the Clinch River.

The first phase of a comprehensive seep sampling project in the WOC Watershed was conducted to identify contaminated groundwater discharges. Seeps that contribute significantly to contaminant flux will be considered for interim corrective measures.

5.2.2.3 FY93 Objectives

Activities planned for FY93 include:

- preparation and submittal of the WAG 2 Phase I RI report;
- preparation and submittal of the preliminary baseline risk assessment to EPA and TDEC for review, comment, and approval; and
- continuation of the comprehensive monitoring program.

The RI process for the ORNL Groundwater OUs will be initiated, and a separate funding plan will be developed.

5.2.2.4 FY94-98 Objectives

The comprehensive monitoring program will continue pending final site remediation at upstream WAGs.

5.2.2.5 List of FY93 Scheduled Milestones

- | | |
|------------------------------------------------------------------|-------|
| • Submit annual draft BMAP report to DOE-OR. | 04/93 |
| • Submit annual ER monitoring and assessment report to DOE-OR. | 09/93 |
| • Submit the WAG 2 Phase I RI Report to EPA and TDEC for review. | 09/93 |

5.2.2.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
3302	\$6,472

5.2.3 ORNL WAG 3 Environmental Restoration (FY94 ADS: OR-3303)
(FY93 ADSs: OR-324AC, OR-329, OR-332AA)

5.2.3.1 Description

WAG 3 is contaminated with radioactive, hazardous, and mixed wastes and is composed of three sites requiring, or potentially requiring, remediation. These three sites are:

1. a shallow land burial ground containing radioactive and hazardous wastes (SWSA 3);
2. a closed scrap metal area; and

3. a closed landfill for construction debris and fly ash from the ORNL steam plant due to the size and complexity of this WAG. A two-phased RI is assumed.

5.2.3.2 Status of FY92 SSP Objectives

No activities were performed associated with WAG 3, due to its prioritization among the other WAGs and available funding.

5.2.3.3 FY93 Objectives

No activities are planned for this WAG in FY93.

5.2.3.4 FY94-98 Objectives

The RI for WAG 3 will be initiated in FY98. It will include updating and revising the Sampling and Analysis Plan for Phase I of the RI to:

- incorporate any new information generated since the plan was originally prepared,
- incorporate the "Observational Approach" and "operable unit strategy" concept, and
- address EPA and TDEC comments.

During this time, the Phase I RI will be initiated.

Preliminary planning activities will be initiated for the final site remediation of WAG 3. This will include initiation of discussions with RD and RA contractors and development and/or refinement of WAG 3 remediation schedules and cost estimates.

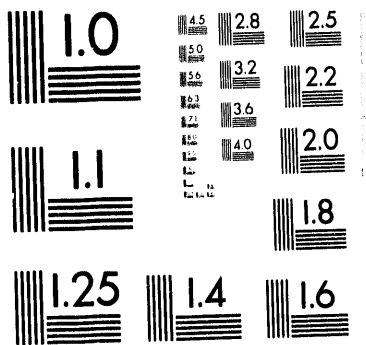
5.2.3.5 List of FY93 Scheduled Milestones

None.

5.2.3.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
3303	\$0

10.9



2 of 4

5.2.4 ORNL WAG 4 Environmental Restoration (FY94 ADS: OR-3304)
(FY93 ADSs: OR-324AD, OR-329, OR-332AA)

5.2.4.1 Description

WAG 4 is contaminated with radioactive, hazardous, and mixed wastes and is composed of three sites requiring, or potentially requiring, remediation. The site includes:

- a shallow land burial ground containing radioactive and hazardous wastes (SWSA 4);
- two pilot-scale liquid low-level waste (LLLW) seepage pits; and
- an inactive LLLW line north of Lagoon Road.

A two-phased RI is assumed due to the size and complexity of this WAG.

5.2.4.2 Status of FY92 SSP Objectives

No activities were performed associated with WAG 4, due to its prioritization among the other WAGs and to limited funding.

5.2.4.3 FY93 Objectives

No activities are planned for this WAG in FY93.

5.2.4.4 FY94-98 Objectives

Activities planned for FY94 include an update and revision of the Sampling and Analysis Plan (SAP) for Phase I of the RI to:

- incorporate any new information generated since the work plan was originally prepared,
- incorporate the "Observational Approach" and "operable unit strategy" concept,
- address EPA and TDEC comments,
- submit the revised plan to EPA and TDEC for approval, and
- initiate WAG 4 Phase I RI field sampling activities.

The RI for WAG 4 will be continued in FY95-98. During this four-year period, this activity will include:

- completing the Phase I RI,
- preparing a Phase I RI Report identifying OUs and presenting a preliminary risk assessment,
- developing and initiating a Source Control IROD,

- developing an OU-based Phase II RI Plan, and
- initiating Phase II of the RI.

5.2.4.5 List of FY93 Scheduled Milestones

None.

5.2.4.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
3304	\$ 0

5.2.5 ORNL WAG 5 Environmental Restoration (FY94 ADS: OR-3305) (FY93 ADSs: OR-324AE, OR-329, OR-332AA, OR-328)

5.2.5.1 Description

WAG 5 is contaminated with radioactive, hazardous, and mixed waste and is composed of 16 sites requiring, or potentially requiring, remediation. These sites include:

- liquid low-level waste (LLLW) tanks, transfer lines, and leak sites;
- hydrofracture facilities;
- a sludge basin and a holding pond;
- a shallow land burial ground containing radioactive and hazardous wastes (SWSA 5); and
- a transuranic (TRU) waste storage area.

Based on the results of an Observational Approach workshop with the EPA-Region IV and the TDEC, WAG 5 has been divided into two OUs for planning purposes:

- a source control OU and
- a groundwater OU.

One phase of the RI is presumed to provide enough information to support the FS and PRAP/ROD for the source control OU. A Phase II RI may be required for this OU due to the size and complexity of the groundwater system associated with WAG 5.

5.2.5.2 Status of FY92 SSP Objectives

During the period from 10/01/90 through 3/31/92, a revised Field Sampling Plan for the Phase I RI was prepared and submitted to EPA and TDEC for approval. The Phase I RI field sampling activities were initiated during this period.

Potential ICMs have been identified in WAG 5 which are associated with remediation of the Old Hydrofracture inactive waste settling pond and with leachate collection and treatment or source control of groundwater seeps.

5.2.5.3 FY93 Objectives

RI activities for FY93 will include completing Phase I RI field activities and initiating preparation of the Phase I RI Report.

Preliminary planning activities will be initiated for the final site remediation for WAG 5. These activities will include:

- the initiation of discussions with remedial design and remedial action contractors, and
- the development and/or refinement of WAG 5 remediation schedules and cost estimates.

5.2.5.4 FY94-98 Objectives

Activities for FY94 will include:

- completing and submitting the Phase I RI Report to EPA and TDEC for review, comment, and approval;
- drafting the FS for the WAG 5 Source Control OU; and
- preparing a WAG 5 Groundwater OU Sampling and Analysis Plan, if appropriate.

Activities associated with final site remediation will continue during FY94. These activities will include:

- further development and refinement of WAG 5 remediation schedules and cost estimates, and
- preliminary engineering.

During FY95-98, the FS, PRAP, and IROD for the WAG 5 Source Control OU will be completed, and a groundwater investigation will be performed, if appropriate. The design will be completed and the field activities will be initiated for final site remediation of the WAG 5 Source Control OU.

5.2.5.5 List of FY93 Scheduled Milestones

None.

5.2.5.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
3305	\$1,905

5.2.6 ORNL WAG 6 Environmental Restoration (FY94 ADS: OR-3306) (FY93 ADSs: OR-332AB, OR-332EX, OR-332AA, OR-363)

5.2.6.1 Description

WAG 6 is contaminated with radioactive, hazardous, and mixed waste and is composed of three sites requiring, or potentially requiring, remediation. These sites include:

1. the explosives detonation trench,
2. the emergency waste basin, and
3. the Solid Waste Storage Area (SWSA) 6.

5.2.6.2 Status of FY92 SSP Objectives

During the period from 10/01/90 through 3/31/92,

- a RCRA closure plan was approved for WAG 6;
- a temporary cap was placed over the RCRA-regulated areas of WAG 6;
- the WAG 6 feasibility study/environmental assessment and the proposed remedial action plan were submitted to EPA and TDEC for approval; and
- the design of the tumulus caps, equipment cleaning facilities, roads, and a monitoring station were initiated.

The Interim Record of Decision is also expected to be submitted to the EPA and TDEC this FY.

5.2.6.3 FY93 Objectives

Activities for FY93 will include:

- the start of Title II design for final remediation;
- initial construction of a liquid transfer station, above-ground storage areas, equipment cleaning facilities, personnel contamination control facilities;
- relocation of the Tennessee Valley Authority (TVA) powerline that bisects the site;
- initiation of borrow area and haul route construction; and
- beginning of Phase I plugging and abandonment of several wells within WAG 6.

5.2.6.4 FY94-98 Objectives

Activities for FY94 will include:

- completion of construction for the site remediation support facilities,
- completion of the initial site remediation design package,
- continued borrow area construction and utilization, and
- the start of site remediation construction activities.

During FY95-98, activities planned for this period include:

- completion of site design and remediation,
- independent verification activities, and
- continuation of post-remediation performance monitoring.

5.2.6.5 List of FY93 Scheduled Milestones

- | | |
|---------------------------------------|-------|
| • Approve Interim ROD. | 12/92 |
| • Complete Remedial Design Work Plan. | 03/93 |
| • Complete Remedial Action Work Plan. | 06/93 |

5.2.6.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
3306	\$38,926

**5.2.7 ORNL WAG 7 Environmental Restoration (FY94 ADS: OR-3307)
(FY93 ADSs: OR-324AF, OR-329, OR-332AA, OR-324XF, OR-329EX)**

5.2.7.1 Description

WAG 7 is contaminated with radioactive, hazardous, and mixed waste and is composed of 17 sites requiring, or potentially requiring, remediation. These sites include:

- seven LLLW seepage pits and trenches,
- Homogeneous Reactor Experiment fuel wells,
- experimental hydrofracture injection sites and associated surface contamination,
- shielded transfer tanks, and
- a decontamination facility.

A two-phase RI is assumed due to the size and complexity of this WAG.

5.2.7.2 Status of FY92 SSP Objectives

No activities were performed associated with WAG 7, due to its prioritization among the other WAGs and available funding.

5.2.7.3 FY93 Objectives

Preliminary planning activities will be initiated for the ICM associated with the WAG 7 Pit No. 1 in-situ vitrification (ISV), including an evaluation of the ISV technology and its applicability to WAG 7.

5.2.7.4 FY94-98 Objectives

During FY94, the WAG 7 Phase I RI will be initiated. The Sampling and Analysis Plan (SAP) will be updated:

- to incorporate any new information since the plan was originally prepared,
- to incorporate the "Observational Approach" and "operable unit strategy" concept and
- to address EPA and TDEC comments.

The revised Phase I RI SAP will be submitted to EPA and TDEC for approval.

Activities for the WAG 7 Pit No. 1 ICM will continue in FY94 with the preparation of the IROD, design and fabrication of the ISV unit, and continued preparation of project documentation.

During FY95-98, activities planned for include:

- completion of the Phase I RI field sampling,
- preparation of the Phase I RI Report identifying OUs,
- presentation of a preliminary risk assessment,
- development of an OU-based Phase II RI Plan, and
- initiation of the Phase II RI field activities.

The WAG 7 Pit No. 1 ICM will be completed during FY95-98. This includes:

- the ISV unit fabrication,
- a treatability study to test the performance of the ISV unit,
- submittal of the IROD to EPA and TDEC,
- implementation and evaluation of the ISV on Pit No. 1, and
- an evaluation of ISV applicability to other pits and trenches.

5.2.7.5 List of FY93 Scheduled Milestones

- Complete evaluation of applicability of ISV technology to WAG 7.

09/93

5.2.7.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
3307	\$500

5.2.8 ORNL WAG 8 Environmental Restoration (FY94 ADS: OR-3308)
(FY93 ADSs: OR-325AB, OR-330, OR-329, OR-329EX, OR-332AA)

5.2.8.1 Description

WAG 8 is contaminated with radioactive, hazardous, and mixed waste and is composed of 22 sites requiring, or potentially requiring, remediation. These sites include:

- waste settling ponds,
- liquid low-level waste (LLLW) lines and leak sites,
- an experimental hydrofracture injection site with associated soil contamination,
- LLLW collection/storage tanks,
- a hazardous waste storage facility,

- a mixed waste storage pad,
- a sewage treatment plant, and
- a silver recovery plant.

A two-phased RI is assumed due to the size and complexity of this WAG.

5.2.8.2 Status of FY92 SSP Objectives

During the period from 10/01/90 through 3/31/92, a RI work plan was prepared and submitted to the EPA and TDEC for review, comment, and approval. No comments have been received to date.

5.2.8.3 FY93 Objectives

No activities are planned for FY93.

5.2.8.4 FY94-98 Objectives

RI activities will resume in FY95 with the revision of the Sampling and Analysis Plan for the Phase I RI. These revisions will incorporate:

- any new information since the plan was originally prepared,
- comments from the EPA and TDEC, and
- concepts from the "Observational Approach" and "OU strategy."

Phase I of the RI will be implemented, including:

- a Phase I RI Report will be prepared which will identify OUs and present a preliminary baseline risk assessment,
- an OU-based Phase II RI Plan will be prepared, and
- the Phase I RI field activities will begin.

5.2.8.5 List of FY93 Scheduled Milestones

None.

5.2.8.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
3308	\$ 0

**5.2.9 ORNL WAG 9 Environmental Restoration (FY94 ADS: OR-3309)
(FY93 ADSs: OR-324AG, OR-332AA)**

5.2.9.1 Description

WAG 9 is contaminated with radioactive, hazardous, and mixed waste and is composed of the Homogeneous Reactor and its support facilities which require, or may require, remediation. A two-phased RI is assumed due to the size and complexity of this WAG.

5.2.9.2 Status of FY92 SSP Objectives

During the period from 10/01/90 through 3/31/92, an RI work plan was prepared and submitted to the EPA and TDEC for review, comment, and approval. No comments have been received to date.

5.2.9.3 FY93 Objectives

No activities are planned for FY93.

5.2.9.4 FY94-98 Objectives

RI activities will be initiated in FY96 with the revision to the Sampling and Analysis Plan for the Phase I RI. These revisions will:

- incorporate any new information obtained since the plan was originally prepared,
- comments from the EPA and TDEC, and
- concepts from the "Observational Approach" and "OU strategy" concept.

Phase I of the RI will be implemented, including:

- preparation of a Phase I RI Report which will identify OUs and present a preliminary risk assessment,
- preparation of an OU-based Phase II RI Plan, and
- start of the Phase I RI field activities.

5.2.9.5 List of FY93 Scheduled Milestones

None.

5.2.9.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
3309	\$ 0

5.2.10 ORNL WAG 10 Environmental Restoration (FY94 ADS: OR-3310) (FY93 ADSs: OR-324AH, OR-324XH, OR-333)

5.2.10.1 Description

WAG 10 is contaminated with radioactive, hazardous, and mixed waste and is composed of four sites which require, or may require, remediation. These sites include the injection wells and grout sheets associated with the Old and New Hydrofracture Facilities and experimental injections. A two-phased RI is assumed due to the size and complexity of this WAG.

5.2.10.2 Status of FY92 SSP Objectives

During the period from 10/01/90 through 3/31/92, an RI work plan was prepared and submitted to the EPA and TDEC for review, comment, and approval. Comments have been received from the EPA. These comments were incorporated into the revised Phase I RI work plan, and field sampling activities for the Phase I RI were initiated.

5.2.10.3 FY93 Objectives

Phase I RI field sampling activities will continue, which include geophysical surveys, well modifications, installation of new monitoring wells, and groundwater sampling. Preliminary planning activities will be initiated for the final site remediation of WAG 10. These activities include discussions with several contractors to develop or refine WAG 10 remediation schedules and cost estimates.

5.2.10.4 FY94-98 Objectives

During FY94, the Phase I RI field sampling activities will be completed and the Phase I RI Report will be initiated. Preliminary planning activities associated with final site remediation will be continued.

During FY95-FY98, the Phase I RI Report will be completed and submitted to the EPA and TDEC for their review, comment and approval. The OU-based Phase II RI plan will be

prepared, and Phase II RI field sampling will begin. The IROD for the plugging and abandonment (P&A) of the WAG 10 wells will be prepared and submitted to the EPA and TDEC for approval, and the necessary plans and procedures for the P&A will be prepared. P&A of the observation and monitoring wells will be initiated.

5.2.10.5 List of FY93 Scheduled Milestones

None.

5.2.10.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
3310	\$3,704

5.2.11 ORNL WAG 11 Environmental Restoration (FY94 ADS: OR-3311)
(FY93 ADSs: OR-324AJ, OR-325AC, OR-329, OR-330, OR-332AA, OR-329EX)

5.2.11.1 Description

WAG 11 is contaminated with radioactive, hazardous, and mixed waste and incorporates the White Wing Scrap Yard. This site was used for above-ground storage of contaminated material from ORNL, K-25, and Y-12. Evidence suggests that subsurface disposal may have occurred. The majority of the above-ground material has been removed, yet some scrap metal, concrete, and other debris are still located on the site. Surface soils are also contaminated with radionuclide and possibly other hazardous constituents. A two-phased RI is assumed due to the size and complexity of this WAG.

5.2.11.2 Status of FY92 SSP Objectives

During the period from 10/01/90 through 3/31/92, the RI work plan was prepared and submitted to the EPA and TDEC for review, comment, and approval. The preparation of the IROD for the removal of the contaminated above-ground debris was completed, and project documentation to perform the removal was initiated. The IROD will be submitted to the EPA and TDEC for review, comment, and approval.

5.2.11.3 FY93 Objectives

Project documentation (e.g., Project Management Plan, Environmental Safety and Health Plan, Waste Management Plan) for the removal of the contaminated above-ground debris at WAG 11 will be completed, and removal activities will be initiated.

5.2.11.4 FY94-98 Objectives

During FY94, activities for the WAG 11 contaminated above-ground debris removal will be completed.

During FY95-FY98, Phase I RI activities will begin. These activities include revision and submittal to the EPA and TDEC of the Sampling and Analysis Plan for the Phase I RI, and field sampling and analysis. The Phase I RI Report will be prepared, which will identify OUs and present a baseline risk assessment to the EPA and TDEC. Preliminary planning activities will be initiated for the final site remediation of WAG 11. These activities include discussions with the remedial design and remedial action contractors for site cleanup, and development and/or refinement of WAG 11 remediation schedules and cost estimates.

5.2.11.5 List of FY93 Scheduled Milestones

- Approve Remedial Action Work Plan for debris removal.

02/93

5.2.11.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
3311	\$700

5.2.12 ORNL WAG 13 Environmental Restoration (FY94 ADS: OR-3312)
(FY93 ADSs: OR-324AK, OR-325AD, OR-329, OR-330, OR-332AA, OR-329EX)

5.2.12.1 Description

WAG 13 is contaminated with radioactive, hazardous, and mixed waste and includes two environmental research areas where a number of simulated fallout experiments were performed in the 1960s using Cs-137. These sites may require remediation. A two-phased RI is assumed due to the size and complexity of this WAG.

5.2.12.2 Status of FY92 SSP Objectives

During the period from 10/01/90 through 3/31/92, the Phase I RI work plan was prepared and submitted to the EPA and TDEC for review, comment, and approval. The preparation of the IROD for the removal or shielding of four cesium-contaminated plots has been completed, and the project documentation to perform the field activities was initiated. The IROD will be submitted to the EPA and TDEC for review, comment, and approval.

5.2.12.3 FY93 Objectives

Project documentation (e.g., Project Management Plan, Environmental Safety and Health Plan, Waste Management Plan) for the removal or shielding of four cesium-contaminated plots will be completed, and construction activities will be initiated.

5.2.12.4 FY94-98 Objectives

During FY94, construction activities for the WAG 13 cesium-contaminated plots will be completed.

During FY95-FY98, Phase I RI activities will begin. These activities include revision and submittal to the EPA and TDEC of the Sampling and Analysis Plan for the Phase I RI, and field sampling and analysis. Preliminary planning activities will be initiated for the final site remediation of WAG 13. These activities include discussions with the remedial design and remedial action contractors for site cleanup, and development and/or refinement of WAG 13 remediation schedules and cost estimates.

5.2.12.5 List of FY93 Scheduled Milestones

- Approve Remedial Action Work Plan for cesium plots IROD. 12/92

5.2.12.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
3312	\$563

**5.2.13 ORNL Inactive LLLW Tank Systems (FY94 ADS: OR-3313)
(FY93 ADSs: OR-331, OR-332AA)**

5.2.13.1 Description

The activities provide for remediation for the inactive liquid low-level waste tank systems. These tanks have contents contaminated with radioactive, hazardous, transuranic, and mixed waste. Remediation of soils and groundwater that may have been contaminated and the removal of most of the tanks are covered as part of the other ADSs. Remediation of the tank contents includes:

- field investigations and assessments leading to the deliverables required by the Federal Facility Agreement (FFA);
- treatability studies;
- engineering analysis;
- interim corrective measures to reduce the risk associated with the tank contents;
- final remediation of tank contents; and
- construction of treatment, storage, and disposal facilities to support these tanks.

Removal of the tanks is not a part of this task unless it is integrated into the ICM or final remediation of the tank contents or is a logical action to take.

5.2.13.2 Status of FY92 SSP Objectives

During the period from 10/01/90 to 3/31/92, identification and location of the inactive LLLW tanks were completed, and characterization of the contents of the tanks was initiated. Plans and schedules for the FFA deliverables were prepared, and field data (e.g. tank schematics, analysis of tank contents) were collected to begin meeting these deliverables. A risk characterization was completed, and the Resource Conservation and Recovery Act closure plans were prepared for the storage canal located at Building 3001 and for the storage tank located near Building 7860. Field activities associated with RCRA closure of the tank located near Building 7860 and the storage canal at Building 3001 will be completed.

5.2.13.3 FY93 Objectives

The alternatives assessment for the tanks located at the North and South Tank Farms will be completed, and an FS report will be prepared for these tanks. Post-closure monitoring at Building 3001 Storage Canal will be performed. A study on ground-penetrating radar will be conducted, and studies on sludge mobilization and in-situ grouting will be initiated. The contents from five tanks will be removed, treated, and disposed. Content and risk characterizations will be continued for the FFA deliverables, and corrective measures will be identified and planned for the North and South Tank Farms.

5.2.13.4 FY94-98 Objectives

During FY94, the following activities are planned:

- post-closure monitoring of the Building 3001 Storage Canal;
- removal of one inactive LLLW tank;
- preparation of the proposed plan for the North and South Tank Farms;
- completion of the sludge mobilization and in situ grouting studies;
- removal, treatment, and disposal of the contents from selected tanks;
- submittal of the RI/FS report for the tanks at the North and South Tank Farms to EPA and TDEC for approval;
- preparation of preliminary engineering design packages and other project documentation for the corrective measures to the North and South Tank Farms; and
- continued efforts to meet the FFA deliverables.

During FY95-FY98, the proposed plan for the tanks at the North and South Tank Farms will be issued to the EPA and TDEC for review, comment, and approval. Remediation to these tanks is expected to begin during this period. Post-closure monitoring of the Building 3001 Storage Canal will continue, as will the removal and disposal of contents from selected tanks.

5.2.13.5 List of FY93 Scheduled Milestones

- | | |
|---------------------------------------------------------------|-------|
| • Submit to EPA and TDEC schedule for tank remediation. | 12/92 |
| • Submit to EPA and TDEC revised waste characterization data. | 06/93 |
| • Submit to EPA and TDEC revised risk characterization data. | 09/93 |
| • Remove the liquid contents from five inactive LLLW tanks. | 09/93 |

5.2.13.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
3313	\$3,406

5.2.14 Surveillance and Maintenance (FY94 ADS: OR-3314)
(FY93 ADSs: OR-329, OR-311AA, OR-311AB,
OR-312, OR-329EX, OR-330)

5.2.14.1 Description

These activities ensure that containment and site control are done at inactive waste sites and other contaminated areas before final remediation. These tasks include:

- WAG surveillance and maintenance (S&M),
- remedial action and fugitive waste management (through FY92), and
- plugging and abandonment (P&A) of inactive groundwater wells.

The S&M task is further divided into the following subtasks:

- S&M planning,
- routine S&M,
- special maintenance projects, and
- project management.

These subtasks are conducted at:

- former solid low-level waste burial grounds,
- liquid low-level waste (LLLW) seepage pits and trenches,
- underground LLLW tanks,
- waste impoundments,
- LLLW line leak sites,
- former environmental research sites,
- inactive landfills, and
- former scrap yards.

5.2.14.2 Status of FY92 SSP Objectives

S&M activities have been conducted for several years throughout the preliminary assessment and remedial investigation phase of the ORNL remedial action effort. Routine S&M activities have been revised to ensure program objectives are met. New S&M activities have been planned and initiated for the RCRA-capped areas in Solid Waste Storage Area (SWSA) 6. Similar plans are being made for the White Oak Creek Embayment (WOCE) project following its expected completion in FY92. Special maintenance projects have been conducted, including:

- resealing the asphalt caps on the LLLW pits and trenches,

- erecting deer control fences around seeps from SWSA 5, SWSA 4, and part of White Oak Creek,
- improving access controls in Melton Valley, and
- removing over 700 radioactive sources from Building 3001 Storage Canal.

Approximately 53,000 gallons of LLLW and 22 million gallons of process waste are collected and treated annually.

5.2.14.3 FY93 Objectives

S&M planning will be conducted for all activities. The S&M plan will be updated as appropriate to ensure adequate containment and site control. Scoping surveys will be conducted at contaminated sites where more information is needed. Potential sites to be surveyed will be prioritized early in the fiscal year.

Routine S&M will be conducted and will include site inspections, maintenance of containment systems and equipment, general facility upkeep, and grounds maintenance.

Special maintenance beyond a routine nature will be performed to correct more serious site deficiencies. Projects expected to be undertaken in FY93 include physical improvements to address contingency situations at the South Tank Farm and improvements in the Melton Valley access control system.

The plugging and abandonment (P&A) of nonessential wells and decommissioning of other wells (identified from the prioritization guidelines contained in the P&A plan) will begin. Wells will be identified for decommissioning in FY94 and FY95, and P&A planning will begin. Updates to the database, including entry of well-decommissioning data, will continue.

5.2.14.4 FY94-98 Objectives

Basic project management activities identified in FY93 will continue in these years. Full-scale implementation of P&A activities will begin in FY94.

5.2.14.5 List of FY93 Scheduled Milestones

- | | |
|------------------------------------------------------------------|-------|
| • Submit report summarizing all S&M related activities for FY92. | 11/92 |
| • Submit NEPA documentation for special maintenance projects. | 12/92 |

5.2.14.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
3314	\$5,000

5.2.15 ORNL Program Management (FY94 ADS: OR-3501)

(FY93 ADSs: OR-322, OR-323, OR-324AA, OR-324AB, OR-324AE, OR-324AH, OR-325A ^, OR-329, OR-330, OR-331, OR-332AA, OR-332AB, OR-333, OR-363, OR-328, OR-329EX, OR-332EX)

5.2.15.1 Description

These activities involve program planning including:

- preparation and maintenance of the life-cycle technical, cost, and schedule baseline for the ORNL ER Program;
- implementation and maintenance of the DOE five-year planning process and annual Current Year Work Plans (CYWPs);
- management of ORNL ER project and staff;
- implementation of ER program management procedures;
- reporting of ER activities;
- quality assurance (QA) activities;
- waste management coordination;
- environmental safety and health (ES&H) oversight; and
- office facilities maintenance.

Energy Systems services to ORNL remedial investigation (RI) include support with:

- facilitation of the RI subcontractor's work;
- ES&H programs oversight;
- the engineering design and permitting requirements;
- plant and equipment needs associated with utility systems;
- access to the site;
- QA and quality control (QC) checks on subcontractor activities;
- provisions of supplies;
- RI subcontractor general project support costs, project management, administration, planning and training; and
- the development of unique ORNL WM facilities.

5.2.15.2 Status of FY92 SSP Objectives

ORNL ER program management activities completed to date include:

- annual preparation of required DOE five-year planning process input,
- CYWPs and supporting documentation,
- management of ORNL ER projects,
- RI subcontractor development and administration,
- project reporting, and
- support to various audits of ER activities.

5.2.15.3 FY93 Objectives

Activities planned for FY93 include:

- maintenance and refinement of the ORNL ER program life-cycle technical, cost, and schedule baseline;
- development, implementation, and maintenance of the DOE five-year planning process (i.e., roadmaps, prioritization, ADSs, site-specific plans, etc.);
- FY93 CYWP;
- FY94 Draft CYWP and supporting documentation;
- management of ORNL ER projects;
- subcontract administration;
- QA;
- waste management coordination;
- ES&H oversight;
- project reporting;
- other miscellaneous activities as required to meet DOE ER Program requirements;
- Energy Systems support services; and
- subcontractor general project support activities for the RI.

5.2.15.4 FY94-98 Objectives

Basic program management activities identified in FY93 will continue in these years. Development of any required unique waste management facilities will be initiated; however, specific requirements are not well defined. They are expected to be better defined as part of the life-cycle baseline development activity.

5.2.15.5 List of FY93 Scheduled Milestones

- | | |
|-------------------------------------|-------|
| • Submit FY95 ADSs to DOE/HQ. | 03/93 |
| • Submit draft FY94 CYWP to DOE/HQ. | 07/93 |

5.2.15.6 FY93 Funding

<u>ADS No.</u>	<u>\$</u> <u>x 1000</u>
3501	\$8,263

5.2.16 White Oak Creek Embayment (FY94 ADS: OR-9301) (FY93 ADS: OR-329)

5.2.16.1 Description

This activity is a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) removal action to prevent the migration of contaminated sediments from the White Oak Creek Embayment (WOCE) to the Clinch River. The action includes construction of a sediment control structure across the mouth of the WOCE to trap sediments and to allow water to flow in both directions.

5.2.16.2 Status of FY92 SSP Objectives

Construction of the sediment control structure was completed in April 1992.

5.2.16.3 FY93 Objectives

No activities are planned for FY93.

5.2.16.4 FY94-98 Objectives

No activities are planned for FY94.

5.2.16.5 List of FY93 Scheduled Milestones

None.

5.2.16.6 FY93 Funding

<u>ADS No.</u>	<u>\$</u> <u>x 1000</u>
9301	\$ 0

5.3 K-25 SITE

Operation of the Oak Ridge Gaseous Diffusion Plant (now called the Oak Ridge K-25 Site) for the past 44 years has created facilities and sites that contain hazardous materials and wastes. These sites include:

- burial grounds,
- process facilities,
- storage facilities,
- surface impoundments,
- treatment facilities,
- process lines, and
- accumulation areas.

All of these have the potential to release contaminants into the environment. Contamination products at K-25 include uranium-contaminated liquid, sludge, and solid Toxic Substances Control Act (TSCA) and Resource Conservation and Recovery Act (RCRA) hazardous wastes.

The shut down gaseous diffusion facilities comprise several large buildings and a number of smaller buildings with a combined under-roof area of about 140 acres. These facilities contain extensive amounts of the following:

- asbestos insulation,
- RCRA oils and chemicals,
- polychlorinated biphenyls,
- special nuclear materials, and
- residual radionuclides.

The shut down gas centrifuge buildings, with 325,000 sq ft of floor space, contain contaminated and classified centrifuge equipment and process materials.

K-25 conducts five ER programs:

1. gaseous diffusion plant (GDP) S&M,
2. GDP decontamination and decommissioning (D&D),
3. centrifuge S&M,
4. centrifuge cleanup, and
5. Central Environmental Restoration Division (CERD) and remedial actions.

5.3.1 Main Plant Area (FY94 ADS: OR-4301)

(FY93 ADSs: OR-411EW, OR-411CD, OR-412EW, OR-412CD)

5.3.1.1 Description

These activities address the ER units in the Main Plant area of the K-25 Site. Study areas undergo a Preliminary Assessment/Site Inspection (PA/SI). The PA involves research into a study area's past operations and the likelihood that hazardous or radioactive wastes were present. The SI phase includes a limited amount of sampling to identify if hazardous or radioactive wastes are present. The PA/SI determines if contamination exists. If contamination is found, the study area becomes an operable unit (OU) and enters the Remedial Investigation/Feasibility Study (RI/FS) phase.

The RI phase involves more extensive sampling to determine the nature and extent of contamination at an OU. In the FS phase, several alternatives for remediating the site are considered. After an alternative is chosen, field work is performed to remediate the OU.

Study areas in the Main Plant area are as follows:

- K-1095 Waste Accumulation Area,
- K-1070-G Burial Ground,
- K-1035 Acid Pits,
- K-822/1037 Cooling Tower Basin and Recirculating Cooling Water Lines, and
- K-1503 Neutralization Pit.

Main Plant area OUs are designated as K-1407, K-1420, K-1070, K-1401, K-1004, K-1007, and K-1413. As information becomes available, potential sites may be identified.

In addition to the above sites, this ADS currently includes:

- RCRA closures of the K-1407-B Holding Pond,
- K-1407-C Retention Basin,
- K-1417 Block Casting/Storage Area, and
- K-1419 Sludge Fixation Plant.

Also included is cleanup of groundwater contaminated by a leaking underground diesel fuel tank near the K-1414 garage. An interim remedial action to address the K-1070-C/D leachate seep is also planned.

Corrective actions for Tiger Team findings are included in the scope of this ADS. Actions in response to these findings include additional investigations of potential sites and of the K-1070-C/D leachate seep. Other actions planned to address these findings include hiring

additional staff, developing new operating instructions, and implementing a resource planning system.

5.3.1.2 Status of FY92 SSP Objectives

Two milestones were listed for the K-1414 bioremediation project: initiate final assessment (May 1991) and initiate remedial field activities (August 1991). Final assessment was actually begun in August 1991; remedial field activities are scheduled to begin in September 1992.

Data Evaluation Technical Memorandums on the K-1407-B & -C ponds, scheduled to be submitted to the regulators in September 1991, were submitted in November 1991. Initiation of field closure activities for the ponds, originally scheduled for June 1992, is now anticipated to begin in March 1993, pending regulatory approval.

5.3.1.3 FY93 Objectives

An RI plan will be initiated for K-1407 OU. RI field activities will be initiated and completed for K-1070 OU. Remedial construction activities will be completed for K-1407-B Holding Pond and K-1407-C Retention Basin. Continued operation and maintenance including soil borings, sampling and analysis will be conducted at the K-1414 bioremediation site. An interim remedial action for the K-1070 Leachate Seep will be implemented.

5.3.1.4 FY94-98 Objectives

In FY94, the following activities are planned:

- RI plan preparation will continue for K-1401 and K-1407 OUs;
- An RI plan will be initiated for K-1004 OU;
- RI field activities at the K-1070 OU will be completed, and an RI report will be prepared;
- A PA/SI will be initiated at K-1070-G;
- Operation and maintenance of the K-1414 bioremediation systems will continue, and verification and system decommissioning of the system will include a final report; and
- Closure activities for the K-1417 and K-1419 facilities will be completed.

For FY95-98, PA/SIs will be completed for the following study areas: K-1070-G, K-1095, K-1503, K-1035, and K-822/1037. RI/FSs will be completed for the K-1401 and K-1070 OUs. RI/FSs will continue for the K-1407 and K-1004 OUs. RI/FSs will be initiated for the K-1413, K-1420 and K-1007 OUs. Remedial design will be completed for K-1070 OU. These objectives assume the unconstrained funding level.

5.3.1.5 List of FY93 Scheduled Milestones

- Submit K-1407 ROD to EPA and TDEC for approval. 12/92
- Submit K-1070 Seep Design Work Plan to EPA and TDEC for approval. 12/92
- K-1417 Block Casting/Storage Area --
Complete closure design/submit to TDEC for approval. 01/93
- K-1419 Sludge Fixation Plant --
Complete closure design/submit to TDEC for approval. 01/93
- Submit K-1070 OU RA Work Plan to EPA and TDEC for approval. 07/93

5.3.1.6 FY93 Funding

<u>ADS No.</u>	<u>\$</u> <u>x 1000</u>
4301	\$21,728

5.3.2 Process Plant Area Remedial Action (FY94 ADS: OR-4302) (FY93 ADSs: OR-492CD, OR-492EW, OR-490CD, OR-490EW)

5.3.2.1 Description

These activities address the ER units in the process plant area of the K-25 Site. The units are divided into two types: Operable Units (OUs) and study areas. Each OU and study area is made up of one or more units which are believed to have contained hazardous or radioactive materials. OUs and study areas both undergo the CERCLA process.

Study areas undergo a Preliminary Assessment/Site Inspection (PA/SI). The PA involves research into a study area's past operations and the likelihood that hazardous or radioactive wastes were present. The SI phase includes a limited amount of sampling to identify if hazardous or radioactive wastes are present. The PA/SI determines if contamination exists. If contamination is found, the study area becomes an OU and enters the Remedial Investigation/Feasibility Study (RI/FS) phase.

The RI phase involves more extensive sampling to determine the nature and extent of contamination at an OU. In the FS phase, several alternatives for remediating the site are considered. After an alternative is chosen, field work is performed to remediate the OU.

The only study area in the Process Plant area is the K-1232 Chemical Recovery Facility. Process Plant area OUs are designated as K-25, K-29, K-33, and K-1410 and K-1064. As information becomes available, other potential sites may be identified.

Corrective actions for Tiger Team findings are included in the scope of this ADS. Actions in response to these findings include investigating potential sites, hiring additional staff, developing new operating instructions, and implementing a resource planning system.

5.3.2.2 Status of FY92 SSP Objectives

Not applicable; none listed in FY92 SSP.

5.3.2.3 FY93 Objectives

SI report for the K-1232 Chemical Recovery Facility will be submitted to the regulators in September 1993.

5.3.2.4 FY94-98 Objectives

During FY94, the RI Work Plan for K-1064 OU will be initiated. The K-1064 OU Work Plan will be completed and submitted to the regulators in June 1995. Site preparation will begin in January 1996, with field work beginning in May 1996. Data validation will be completed in April 1997. The RI report will begin in April 1997 and will be submitted to the regulators in July 1998. The K-1410 OU RI Work Plan is scheduled to begin October 1996, and is scheduled to be completed and submitted to the regulators in June 1998. The K-33 OU RI Work Plan is scheduled to be initiated in April 1997 and completed and submitted to the regulators in December 1998. The K-29 OU RI Work Plan is scheduled to be initiated in October 1997. These objectives assume the unconstrained funding level.

5.3.2.5 List of FY93 Scheduled Milestones

- PA/SI report to EPA and TDEC.

09/93

5.3.2.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
4302	\$852

5.3.3 K-25 External Plant Area (FY94 ADS: OR-4303)

(FY93 ADSs: OR-491EW, OR-491CD, OR-493CD, OR-493EW)

5.3.3.1 Description

This ADS is for ER units in the External Plant area of the K-25 Site. These units are divided into two types: Operable Units (OUs) and study areas. Each OU and study area is made up of one or more sites which are believed to have contained hazardous or radioactive materials. OUs and study areas both undergo a particular phase of the CERCLA process.

Study areas undergo a Preliminary Assessment/Site Inspection (PA/SI). The PA involves research into a study area's past operations and the likelihood that hazardous or radioactive wastes were present. The SI phase includes a limited amount of sampling to identify if hazardous or radioactive wastes are present. The PA/SI determines if contamination exists. If contamination is found, the study area becomes an OU and enters the Remedial Investigation/Feasibility Study (RI/FS) phase.

The RI phase involves more extensive sampling to determine the nature and extent of contamination at an OU. In the FS phase, several alternatives for remediating the site are considered. After an alternative is chosen, field work is performed to remediate the OU.

Study areas in the External Plant area are:

- Area 8 Study Area,
- K-720 Bottom Ash Pile,
- K-1085 Old Firehouse Burn Area,
- Flannagan's Loop Road,
- K-1515-F Land Treatment, and
- K-1099 Blair Quarry.

External Plant area OUs are designated as K-901 (formerly Area 10) and K-770. As new information becomes available, other potential sites may be identified.

Corrective actions for Tiger Team findings are included in the scope of this ADS. Actions in response to these findings include:

- additional investigating of potential waste sites,
- hiring additional staff,
- developing new operating instructions, and
- implementing a resource planning system.

5.3.3.2 Status of FY92 SSP Objectives

A Data Evaluation Technical Memorandum on the K-1070-A burial ground, scheduled to be submitted to the regulators in March 1991, was submitted in April 1991.

5.3.3.3 FY93 Objectives

The regulators are expected to approve the K-901 OU RI Work Plan, after which field sampling and analysis will begin. PA/SIs will be initiated for Area 8 and K-720 in the second quarter and will include field sampling. A PA/SI will be initiated for the K-1085 Firehouse Burn Area in the fourth quarter.

5.3.3.4 FY94-98 Objectives

In FY94 the following activities are planned:

- K-901 OU data analysis, verification, and validation will continue, and a draft report will be completed;
- The Area 8 and K-720 Bottom Ash Pile SI reports will be completed and submitted to the regulators;
- Data analyses and verification for K-1085 Firehouse Burn Area will be completed and a draft SI report written; and
- A PA/SI will be initiated for K-1099 Blair Quarry in the third quarter.

In FY95-98:

- the K-1099 PA/SI will be completed;
- the K-901 OU RI/FS will be completed;
- remedial design will take place; and
- an RI/FS for K-770 OU will be initiated, and field sampling and analysis will be completed.

PA/SIs for K-1515-F and Flannagan's Loop Road will be completed and SI reports submitted to the regulators. These objectives assume the unconstrained funding level.

5.3.3.5 List of FY93 Scheduled Milestones

- | | |
|----------------------------------------------------------------|-------|
| • Submit K-901 OU Remedial Investigation Plan to EPA and TDEC. | 03/93 |
| • Submit K-720 Bottom Ash Pile Interim ROD to EPA and TDEC. | 06/93 |
| • Submit K-770 OU Remedial Investigation Plan to EPA and TDEC. | 09/93 |

5.3.3.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
4303	\$4,090

5.3.4 Pond Waste Management Project (FY94 ADS: OR-4304) (FY93 ADSs: OR-409EW, OR-409CD)

5.3.4.1 Description

The Pond Waste Management Project (PWMP) entails efforts to address the hazardous waste sludge storage problem. This problem developed as a result of the RCRA closure activities for the K-1407-B and K-1407-C Ponds at the K-25 Site. Approximately 77,000 drums of stabilized and raw sludge are involved in the PWMP, and the focus of activities is to correct several regulatory noncompliance issues. The sludge will be stored on-site until a permanent disposal site and/or additional treatment criteria are identified. The objective of the PWMP is to achieve fully compliant storage.

5.3.4.2 Status of FY92 SSP Objectives

Five major subcontracts for new storage facilities, de-watering processing, stabilized drum processing, and packing and storing of material have been awarded. Processing and de-watering of approximately 45,000 drums has begun; 5,500 steel pallets have been procured, and the production of bulk storage containers has been initiated. Raw sludge de-watering and repacking has begun. Statistical sampling of stabilized sludge drums has been undertaken to prepare for initiation of a de-listing petition.

5.3.4.3 FY93 Objectives

The processing and compliant storage of approximately 45,000 drums of stabilized sludge will be completed, as will the production and delivery of 20,000 bulk storage and over-pack containers. The raw sludge de-watering and re-packing process will be completed, with the resulting compliant storage of an additional 20,000 containers. The statistical sampling and characterization of drums containing stabilized sludge will be completed, and the de-listing petition initiated.

5.3.4.4 FY94-98 Objectives

The PWMP is scheduled for completion in early FY94. Project closeout will be completed including archiving project files, finalizing and summarizing costs, closing-out subcontracts, and producing of final reports. A statistical radiological surface survey of the K-1417 A&B pads will be conducted for informational purposes.

5.3.4.5 List of FY93 Scheduled Milestones

- Complete transfer of stabilized waste. 10/92
- Complete volume reduction and transfer to compliant storage facilities. 02/93

5.3.4.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
4304	\$26,436

5.3.5 K-25 Site Groundwater Protection Program (FY94 ADS: OR-4305) (FY93 ADSs: OR-437CD, OR-437EW)

5.3.5.1 Description

The K-25 Site Groundwater Protection Program (GWPP) is required to characterize the hydrogeology and to monitor the quality of groundwater at the K-25 Site. These tasks are conducted primarily for three purposes:

1. compliance with CERCLA groundwater monitoring requirements,
2. compliance with Resource Conservation and Recovery Act (RCRA) interim status or permit groundwater monitoring requirements, and
3. support to the Environmental Restoration Program.

Groundwater monitoring is conducted to fulfill the objectives of:

- 3004(u/v) RCRA Facility Investigations (RFIs);
- CERCLA Remedial Investigations/Feasibility Studies (RI/FSs); and
- Underground Storage Tank (UST) corrective actions, as applicable.

Other programs which are supported on an as-needed basis include Facilities Decontamination and Decommissioning (FD&D) and Low-Level Waste Disposal (LLWD).

Support for the above programs is provided in many forms, including:

- technical advice and assistance,
- well installation and development,
- sampling and analysis,
- data management,
- data interpretation,
- report preparation,
- regulatory negotiation, and
- implementation of corrective actions.

The policy of the K-25 GWPP is dictated by Energy Systems Policy Procedure ESH-14, Environmental Protection and Waste Management. Following this procedure, the policy of the GWPP is to provide for protection of groundwater resources at the K-25 Site consistent with Federal, state, and local requirements and in accordance with DOE Orders and Corporate policy.

5.3.5.2 Status of FY92 SSP Objectives

A total of 204 groundwater monitoring wells have been installed within and around Solid Waste Management Units (SWMUs). Baseline monitoring of existing wells was completed in FY90, with the exception of new wells installed in the summer of 1991. Plant hydrogeology and groundwater quality reports were also completed in FY90. Groundwater activities have undergone a transition from SWMUs to a Waste Area Grouping (WAG) approach.

K-1407-B and K-1407-C Ponds have been monitored under a Tennessee Department of Environment and Conservation RCRA interim status modified detection program and are currently sampled semi-annually.

Annual monitoring of approximately 80 groundwater monitoring wells was accomplished in FY92.

The Environmental Restoration Program is responsible for planning, budgeting, and managing activities required to accomplish remediation of the K-25 Site. The GWPP interacts with ER by providing technical assistance to Remedial Investigation preparation teams. Support provided includes reviewing/commenting on technical documents and attending team meetings. New groundwater activities, such as hydrogeologic characterization work, are accomplished in support of ER and other site programs. All groundwater well surveillance and maintenance related to ER Operable Units are the responsibility of the GWPP.

5.3.5.3 FY93 Objectives

The FY93 objectives include sampling of 11 RCRA interim status wells and other groundwater monitoring in support of K-25 ER Remedial Investigations. K-25 site-wide hydrogeologic characterization work and baseline monitoring of new wells are scheduled to begin in FY93, if sufficient funding is received. The GWPP will also develop a groundwater database in order to transfer data to the Oak Ridge Environmental Impact Statement (OR-EIS) in a compatible format.

5.3.5.4 FY94-FY98 Objectives

Since the GWPP is an on-going program, objectives for FY94-98 are similar to those for FY93.

In FY94 the following activities are planned:

- sample and analyze of RCRA monitoring wells;
- provide technical support to the ER Program;
- continue site-wide hydrogeologic characterization;
- maintain groundwater database in support of OREIS;
- schedule and oversee monitoring well inspection and maintenance activities; and
- monitor groundwater quality in support of ER Program.

In FY95-98:

- Continue FY94 activities.

5.3.5.5 List of FY93 Scheduled Milestones

- | | |
|-----------------------------------|-------|
| • 1992 Annual Groundwater Report. | 03/93 |
| • Sample RCRA Compliance Wells. | 04/93 |
| • Sample RCRA Compliance Wells. | 09/93 |

These milestones are based on the unconstrained funding level for this ADS.

5.3.5.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
4305	\$1,832

**5.3.6 Surveillance and Maintenance of Inactive Waste Sites (FY94 ADS: OR-4306)
(FY93 ADS: None)**

5.3.6.1 Description

Past activities conducted at the Oak Ridge K-25 Site (formerly the Oak Ridge Gaseous Diffusion Plant) have resulted in areas of contamination not associated with current operations. These "inactive" waste sites include burial grounds, holding ponds, former treatment facilities, quarries and scrap yards. Remediation of these sites will be accomplished through the Environmental Restoration (ER) Program; however, continuous monitoring of inactive waste sites is necessary to ensure that hazardous wastes at each site are properly controlled and contained until the sites are remediated. Surveillance and maintenance (S&M) activities are oriented towards contamination containment and establishing control boundaries for each waste site. Surveillance and maintenance activities are guided by DOE Orders with respect to radiological activities, industrial hygiene, and environmental protection. These activities are not intended to be a substitute for remedial actions conducted as part of the ER Program.

S&M activities will consist of four primary areas:

1. S&M planning,
2. routine S&M,
3. special maintenance projects, and
4. project management.

Surveillance and maintenance planning begins with the establishment of surveillance requirements for each site (project scoping), review of inspection reports and surveillance data, and revisions to S&M activities based on inspection and surveillance data. Routine S&M includes periodic surveillance of each site by health physics, industrial hygiene, and environmental management department personnel. Maintenance of containment systems, monitoring instrumentation, facility support equipment, and grounds upkeep are also part of routine maintenance. Special maintenance projects are tasks beyond routine and are typically non-repetitive. Special maintenance projects are implemented to correct serious deficiencies found at a site. Project management includes the management, oversight, and coordination of S&M activities (routine and special projects) for an operable unit. Interface between the K-25 Site and the ER Program is an additional task conducted as part of project management.

5.3.6.2 Status of FY92 SSP Objectives

This is a new ADS for FY93.

5.3.6.3 FY93 Objectives

Surveillance and maintenance activities will be implemented for all inactive waste sites during FY93. Significant activities will include:

- the development of an S&M plan,
- S&M practices and procedures,
- identification of S&M requirements for each site through scoping surveys,
- prioritization of S&M activities, and
- implementation of routine S&M activities.

Special maintenance projects will also be identified and scoped. Potential special projects include:

- characterization of groundwater seeps from the K-1070-B,-C, and-D Burial grounds,
- characterization of surface runoff from the scrap metal yard, and
- surface runoff from the coal/ash pile in the old powerhouse area.

5.3.6.4 FY94-98 Objectives

S&M planning will continue to be updated based on changes that may result from the ER Program's interim remedial measures and changes in site conditions. Routine S&M activities will continue, including:

- site inspections,
- maintenance of containment and monitoring systems, and
- periodic radiological and environmental monitoring.

5.3.6.5 List of FY93 Scheduled Milestones

- | | |
|-------------------------------|-------|
| • Complete program plan. | 12/92 |
| • Complete S&M Annual Report. | 09/93 |

5.3.6.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
4306	\$1,700

**5.3.7 Landlord Capital Equipment (FY94 ADS: OR-4401)
(FY93 ADS: OR-438-EW)**

5.3.7.1 Description

The Landlord Capital Equipment activity provides for the procurement of the capital equipment necessary to support the K-25 Site infrastructure and general purpose/multi-programmatic facilities. A significant portion of this funding provides for a multi-year vehicle replacement program. Equipment and instrumentation requirements are identified by the various K-25 elements. For FY92 only, this activity also funded landlord capital construction projects. Beginning in FY93, landlord capital construction will be supported in ADS OR-4402.

5.3.7.2 Status of FY92 SSP Objectives

Capital Equipment procurements for FY92 include two data systems. The Computer Requisition/Applicant Tracking System is an improved mainframe application designed to meet increased legal requirements for applicant tracking information. The second system is the Phase I Electronic Information/Documentation Processing System, which is designed to meet the Federally-imposed recordkeeping obligations for government contractors.

Capital Construction projects for FY92 include the design work for modifications to the K-25 Laundry and the construction of a prefabricated modular office building. The Laundry modification design will upgrade the 44-year-old facility by correcting safety deficiencies and bringing it into compliance with current DOE standards. The modular office building will help relieve the severe office space shortage at the Site.

5.3.7.3 FY93 Objectives

Capital equipment purchases for FY93 involve additional data processing equipment. Phase II of the Electronic Information/Documentation Processing System will be procured. The other major purchase for FY93 is the Plant Engineering Network Servers system. This equipment will allow online storage of the design documentation used by the various engineering disciplines at K-25 and will provide ready access to the information for all users.

5.3.7.4 FY94-98 Objectives

In addition to vehicle fleet upgrades during the FY94 through FY98 period, there will be several major analytical equipment purchases. An Infrared Analyzer and a Purge and Trap Sampling Device will be procured in FY94 to support both ER and WM activities at the Site.

An Automatic Purge & Trap Sampling Device is required for environmental analysis of volatile organics. Delay in replacement of this equipment will result in QA/QC criteria failure and will prevent or greatly delay (causing holding time failures) the analyses of important environmental restoration samples. These criteria are critical from a legal as well as a technical standpoint. Failure to meet the QA/QC criteria can constitute legal noncompliance. Drivers for this equipment include DOE Order 5480.4 "Environmental Protection" and 40 CFR 26 "RCRA Materials Identification."

An Infrared Analyzer is required for use by Industrial Hygiene to assist in a wide range of field-based operations including environmental and personal exposure monitoring at remedial action sites. Due to its portability, speed, and reliability, this instrument is ideal for emergency identification of hazardous compounds. It is also an intrinsically safe instrument (will not ignite in a combustible atmosphere) capable of operating for four hours between charges. This equipment will assist in compliance with 29 CFR 1910.1000 "Permissible Exposure Limits" and 29 CFR 1910.120 "Hazardous Waste Operators and Emergency Response Standard."

Other purchases during the period will provide for the upgrade or replacement of aging or obsolete equipment as identified by K-25 elements.

5.3.7.5 List of FY93 Schedule Milestones

None.

5.3.7.6 FY93 Funding

<u>ADS No.</u>	<u>\$</u> <u>x 1000</u>
4401	\$1,818

5.3.8 Landlord Capital Construction (FY94 ADS: OR-4402) (FY93 ADS: OR-443-EW)

5.3.8.1 Description

The Landlord capital construction activity provides for the planning, design, construction, and program management necessary to support the K-25 infrastructure and general purpose/multi-programmatic facilities. This support includes many upgrade projects due to the age of many of the existing facilities at the Site. Also included in these activities is an asbestos abatement program and other improvements to meet operational needs and achieve compliance with DOE and OSHA standards.

5.3.8.2 Status of FY92 SSP Objective

Landlord capital construction projects for FY92 are described in the previous section of this SSP in ADS OR-4401.

5.3.8.3 FY93 Objectives

The capital construction projects for FY93 include modifications to the K-25 Laundry to upgrade the aged facility and to bring it into compliance with current safety standards. An additional modular office building will be constructed in FY93. Designs for an upgrade to the heating and cooling system for building K-1007 and a K-25 electrical utilities upgrade are also scheduled.

5.3.8.4 FY94-98 Objectives

The Building K-1007 heating and cooling system upgrade and the K-25 electrical utilities upgrade will be initiated in FY94. The Site Infrastructure Support Plan will be refined to document the scope, schedule, and cost estimates for the landlord program. Feasibility studies will be conducted to ensure the most cost-effective alternatives are chosen for needed capital construction projects. Because of the age and condition of the existing facilities at K-25, the capital construction program is fluid and reflects the most important priorities for upgrade or replacement as conditions warrant.

5.3.8.5 List of FY93 Schedule Milestones

None.

5.3.8.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
4402	\$16,761

5.3.9 ER Program Management (FY94 ADS: OR-4501)

(FY93 ADS: OR-411EW, OR-411CD, OR-412EW,
OR-412CD, OR-490EW, OR-490CD, OR-491EW,
OR-491CD, OR-492EW, OR-492CD, OR-493EW,
OR-493CD)

5.3.9.1 Description

This ADS funds costs for managing the K-25 ER Program and for working with other Energy Systems organizations. Work includes:

- establishing an overall schedule for ER projects,
- interacting with regulators,
- developing and implementing management plans,
- performing self-assessments, and
- developing plans for future investigations and cleanups.

5.3.9.2 Status of FY92 SSP Objectives

A baseline scheduled for completion in August 1991 was submitted to DOE Headquarters in May 1992.

5.3.9.3 FY93 Objectives

Implement program management activities as described above.

5.3.9.4 FY94-98 Objectives

Implement program management activities as described above.

5.3.9.5 List of FY93 Scheduled Milestones

None.

5.3.9.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
4501	\$3,740

5.4 DECONTAMINATION AND DECOMMISSIONING (D&D)

5.4.1 Y-12 Plant Facilities Decontamination and Decommissioning

(FY94 ADS: OR-2701)

(FY93 ADSs: OR-222G1, OR-252G1, OR-253G1, OR-254G1, OR-255)

5.4.1.1 Description

Decontamination and Decommissioning (D&D) efforts at Y-12 will be long term. Surplus facilities identified through Y-12's current downsizing and consolidation efforts will be transferred to the Y-12 D&D Program. While awaiting D&D efforts, these facilities will be kept in a safe shutdown condition through execution of an established surveillance and maintenance (S&M) Plan. Each S&M Plan includes routine maintenance activities, health physics and industrial hygiene surveys, safety audits, routine monitoring and testing of fire alarms and other emergency equipment, and maintenance of all documentation regarding any activities in the facility.

One facility, Building 9201-4 ("Alpha 4"), is awaiting decontamination and decommissioning. Building 9201-4 houses a former mercury solvent extraction process used for lithium isotope separation. The process, which operated during the late 1950s and early 1960s, consists of separation columns and associated pumps, piping, trays, and tanks that still retain a large quantity of mercury. The D&D of 9201-4 is an integral part of the plan to remediate mercury contamination at Y-12. No specific deadline is mandated for initiation and/or completion of this activity, and RCRA/CERCLA requirements do not currently apply to the remediation of this facility.

Several other facilities have been identified as candidates for D&D. Building 9731 housed a calutron process, inactive since 1977, and is contaminated with PCBs and uranium. Building 9213, which has been inactive for several years, was a Critical Experiments Facility and is contaminated with uranium and other radioactive isotopes. Building 9202 Head-End Area housed several experimental laboratories and is contaminated with uranium, asbestos, and several other contaminants.

5.4.1.2 Status of FY92 SSP Objectives

S&M continued in Building 9201-4. D&D planning activities for the facility were also initiated.

5.4.1.3 FY93 Objectives

S&M will continue at Building 9201-4 as will D&D planning activities for the facility. A NEPA Environmental Assessment will be initiated for the Phase I activities of 9201-4.

Phase I includes removal, decontamination, and demolition of process equipment and piping and decontamination of the interior of the facility. A D&D Plan for 9201-4 will also be prepared.

All drainable residual mercury will be drained from the process equipment and piping in 9201-4. In addition, removal of friable asbestos insulation from the steam lines in the facility will be initiated. Removal of this asbestos is required prior to beginning demolition activities in the facility.

5.4.1.4 FY94-98 Objectives

S&M will continue at Building 9201-4 as will the Phase I D&D activities. After all asbestos insulation is removed from the building, the process equipment and piping will be removed and decontaminated.

Several other buildings, including 9213, 9202 Head-End Area, and 9731, will transfer to the D&D Program; and S&M activities, as well as D&D planning, will be scheduled for these facilities.

Lessons learned from facility characterization, decontamination, dismantlement, and material disposition activities will be used as inputs to the Deactivation, Decommissioning, and Recycle demonstrations and projects.

5.4.1.5 FY93 Scheduled Milestones

- Complete the D&D Plan for 9201-4. 09/93
- Complete Annual Summary Report of S&M Activities. 09/93

5.4.1.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
2701	\$10,320

5.4.2 ORNL Facilities Decontamination and Decommissioning (FY94 ADS: OR-3701)

(FY93 ADSs: OR-313AA,
OR-313AB, OR-314,
OR-315, OR-338AB,
OR-338AC, OR-338AD,
OR-339AA, OR-339AB,
OR-339AC, OR-339AD,
OR-339AE, OR-339AF,
OR-339AG)

5.4.2.1 Description

Many ORNL facilities have been declared surplus because the programs for which they were built have been completed. Because these facilities contain residual inventories of radioactive and other hazardous materials, the potential exists for release to the environment or exposure to personnel. These facilities must be decontaminated and decommissioned. Until decommissioning is completed, the facilities must be kept under surveillance so that necessary maintenance can be planned and implemented, thereby assuring continued safe containment. The inventory of surplus contaminated facilities includes:

- experimental reactors,
- technology support facilities,
- hot cells,
- isotope processing facilities,
- research laboratories, and
- decontamination facilities.

To meet the objective of adequate containment and site control prior to decommissioning, a structured program of surveillance and maintenance (S&M) has been established. Three principle tasks comprise this effort:

1. S&M planning,
2. routine S&M, and
3. special maintenance projects.

The planning function involves establishing surveillance requirements, evaluating inspection reports and surveillance data, and supervising all routine and special maintenance activities. Routine S&M consists of scheduled site inspections, radiological surveillance, and periodic maintenance as a result of inspections and monitoring. Special maintenance projects are planned and implemented to correct serious site deficiencies that are beyond the scope of routine maintenance. These activities are of the highest priority since they are required to

ensure the health and safety of on-site and off-site populations and the protection of the environment. Through these activities, the functionality of engineered barriers inherent in nuclear facilities will be assured. This permits safe protective storage for the near term. As decommissioning projects are initiated for high-priority facilities, the scope of S&M activities will decrease accordingly.

Facilities are prioritized for decommissioning on the basis of potential risks to health and safety, environmental concerns, cost of continuing surveillance and maintenance, and regulatory compliance. Emphasis is placed on integrating D&D of facilities with remediation of adjacent solid waste management units. This integration process provides for a single cost effective restoration effort which encompasses both contaminated facilities and contaminated soils, groundwater, or other media into a single operable unit.

As a facility enters the decommissioning stage, a project is planned and implemented according to a structured project management approach prescribed by DOE. This approach includes:

- site characterization,
- development of preliminary designs/D&D alternatives,
- selection of a preferred alternative,
- final design, and
- D&D implementation.

The project sequence also includes environmental review and documentation to comply with the National Environmental Policy Act (NEPA) and significant participation by DOE through startup and readiness reviews. For projects which are being integrated into an operable unit remedial action, D&D project planning will parallel the conventional CERCLA process.

Periods of duration for individual projects could range from one year or less for simple facilities to multiple years for complex hot cell facilities or experimental reactors. Initiation and continuation of ORNL D&D projects are subject to DOE-OR priorities as well as national priorities for D&D of facilities at other installations. Precise schedules for starting and completing projects are not always possible. However, the S&M program previously described will remain in force to ensure adequate containment and site control.

5.4.2.2 Status of FY92 SSP Objectives

S&M activities have continued at all facilities without identification of significant problems or concerns requiring major corrective action. Special maintenance projects have also been initiated at a number of facilities. Planning has been completed to correct facility conditions

which do not comply with the Occupational Safety and Health Act (OSHA) at the Low-Intensity Test Reactor (LITR) and Homogeneous Reactor Experiment (HRE). Abatement of asbestos concerns at the Graphite Reactor and Molten Salt Reactor Experiment (MSRE) has also been planned.

An assessment of compliance of the MSRE with DOE Orders is also underway. This assessment will determine what physical improvements or managerial actions are needed for compliance with environmental, safety, and health-related DOE Orders.

Procurement activities are underway to acquire a subcontractor to decontaminate a process cell at the Metal Recovery Facility (MRF). This activity is expected to conclude in FY93 with the contractor on-site performing decontamination.

5.4.2.3 FY93 Objectives

S&M will continue as scheduled at all facilities. The Oak Ridge Research Reactor is expected to be transferred to the D&D Program and undergo S&M while awaiting decommissioning.

Decommissioning planning will be initiated at three facilities:

1. the Fission Product Pilot Plant (FPPP),
2. the Waste Evaporator Facility (WEF), and
3. the Old Hydrofracture Facility (OHF).

The first two facilities are located on the east and west ends, respectively, of the south tank farm. Their decommissioning will be integrated with remedial action planned for the gunite tanks, and thus will parallel the CERCLA process for that operable unit. The OHF is located in Waste Area Grouping (WAG) 5 and will require decommissioning to facilitate subsequent remedial action planned for that WAG. In other activities, decontamination of cell G at the MRF will be completed, and planning will be initiated for further decommissioning and final facility disposition.

5.4.2.4 FY94-98 Objectives

S&M will continue as scheduled at all facilities. A number of major isotope facilities are expected to be transferred to the D&D Program and undergo S&M while awaiting decommissioning.

Decommissioning is expected to be completed at the FPPP, WEF, and OHF. Final D&D design will be completed for the MRF with subsequent facility D&D to follow. Decommissioning will be planned and initiated for the HRE, Shielded Transfer Tanks,

surplus heat exchangers at the Oak Ridge Research Reactor, and 9419-1 Decontamination Facility. Planning will also be initiated for decommissioning of the following:

- MSRE,
- LITR,
- Molten Salt Corrosion Loop,
- inactive cells at the Fission Product Development Laboratory,
- Coolant Salt Technology Facility, and
- the Graphite Reactor.

Lessons learned from facility characterization, decontamination, dismantlement, and material disposition activities will be used as inputs to the Deactivation, Decommissioning, and Recycle demonstrations and projects.

5.4.2.5 List of FY93 Scheduled Milestones

- | | |
|-------------------------------------------------------|-------|
| • Submit Preliminary NEPA Documentation for FPPP D&D. | 02/93 |
| • Submit Preliminary NEPA Documentation for WEF D&D. | 02/93 |
| • Submit Preliminary NEPA Documentation for OHF D&D. | 02/93 |
| • Issue MRF Cell G Final Report. | 06/93 |
| • Complete Annual Summary Report of S&M Activities. | 09/93 |

5.4.2.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
3701	\$4,963

5.4.3 K-25 Facility Decontamination and Decommissioning (FY94 ADS: OR-4701)

(FY93 ADSs: OR-405C2,
OR-406C2, OR-414C2,
OR-415CD, OR-416C2,
OR-418C2, OR-439C2,
OR-440C2, OR-407CD,
OR-405G1, OR-405G2,
OR-406G1, OR-406G2,
OR-407EW, OR-410EW,
OR-414CX, OR-414CZ,
OR-414G1, OR-414G2,
OR-415CX, OR-415GF,
OR-416G1, OR-416G2,
OR-417EW, OR-418CX,
OR-418G1, OR-418G2,
OR-439G1, OR-439G2,
OR-440G1, OR-440G2)

5.4.3.1 Description

5.4.3.1.1 Gaseous Diffusion Facilities

The K-25 gaseous diffusion facilities, which were the first production facilities of the uranium enrichment complex, were built in the 1940s and 1950s to produce weapons-grade material for national defense. The K-25 and K-27 buildings were dedicated to defense production needs for highly enriched uranium (HEU). The K-29, K-31, and K-33 Buildings were built to increase the production capacity of the HEU facilities by increasing the assay of the feed material into K-27 Building.

After military production of HEU was concluded in 1964, the HEU facilities were shut down and the K-29, K-31, and K-33 Buildings were used to produce low enriched uranium (LEU) for the Civilian Nuclear Power Program initiated in the 1960s. In 1985, DOE decided to suspend environment operations. In 1987, it was permanently shutdown.

The entire complex (HEU plus LEU) comprises 52 facilities with a total floor area of about 300 acres. Since these facilities were constructed in the 1940s and 1950s, much of the materials of construction, internal fluids, and process auxiliary materials are considered hazardous and are now regulated under today's standards. Extensive amounts of asbestos insulation, RCRA (oils and chemicals) and TSCA (PCBs) substances, special nuclear materials, residual radionuclides, and classified hardware must be responsibly managed for decades while appropriate disposition methods are developed.

Until these facilities are decontaminated and decommissioned, S&M will be required to ensure that the facilities are maintained in an acceptable state. S&M activities needed to maintain a safe, environmentally-sound storage condition is substantial because of the size of the facilities, which are the largest in the Defense Facilities D&D Program. S&M funding is mandated by federal regulations and DOE Orders.

S&M activities at K-25 include:

- environmental monitoring of surface water and storm drains, biological water assessments, and NPDES compliance at discharge points from the shutdown facilities;
- environmental management and technical support;
- surveillance inspections to detect environmental, health, and safety hazards associated with these facilities [including, but not limited to, 21 miles of asbestos insulation, 10,000 PCB-contaminated electrical components, 7,000 UF₆ cylinders, 77 lubricating systems containing 279,000 gallons of oil, 200 process coolant systems containing 200,000 gallons of coolants (largely chloroflouro carbons), 20,000 ventilation gaskets contaminated with PCBs and potential leak sources of PCBs, and general facility condition];
- facility maintenance to repair environmental, health, and safety concerns identified in the building, such as (1) interim corrective actions to contain or repair hazardous material systems, (2) patching 120 acres of flat roofs for maintaining building integrity, (3) providing housekeeping of facilities, (4) general building repairs for electrical lighting and utility services, and (5) maintenance for facility care;
- safeguard and security protection of facilities to protect classified and special nuclear material (including security patrols, nuclear material control and accountability, safeguard systems and support personnel, and safeguard-related maintenance);
- fire protection, minimum-level electrical power for lighting, and utility services for water and air for fire suppression systems;
- radioactively contaminated waste storage and decontamination support; and
- special projects for criticality safety, facility safety, large roofing projects, and radioactive contamination control, plus implementation of new DOE Orders governing these facilities.

These activities are required to protect site personnel, the public, and the environment in accordance with federal regulations and DOE orders governing facilities containing radioactive and hazardous materials.

The last of the operating gaseous diffusion facilities at K-25 were shut down and placed in standby in 1985. Since there were long-range forecasts of enrichment needs that required a restart of the diffusion facilities, the facilities were retained in an operational state of readiness with all the hazardous fluids and materials left in place. However, in December 1987, DOE declared that these facilities would no longer be needed for their primary mission of uranium enrichment and should be permanently shut down. Since that decision, plans have been developed for removing surplus hazardous materials still present inside these facilities, and implementation has begun in accordance with environmental regulations governing RCRA materials, PCB-contaminated equipment, and friable asbestos.

On February 20, 1992, a Federal Facility Compliance Agreement (FFCA) was jointly signed by DOE and the Environmental Protection Agency to address the compliance of TSCA regulations at the K-25 Site (as well as the Paducah and Portsmouth Gaseous Diffusion Plants). This agreement establishes responsibilities and commitments for conducting actions required by TSCA at the K-25 Site. It contains the plan which is intended to bring DOE's facilities into full compliance with the TSCA and PCB regulations.

This agreement requires the elimination of PCB's at the K-25 Site in accordance with a mutually agreed upon schedule. Specific actions under the agreement are the PCB Gasket Removal Project, the PCB Electrical Equipment Project, PCB spill cleanup, PCB air sampling, and PCB storage and disposal. To date several actions under this agreement have been completed. The completed actions are as follows:

- all known PCB leaks from ventilations gaskets in buildings K-29, K-31, K-33 have been trougthed to contain PCB drips;
- disposal of 189,000 gallons of PCB contaminated fluids and 65,000 gallons of PCB contaminated mineral oil have been completed; and
- the feasibility study and cost estimate for the PCB Gasket Program have been completed.

The removal of more than 8,000 ventilation gaskets and associated ductwork contaminated with PCBs will be completed by 2001 per the FFCA. The removal specification for subcontractor(s) work is 90% complete for the K-33 building. The bid package is expected to be released later this year.

The Hazardous Material Management Program is responsible for inventorying, characterizing, excessing (if appropriate), removing, and disposing of the hazardous materials associated with the diffusion facilities.

These gaseous diffusion facilities are among the largest contaminated surplus facilities in the world. They were built when asbestos insulation and PCB electrical equipment were the industry standard. The actions to place them in a permanent shutdown condition require several million dollars and an extensive program lasting about seven years. This program will remove and dispose of 21 miles of asbestos insulation, 10,000 PCB-contaminated electrical components, 77 lubricating systems containing 279,000 gallons of oil, and 200 process coolant systems containing 200,000 gallons of coolants (largely fluorocarbons).

The current status of this work is as follows:

- Asbestos has been removed from 5 miles of pipe.
- 225 electrical components plus 9850 capacitors are being disconnected and prepared for disposal or storage.
- Over 14,000 process piping openings have been closed.
- 79,000 gallons of lube oils have been disposed.
- Preparations have been made to transfer coolants to other gaseous diffusion facilities.

Once this program has been accomplished, the facilities will comply with current environmental regulations and can be retained in a prolonged storage condition until D&D issues are resolved.

Since many of the buildings are contaminated with uranium, DOE Order 5480.11 requires control measures to protect employees and to prevent the spread of contamination. These control measures will continue until the decontamination is complete. Boundary control stations for the uranium track-out control have been upgraded in the five-main process building.

Six cooling towers that have been shutdown will be removed in the coming years. NEPA documentation was submitted in 1991, and approval is expected from DOE-OR in 1993. The characterization of the towers to determine waste disposal requirements will be completed in 1993.

The K-25 Decontamination and Decommissioning (D&D) Pilot Project of one cell in the K-27 building includes completion of the D&D of the selected cell by January 1996 and decontamination of the remaining structure. The project will provide cost verification data and logistical information for planning and for the equipment and materials needed to support the activity. It will also provide and encourage industry to explore state-of-the-art decontamination technologies. Ultimate disposal for all waste streams and materials is expected to occur 10 years after D&D completion.

Once this program has been accomplished, the facilities will comply with current environmental regulations and can be retained in a prolonged storage condition until D&D issues are resolved.

Other ongoing activities include projects to remove uranium deposits, to shutdown surplus electrical systems, and to modify depleted UF₆ cylinders to meet long-term storage requirements for storage areas.

5.4.3.1.2 Centrifuge Facilities

The former centrifuges at K-25 which are contaminated must be maintained until the buildings can be decontaminated and an alternative use initiated. Buildings included in this project are K-797, K-798, K-1004-J, K-1004-Q, K-1010, K-1023, K-1045, K-1052, K-1200, K-1210, K-1210-A, K-1220, and K-1600. Since the centrifuge facility cleanup task is not funded, the fiscal year cost for S&M (FY92 through FY96) will remain at the same level. The primary objective of this task is to prevent the former centrifuge facilities from deteriorating and to provide for plant services associated with these facilities.

S&M includes periodic facility inspections and repairs to prevent deterioration and to comply with standards for fire protection, safety, security, and environmental protection. These inspections will include daily observations to identify emergency problems and weekly observations to verify equipment functions. Heating and ventilation will be necessary at minimum levels for facilities with wet sprinkler systems until dry sprinkler systems can be installed.

Other principle activities associated with the former centrifuge facilities include processing of program excess equipment in accordance with Federal Acquisition Regulations. Disposing of process waste and other hazardous materials either originating at K-25 or shipped in to expedite centrifuge manufacturer facilities closeout is also included.

About 50 of 308 trailer loads of contaminated equipment and materials brought in from the former centrifuge manufacturers must be disposed. An additional 25 trailer loads of equipment left from the former development program are being maintained in temporary storage until disposal can be done. S&M will be required until disposal of these materials and equipment is achieved.

The purpose of the centrifuge facility cleanup task is to remove contamination from former centrifuge facilities at K-25. Another important aspect of the work is to decontaminate the centrifuges and piping removed from the centrifuge facilities constructed during the Centrifuge Development Program.

Standard resources, equipment, and techniques are expected to be sufficient for all S&M work. Much of the D&D work will require specialized equipment and techniques that are yet to be proven in technology demonstrations.

5.4.3.2 Status of FY92 SSP Objectives

S&M including repairing of roofs and asbestos maintenance was continued at the Oak Ridge K-25 Site. Removal of 4,100 linear feet of asbestos insulation from piping has been completed. Approximately 39,000 gallons of PCB and PCB-contaminated fluids have been drained from electrical components and incinerated. The sampling plan for cooling tower characterization was completed. Non-essential electrical systems were shut down in K-27 and K-29.

5.4.3.3 FY93 Objectives

Continue S&M of gaseous diffusion and centrifuge facilities. The nonessential electrical systems shutdown will be completed in 1993 for the K-25 and K-31 buildings. Asbestos will be characterized in Buildings K-29 and K-31. The motor exhaust ducts in Building K-33 will be characterized for suspect PCB-contaminated asbestos insulation. Planning for the K-27 Pilot Project will continue. Relocation of the UF₆ cylinders to a new upgraded on-site location will begin. Disposal of electrical equipment will continue. The bid and award contract for the removal of PCB gaskets will be completed. Approval of NEPA documentation for the removal of the cooling towers is expected, and the sampling will be completed. The bid package for the removal of asbestos from Building K-25 and the K-25 Powerhouse will be prepared.

5.4.3.4 FY94-98 Objectives

More facilities which have been shutdown will be added to the D&D Program. S&M will continue on the K-25 Site. A long-term S&M Plan will be issued. Asbestos removal will continue. Removal, storage, and/or disposal of PCB items will levels lower than current TSCA limits will occur. The PCB gaskets and duct removal from Building K-33 will be completed. The D&D Pilot Project for Building K-27 will be completed. The contract for the demolition of the cooling towers will be awarded, and work will begin. Nonessential electrical systems will be shutdown.

Lessons learned from facility characterization, decontamination, dismantlement, and material disposition activities will be used as inputs to the Deactivation, Decommissioning, and Recycle demonstrations and projects.

5.4.3.5 List of FY93 Scheduled Milestones

K-25

- Complete electrical systems shutdown in the K-25 building. 12/92
- Complete electrical systems shutdown in the K-31 building. 05/93

- Initiate removal of PCB gaskets/duct in building K-33. 08/93
- Complete asbestos removal of 2110 linear feet. 09/93
- Complete inspection and characterization of suspect PCB-contaminated asbestos insulation under K-33 motor exhaust ducts. 03/93

5.4.3.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
4701	\$91,686

5.5 CENTRAL ENVIRONMENTAL RESTORATION ORGANIZATION

**5.5.1 Contract Management Support and Environmental Restoration Waste Management (FY94 ADSs: OR-8303, OR-8351)
(FY93 ADSs: OR-448, OR-449, OR-448CD, OR-448EW, OR-448EX, OR-449CD, OR-449EW, OR-449EX)**

5.5.1.1 Description

The Contract Management Support Activity Data Sheets (ADSs) provide for the activities that will be performed by Martin Marietta Energy Systems Environmental Restoration (ER) Program Senior Management personnel and the Central Management Systems organization. These organizations will provide adequate management and resources to assure the accomplishment of the ER priority milestones on schedule, within cost and regulatory constraints, and in a quality manner. The objective is to integrate the site remedial action (RA) and decommissioning and decontamination (D&D) programs into a consolidated program for management control, conduct of operations, and reporting to DOE. Work activities include:

- the ERWM Senior Management;
- the Central Program staff;
- Management Systems; and
- associated material costs, including minor equipment, building maintenance, upgrades, and utilities.

The ER waste management technical scope primarily involves treatment, storage, and disposal (TSD) facilities/activities to provide capacity for ER waste generation which has been left untreated in storage or cannot be provided final disposition during remediation. Support functions to the TSD facilities/activities include:

- program management,
- systems and planning,
- waste minimization, and
- training.

TSD activities/facilities include design, construction, and operation for on-site facilities and operating funds for commercial TSD activities. The waste management scope involves ER waste streams at Portsmouth, Paducah, and the Oak Ridge Reservation including D&D of wastes.

5.5.1.2 Status of FY92 SSP Objectives

The Energy Systems D&D and Remedial Action Program Offices were established by the end of 1990 and were consolidated in February 1992. Staffing and organization have been accomplished, Program Management plans and procedures have been prepared, and a central financial plan was put into place. Detailed spending plans were submitted to DOE, an initial Management Baseline was established, and a Change Control System was developed and implemented.

There were no FY92 SSP objectives for the ER waste management section because it is a new activity. A summary of the ER waste management progress to date follows.

- A waste generation planning base has been developed and automated which provides a comprehensive forecast of the waste volumes expected to be generated as a result of ER activities on the ORR and at the Portsmouth (PORTS) and Paducah (PGDP) Gaseous Diffusion plants.
- A consistency in the approach for projecting these waste volumes was achieved as a result of the development of a "Methodology for Generating Waste Volumes," ES/ER/TM-18.
- A TSD capacity planning model was developed and used to define the design, construction, and operating cost projections for TSD facilities, as well as schedules to determine dates for funding needs.
- An ER Program waste management plan was developed to provide guidance to the ER Program participants. This plan provides guidance on regulatory requirements, organizational responsibilities, functional interfaces, and major program implementation areas to ensure consistency among program participants.
- A waste minimization and pollution prevention program has been developed which details organizational responsibilities for waste minimization and sets forth program objectives.

5.5.1.3 FY93 Objectives

FY92 activities will continue at approximately the same level of effort. Development of automated systems for management information and action tracking will begin in FY93. Also, increased integration will occur among the Oak Ridge prime-contracting organizations.

The following information details the ER waste management objectives for FY93 by major task area.

Continuity of Operations will proceed upon the foundation established in FY92. The waste management program will implement the plan and procedures to fulfill the required TSD facilities and activities.

Waste generation forecasts and TSD capacity plans will be updated and maintained. Project management systems will be developed and utilized to accomplish the following:

- manage ER waste information,
- set quantitative ER waste minimization goals for the ER program, and
- achieve quantitative ER waste minimization goals for FY93.

Objectives for waste treatment will be to (1) complete feasibility study and technical specification and to award a demonstration contract for thermal treatment for TCE/mixed (PORTS) soils; and (2) to complete a feasibility study, sampling/analysis, and project scoping for PCB soil treatment (PGDP). Objectives for waste storage will be to complete Title I and Title II design for a modular ORR central ER waste storage facility. In the area of disposal, a NEPA document and 5820.2A exemption request for commercial mixed waste disposal will be completed.

5.5.1.4 FY94-98 Objectives

FY93 activities will continue at approximately the same level of effort. The Management Control System will be implemented and the Management Information System will be automated.

The following details the ER waste management objectives for FY94 through FY98.

At the unconstrained funding level, the following paragraphs outline what will be accomplished.

FY94:

Continuity of Operations:

- revised ER/waste generation forecasts will be issued, and TSD capacity plans will be updated and maintained;
- interactive capabilities for waste information for the ORR, PORTS, and PGDP will be set forth; and
- quantitative ER waste minimization goals set for FY94 will be achieved.

In the waste treatment area, a contract for full-scale treatment of TCE/mixed soils will be awarded. A feasibility study will be undertaken; and project scoping will be completed, as well as a technical specification for mixed PPE/trash and X-701B box sludge (PORTS). A contract for treatability demonstration on Paducah PCB/mixed soils will be awarded. A feasibility study will be completed. Sampling/analysis and project scoping for mixed contaminated plume treatment sludges and PPE/trash (PGDP) will be completed. NEPA documentation, systems requirements, and initiation of permits for raw pond waste treatment (ORR) will be completed.

In the storage area, operating funds will be provided to Nuclear Energy at PORTS to operate the X-7725 waste storage facility, and a contract for construction of a modular ORR central ER waste storage facility will be provided.

In the support facility area, Title I and Title II designs will be completed for shipping/certification facilities at PORTS, PGDP, and OR. A complete systems requirements document will be completed, and a contract will be awarded for long-lead procurement items for the mobile decontamination units at PORTS, PGDP, and OR.

In the waste disposal area, a contract for off-site commercial mixed waste disposal will be awarded, applicable documentation completed, and disposal of solidified pond sludge from OR initiated. A feasibility study will be completed with intent to follow up on detailed design to consider on-site passive long-term waste storage configurations or on-site disposal for ER waste streams that require engineered facilities after treatment. The increase in funding from FY93 to FY94 enables the awarding of contracts to implement waste, storage, and disposal activities for regulatory-driven ER activities.

FY95:

Continuity of Operations:

- revised ER waste generation forecasts will be issued,
- TSD capacity plans will be updated and maintained, and
- quantitative ER waste minimization goals set for FY95 will be awarded.

In the waste treatment area, full-scale treatment operations for the TCE/mixed (PORTS) soils will be conducted. Contracts for treatment of mixed PPE/trash and X-701B box sludge (PORTS) and treatment on mixed PCB soils (PGDP) will be awarded. A contract for full-scale treatment of mixed contaminated plume treatment sludges and mixed PPE/trash (PGDP), and a contract for full-scale treatment of raw pond sludge (ORR) will be awarded.

In the storage area, funds will be provided to Nuclear Energy at PORTS to operate the X-7725 waste storage facility. EM-30 (waste management) will receive funds to operate the centralized ER storage facility.

In the support facilities area, the mobile decontamination facilities at PORTS, PGDP, and ORR will begin operation. Contracts for construction of shipping/certification facilities at PORTS, PGDP, and OR will be awarded.

In the disposal area, disposal of solidified pond sludge to a commercial facility will continue. A conceptual design report and NEPA documentation on the most feasible options for passive long-term waste storage/disposal at ORR will be produced. Documentation for disposal of LLW off-site either at a commercial or DOE facility will be initiated.

FY96:

Continuity of Operations:

Revised ER waste generation baseline and TSD capacity assessment will be issued, and quantitative ER waste minimization goals set for FY96 will be achieved.

In the waste treatment area, full-scale treatment operations for TCE/mixed (PORTS) soils that will be generated during RCRA corrective measure/closure activities will continue. X-701B sludge and mixed PPE/trash treatment capability (PORTS) will be demobilized or integrated into ongoing remedial activities. The PCB/mixed soil and plume treatment/sludges and mixed PPE/trash treatment capability will be demobilized or integrated into ongoing remedial activities. Full-scale treatment operations on the raw pond sludge will be completed (ORR).

In the storage area, funds will be provided to Nuclear Energy at PORTS to operate the X-7725 waste storage facility. EM-30 will receive funds to operate the centralized ER storage facility.

In the support facilities area, the mobile decontamination facilities at PORTS, PGDP, and ORR will be operated. Construction on shipping/certification facilities at PORTS, PGDP, and OR will be initiated.

In the disposal area, disposal of pond waste and other treated mixed waste streams from PORTS and PGDP will be continued. Disposal of LLW off-site from PORTS, PGDP, and OR will be initiated. Detailed design criteria and performance assessments for a passive long-term waste storage/disposal facility at ORR will be completed.

FY97:

Continuity of Operations:

Revised ER waste generation forecasts will be issued, and TSD capacity plans will be updated and maintained. Quantitative ER waste minimization goals set for FY97 will be achieved.

In the treatment area, the full-scale treatment for TCE/mixed (PORTS) soils will be demobilized or integrated into continuing remedial activities. The full-scale treatment operation for raw pond sludge (ORR) will be demobilized. Development of commercial treatment applications to ER wastes which have been left in storage without treatment will be pursued, such as the PCB gasket removal waste at OR.

In the storage area, Nuclear Energy at PORTS will be funded to operate the X-7725 waste storage facility, and EM-30 will receive funds to operate the centralized ER storage facility.

In the support facilities area, the mobile decontamination facilities at PORTS, PGDP, and ORR will be completed, as will construction on shipping/certification facilities at PORTS, PGDP, and OR. In the disposal area, disposal of pond waste (ORR) and other treated mixed wastes streams from PORTS, PGDP, and OR will continue. Disposal of LLW off-site from PORTS, PAD, and OR will continue. A contract for construction of a passive long-term waste storage/disposal facility at ORR will be awarded.

FY98:

Continuity of Operations:

- revised ER waste generation forecasts will be issued,
- TSD capacity plans will be updated and maintained, and
- quantitative ER waste minimization goals set for FY98 will be achieved.

In the waste treatment area, full-scale implementation of commercial treatments will continue for ER wastes left in storage untreated.

In the storage area, funds will be provided to Nuclear Energy at PORTS to operate the X-7725 waste storage facility. Funds will also be provided to EM-30 to operate the centralized ER storage facility.

In the support facilities area, operation of the mobile decontamination facilities at PORTS, PGDP, and ORR will continue. Operation of the shipping/certification facilities at PORTS, PGDP, and OR will continue.

In the disposal area, mixed wastes and LLW off-site from PORTS, PAD, and OR will be disposed. Construction of a passive long-term waste storage/disposal facility at ORR will be initiated.

5.5.1.5 List of FY93 Scheduled Milestones

The reporting and planning milestones for this ADS will be decided at the beginning of FY93 but will be approximately those listed below.

- | | |
|----------------------------------------------------------------------------------------------------------------|-------|
| • Submit the FY95 Budget Request. | 02/93 |
| • Submit the Unconstrained Level FY95 ADSs. | 03/93 |
| • Submit the final FY95 ADSs. | 04/93 |
| • Prepare for the Mid-Year Review. | 05/93 |
| • Submit the FY95 SSP. | 06/93 |
| • Submit the FY94 Current Year Work Plans. | 07/93 |
| • Update the Life Cycle Baseline. | 09/93 |
| • Update and issue revised ER waste generation forecasts. | 09/93 |
| • Revise ER TSD capacity requirements plan based on waste generation forecasts. | 09/93 |
| • Achieve the quantitative ER waste minimization/pollution prevention goals set for FY93. | 09/93 |
| • Complete Title I and Title II design for centralized OR waste storage facility. | 09/93 |
| • Complete treatability procurement specifications for Paducah PCB mixed soils and Portsmouth TCE mixed soils. | 09/93 |
| • Deploy project management systems to manage ER waste information. | 09/93 |

5.5.1.6 FY 93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
8303	\$10,228
8351	<u>\$ 6,208</u>
Total	\$16,436

5.5.2 Technical Integration (FY94 ADS: OR-8304)

(FY93 ADSs: OR-441CD, OR-441EW, OR-441EX, OR-444C1, OR-444C2, OR-444W1, OR-444W2, OR-444X1, OR-444X2, OR-445CD, OR-445EW, OR-445EX, OR-448CD, OR-448EW, OR-448EX)

5.5.2.1 Description

The ER Technical Integration (TI) Program Office is charged with assuring that technical consistency is achieved for applications, management, and oversight of ER activities in the following areas as appropriate at the Oak Ridge Reservation (ORR), Portsmouth (PORTS), and Paducah (PGDP):

- Technical Integration Operations
- Federal Facilities Agreement Implementation and Operation
- Groundwater Programs
- Analytical Programs
- Remediation Effectiveness Monitoring
- Agreement-In-Principal Site Implementation

5.5.2.2 Status of FY92 SSP Objectives

The various functions of the Technical Integration Program Office were aggressively pursued during FY92.

5.5.2.3 FY93 Objectives

Capital equipment including workstations, file servers, and output devices will be acquired for the Oak Ridge Environmental Information System. The Remediation Effectiveness Monitoring Program will be implemented, and additional analytical equipment or upgrades to existing equipment will continue.

5.5.2.4 FY94-98 Objectives

Activities will be a continuation of work-in-progress with an allowance for growth as a result of extended task durations. These include continued management and operation of the ER program and the total scope as defined above. This also includes audits and compliance reviews. Integration will occur among all DOE-OR participants including prime contractors and subcontracts.

5.5.2.5 List of FY93 Scheduled Milestones

- | | |
|--------------------------------------------------|-------|
| • Develop Integrating Contractor Interface Plan. | 10/92 |
| • Develop Preliminary FFA Appendix E for FY94. | 03/93 |
| • Update permits per DOE Order 5400.2A. | 09/93 |

5.5.2.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
8304	\$14,912

5.6 OFF-SITE

5.6.1 Clinch River - Watts Bar Reservoir (FY94 ADS: OR-9302) (FY93 ADSs: OR-413EW, OR-413CD)

5.6.1.1 Description

The Clinch River Environmental Restoration Program addresses the following:

- historical transport of water-borne contaminants beyond the boundary of the ORR;
- contamination of water, sediments, and biota in off-site surface-water environments; and
- potential risks to human health and the environment associated with off-site contamination in the Clinch River - Watts Bar Reservoir system.

This activity includes the following:

- investigation of the nature and extent of contamination,
- identification and evaluation of remediation alternatives,
- implementation of selected remedial actions, and
- any interim measures determined to be necessary to protect human health and the environment.

Releases of contaminants (radionuclides, metals, and organic compounds) at the DOE Oak Ridge Reservation facilities have occurred during the past 50 years of operations. Some contaminants have been transported beyond the ORR boundary and into off-site public waterways.

The Clinch River-Watts Bar Reservoir system is (140 river miles in length, 44,000 acres in surface area). It is used for municipal water supply, sport fishing, boating, swimming, tourism, and residential development. A phased remedial investigation is in progress to accomplish the following:

- determine the nature and extent of contamination,
- quantify the potential environmental and human-health risks associated with off-site contamination, and
- identify and preliminarily evaluate appropriate remediation measures.

Scoping studies indicate that the highest levels of contamination occur in deep water and are associated with sediment deposits in the old river channels. Contaminants of concern include metals (primarily mercury, lead, arsenic, selenium, and chromium) and radionuclides (primarily cesium-137 and cobalt-60) in bottom sediment, and organic compounds [primarily polychlorinated biphenyls (PCBs) and chlordane] that bioaccumulate in fish tissue.

The off-site contamination present in the Clinch River - Watts Bar Reservoir system does not appear to present any short-term or long-term imminent risks to human health or to the environment. However, the public perception that an off-site contamination problem exists requires prompt attention. Prompt measures to assess and document the actual extent of the problem may help to avoid (1) regulatory disapproval of the scope and/or pace of work and (2) adverse public and media reaction. The schedule for completion of the remedial investigation has been accelerated at the request of the regulators.

Remedial investigations addressing off-site surface-water contamination are specifically included in the Federal Facility Agreement for Oak Ridge and are required for compliance with CERCLA and RCRA 3004(v). This activity is co-funded by the Environmental Restoration Program and the Uranium Enrichment Program.

5.6.1.2 Status of FY92 SSP Objectives

The Clinch River Work Plan was approved by the Environmental Protection Agency (EPA) and the Tennessee Department of Environment and Conservation (TDEC) in November 1991.

5.6.1.3 FY93 Objectives

FY93 objectives include the following:

- Conduct extended Phase-1 sampling and analysis for contaminants of concern in bottom sediments;
- Conduct expanded program for fish sampling and analysis in Watts Bar Reservoir;

- Continue ecological assessment activities;
- Initiate analysis of contaminant pathways in foodwebs;
- Continue near-shore sediment characterization in cooperation with Watts Bar Reservoir interagency working group;
- Conduct screening-level sediment and water sampling;
- Continue sediment and contaminant transport assessment;
- Complete characterization of arsenic speciation and distribution;
- Obtain regulator approval of Phase-2 Sampling and Analysis Plan;
- Initiate Phase-2 sampling and analysis of media, pathways, and contaminants of concern;
- Initiate sediment toxicity bioassay assessments;
- Conduct validation and verification of analytical data; and
- Initiate preliminary screening of remediation alternatives.

5.6.1.4 FY94-98 Objectives

- Baseline environmental measurements will be initiated and continued to permit long-term assessment of the effectiveness of remediation activities on the ORR.
- Phase-2 site characterization and task assessment activities will be completed and the Remedial Investigation report will be submitted in 1995.
- The Feasibility Study report will be submitted in 1996, and an interim record of decision is anticipated in 1997.

5.6.1.5 List of FY93 Scheduled Milestones

- | | |
|-----------------------------------------------------------------------------|-------|
| • Initiate preliminary screening of potential remediation alternatives. | 12/92 |
| • Respond to regulators' comments on Phase-2 Sampling and Analysis Plan. | 03/93 |
| • Initiate implementation of Phase-2 sampling and analysis. | 06/93 |
| • Complete assessment of arsenic speciation and distribution. | 09/93 |
| • Complete sediment contaminant distribution and remobilization assessment. | 09/93 |

5.6.1.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
9302	\$10,700

6.0 WASTE MANAGEMENT OPERATIONS

Waste Management (WM) Operations conducted on the Oak Ridge Reservation (ORR) include treatment, disposal, and storage of waste. These wastes include radioactive, hazardous, mixed, and industrial wastes. Requirements for each waste category are established by Department of Energy (DOE) Orders and by environmental laws under the authority of Environmental Protection Agency (EPA) and the State of Tennessee.

Radioactive waste on ORR contains radioactive materials resulting from research and defense program activities. High-level radioactive waste and transuranic (TRU) waste are long-lived and typically require special shielding and eventual disposal in a geologic repository. Low-level waste is short-lived and usually requires little shielding, making simpler disposal methods possible. Hazardous waste is defined by the Resource Conservation and Recovery Act (RCRA) and must be managed according to strict federal and state environmental regulations. Mixed waste contains both radioactive and hazardous wastes and must be managed to meet the requirements for both. Management of industrial waste includes landfill disposal of solid waste and treatment of wastewater, sewage, and stormwater runoff.

6.1 Y-12 PLANT

WM at the Y-12 Plant (Y-12) encompasses ongoing operation of facilities as needed to support DOE programs and a comprehensive waste management capability that fully complies with applicable federal and state regulations. Support for the programmatic missions of DOE is carried out through a planning program that establishes operational priorities consistent with legal requirements for protecting human health, safety, and the environment. The waste management program is based on developing plans that present an integrated program for environmental restoration and waste management at Y-12. This program will be consistent with programs at the Central Waste Management Division (CWMD) and other DOE/Oak Ridge (DOE/OR) plants with shared waste management missions. Waste management program activities include those associated with collecting, treating, storing, and disposing of industrial, hazardous, low-level radioactive, and mixed waste, as well as those activities required for program continuity.

The major programmatic activities of the Y-12 WM are treatment, storage, and disposal; site-wide activities; line-item (LI) projects; and general plant projects (GPP). Waste treatment provides controlled conversion of waste streams generated from operations at the plant to an environmentally acceptable or more efficiently handled or stored form.

Waste storage activities provide interim management for wastes awaiting treatment, and wastes that presently cannot be disposed at current facilities, such as mixed, low-level radioactive, and polychlorinated biphenyl (PCB)-contaminated wastes. Waste disposal activities provide permanent isolation of waste from the operation of two on-site landfills, the use of commercial disposal facilities for hazardous waste where feasible, scrap metal for off-site shipment, and transportation of tankers and polytanks. Site-wide activities include continuity of operations, waste certification/characterization, and waste minimization.

**6.1.1 Facility Operations and Maintenance (FY94 ADS: OR-2201, OR-2206)
(FY93 ADSs: OR-223AA, OR-224, OR-225,
OR-226)**

6.1.1.1 Description

The requirements for meeting waste management regulatory objectives at Y-12 are varied and complex, but the overall goal of waste management at Y-12 is full compliance with all current regulations, plus anticipating and participating in the development of future regulations. Planning for actions to comply with those future regulations is also very important. Over the last several years, many facilities have been constructed or upgraded to meet the provisions of numerous state, federal, and local regulations and requirements. DOE/OR has developed the following policies for managing of radioactive, hazardous, and mixed wastes:

- Reduce the quantity of solid waste generated.
- Characterize and certify the waste before storing, processing, treating, or disposing.
- Use on-site storage where it is shown to be safe and cost effective until the final disposition option is selected.
- Use technology demonstrations to determine the effectiveness of promising technologies in solving local problems.
- Maximize the involvement of private-sector contractors in conducting technology demonstrations and in implementing successful technologies.
- Detoxify mixed waste to the extent possible so that it can be delisted and disposed of as low-level waste.

Waste management activities involve wastes generated by active production operations and some environmental restoration (ER) activities at Y-12 and other DOE/OR locations.

During FY93 the following activities will occur:

- basic operations for managing routinely generated waste;
- planning for GPPs and line-item (LI) projects;
- procurement of capital equipment needed at the treatment, storage, and disposal (TSD) facilities;
- continuance of the ongoing production waste storage facility (PWSF) LI project; and
- coordination of Y-12's waste minimization program.

The driving force behind all Y-12 Waste Management activities is the protection of human health and the environment from hazardous and radioactive wastes. All waste operations are monitored and maintained in accordance with the requirements of the Clean Water Act (CWA), RCRA, the Toxic Substances Control Act (TSCA), DOE Order 5820.2A, and other regulations.

6.1.1.1.1 Waste Treatment. Waste treatment activities at Y-12 involve controlled conversion of waste streams generated from active ongoing operations to a safer, more environmentally acceptable and/or more easily managed form. Treatment includes continuing operation and maintenance of facilities that treat wastewater generated as a result of production and production support activities at the plant. Waste treatment activities are conducted in compliance with applicable environmental regulations and DOE Orders.

Six facilities treat the following types and volumes of waste generated from production and production support activities:

- | | |
|-------------------------|------------------------|
| • Low-level radioactive | 225,000 gallons/year |
| • Hazardous | 210,000 gallons/year |
| • Low-level mixed | 825,000 gallons/year |
| • Solid low-level | 80,000 cubic feet/year |

Although production levels at Y-12 are expected to decrease because of the Plant's changing mission, weapons tear-down and environmental compliance activities are projected to continue generating waste requiring treatment at a rate that is similar to current levels. Existing facilities that will continue to operate in coming years include:

- Central Pollution Control Facility (CPCF) — non-nitrate wastewater;
- Plating Rinsewater Treatment Facility (PRTF) — plating shop rinsewater;
- Uranium Chip Oxidation Facility (UCOF) — machined uranium turnings;

- Waste Coolant Processing Facility (WCPF) — biodegradation pretreatment of spent machine coolant;
- West End Treatment Facility/West Tank Farm (WETF/WTF) — nitrate-bearing wastewater; and
- Waste Feed Preparation Facility (WFP) — compaction of solid low-level waste.

These facilities will be modified as needed to handle new waste streams, to improve treatment for compliance with increasingly strict permit requirements, and to continue best-management practices. Activities include replacement, repair, and upgrade of existing plant/division infrastructure and construction of new infrastructure, facilities and equipment.

Incineration and other technologies, such as wet oxidation, are being investigated for specific waste treatment. Treating waste as it is generated helps to eliminate the need for additional storage capacity. A private contractor is used for volume reduction of solid, combustible low-level waste, which involves incineration or supercompaction of the waste.

6.1.1.1.2 Waste Storage. Waste storage is a continuing activity conducted in compliance with applicable environmental regulations and DOE Orders. It is essential that storage operations are conducted in a safe manner to protect both people and the environment. Waste storage activities provide interim management for wastes awaiting treatment and for wastes that presently cannot be disposed at existing facilities, such as mixed and low-level radioactive wastes. Y-12 manages in storage approximately 3.5 million pounds of solid and 80,000 gallons of liquid waste each year. This includes preparing and packaging wastewater, solvents, oils, and solids generated at Y-12. Storage facilities at Y-12 include:

- Building 9702-31 — hazardous wastes;
- Containerized Waste Storage Area (CWSA) — hazardous, mixed, and low-level wastes;
- Classified Waste Storage Facility (CWSF) — hazardous, mixed, and low-level wastes;
- Oil Dikes 7, 8, and 9 — hazardous and mixed oils and solvents;
- Oil Dike 10 — flammable wastes;
- Building 9720-9 — PCB, mixed waste;
- Building 9404-7 — PCB, solid waste;
- Building 9720-58 — PCB, mixed waste;
- Interim Drum Yard (IDY) — mixed waste; and
- Uranium Oxide Storage Vaults (UOSV) — uranium oxide.

Operation of the storage facilities includes all activities required to ensure that wastes are properly stored, such as periodic inspections, maintenance, and improvement/modification projects.

6.1.1.1.3 Waste Disposal. Waste disposal includes managing of wastewater, solvents, oils, sludge and other solids for disposal on- and off-site. Activities also include identifying new disposal methods, such as commercial disposal, operating and maintaining active disposal sites, and performing waste disposal feasibility studies.

Waste disposal activities provide permanent isolation of approximately 30 million pounds of waste each year. These include:

- operating two on-site landfills,
- using commercial disposal facilities for hazardous waste where feasible, and
- accumulating and sorting scrap metal at two salvage yards for off-site shipment.

In addition, the Construction/Demolition Landfill VI will begin operation to dispose of construction debris that currently go to the Centralized Landfill II, which will cease operations in late FY93 or early FY94.

6.1.1.2 Status of FY92 SSP Objectives

6.1.1.2.1 Waste Treatment. FY92 includes operation of all existing treatment facilities. In addition, work continued or was initiated on the following projects.

- Sanitary and Industrial Wastewater Pretreatment - A fixed-film biotreatability study of Y-12 Sanitary Wastewater was initiated on October 1, 1991, and was completed.
- The Sanitary and Industrial Wastewater Pretreatment Conceptual Design Report (CDR) is scheduled for completion in July 1992.
- Modifications to CPCF to alleviate tanker blockage of 2nd Street will be submitted for design.
- A heating and ventilation system for UCOF is scheduled for design.
- Preparations were made for providing freeze protection for the feed line from WETF to Tank Farm 1.
- Plans to paint the WTF to protect the Tank Farm equipment from corrosion were initiated.
- A WETF sludge reduction study evaluated alternative organic sources for use in the biodentrification process for the purpose of reducing calcium carbonate (mixed-waste) generation.

- Corroded tanks at the WTF 2 are being repaired.
- A technology demonstration was conducted at WETF for biosorption of metals from wastewater streams. If adopted, the biosorption process will replace the current metal removal process, which uses excessive amounts of carbon. The priority ranking for removing metals is uranium first, then nickel, copper, and zinc. These metals are removed to meet National Pollutant Discharge Elimination System (NPDES) limits.

6.1.1.2.2 Waste Storage. Consistent with FY92 objectives, all storage facilities have been operated for maximum regulatory compliance. The following projects were initiated to maintain facilities and to comply with changing regulations.

- Moved 10,000-gallon capacity waste oil storage tanks from the closed Oil Dike 6 Tanks to Oil Dike 7. Y-12 routinely generates mixed-waste oils that currently have no disposal outlet. Therefore, plant storage capacity must be maintained.
- Initiated contracts for painting all storage tanks at Oil Dikes 9 and 10 for corrosion protection.
- Performed required repairs and modifications to the CWSA concrete pads to allow storage of RCRA-containerized waste.
- Initiated modifications of the 9720-9 facility to allow storage of strictly compatible PCB and RCRA hazardous waste awaiting analysis results and final disposal destination.
- Provided above-grade concrete storage pads for solid low-level radioactive waste. One additional pad will be needed each year at current generation rates.

6.1.1.2.3 Waste Disposal. FY92 included operation of all existing disposal facilities. In addition, work has been initiated on the Centralized Landfill II Closure Plan.

6.1.1.3 Status of FY93 SSP Objectives

6.1.1.3.1 Waste Treatment. FY93 includes operation of all treatment facilities; all ongoing projects will continue. Several projects are planned if funding levels permit. The following projects will be worked in FY93.

- Investigate the extent of corrosion at WTF 1 and plan for the repair of these tanks, if needed.
- A Cooling Water Discharge project will help reduce the chlorine and temperature loading to East Fork Poplar Creek.

6.1.1.3.2 Waste Storage. FY93 includes continuing operation of all storage facilities in compliance with all laws and regulations. Other objectives are listed below.

- Continue construction of above grade pads, depending on funding, until a disposal outlet for solid low-level radioactive waste is made available.
- Fund facility projects to prevent facility deterioration and to provide upgrades to meet compliance orders and to improve processes.

6.1.1.3.3 Waste Disposal. FY93 includes operation of all disposal facilities. Other FY93 projects include the following list.

- Begin operating the Steam Plant Ash Disposal (SPAD) Facility, which will be composed of two separate permitted landfills – one for construction/demolition debris and one for industrial wastes.
- Begin operating the Construction/Demolition Landfill VI. This landfill will be used to divert construction debris out of Centralized Landfill II, thereby extending its useful life.
- Begin constructing the Centralized Landfill II Closure. This activity is necessary to cease waste disposal operations at Landfill II, revise the construction design and specification package as needed, construct landfill closure cap appurtenances, perform monitoring and grading, and maintain the site until the closure is approved by the state. Closure of the landfill is required per Tennessee Department of Environment and Conservation (TDEC) regulations (1200-1-7).

6.1.1.4 FY94-98 Objectives

6.1.1.4.1 Waste Treatment. The specific activities to be conducted include the following list.

- Continue operation of all treatment facilities.
- Replace the deteriorating CPCF clarifier to remove heavy-metal sludge from wastewater during treatment processes.
- Initiate a project that will provide a recycle line to return effluent to the beginning of the plating rinsewater treatment process, to help ensure that discharge criteria are met before discharging, and to help ensure compliance with the Tennessee Water Quality Control Act.
- Begin procurement efforts for specialty and long-lead items; initiate performance of Title III Engineering activities.

6.1.1.4.2 Waste Storage. The following projects are scheduled for FY94-98.

- Operate the Ignitable Waste Warehouse Facility to store ignitable RCRA hazardous wastes.
- Construct above-grade pads to store solid low-level radioactive waste until a disposal outlet for this waste stream is available.

6.1.1.4.3 Waste Disposal. The following projects are scheduled for FY94-98.

- Identify and develop Disposal Facility GPPs each year.
- Initiate and complete closure of Spoil Area I.
- Continue ongoing upgrade/maintenance projects.

6.1.1.5 List of FY93 Scheduled Milestones

- Provide regulatory compliant operation of the liquid waste treatment facilities. 09/93
- Operate storage facilities in a safe, compliant, and efficient manner. (From FY93 - FY97 Five Year Plan W224-O4H.) 09/93
- Begin operating Landfill V and submit letter report to the Environmental Restoration and Waste Management Program (EM-321). 09/93

6.1.1.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
2201	\$26,231
2206	<u>8,760</u>
Total	\$34,991

**6.1.2 Site-Wide Activities (FY94 ADS: OR-2202)
(FY93 ADSs: OR-226, OR229)**

6.1.2.1 Description

6.1.2.1.1 Continuity of Operations. A number of ongoing activities help ensure that the WM Programs at every DOE site are conducted properly and that the facilities are maintained in a safe condition for employees and the general public. These activities fall into a category called "Continuity of Operations." Included are:

- developing strategic and long-range waste management plans,
- survey and maintain of facilities and equipment,
- certifying waste,
- providing proper training programs for personnel, and
- administrating records and information.

Continuity of operations also includes:

- waste collection;
- certification of prior characterizations;
- transport container inspection and maintenance; and
- transportation of wastewater, solvents, oils, sludges, and other solids generated by active, ongoing Y-12 operations.

After characterization, waste is collected from various waste stream locations inside Y-12. Filled waste containers are moved from the waste generation point to an interim storage area or to a designated facility for treatment or disposal. Continuity of operations also includes communications with waste generators to reduce, eliminate, and segregate waste activities for waste tracking, development support, and the expense planning portion of GPP and capital equipment projects.

Continuity of operations provides operation and maintenance of the Trash Monitoring Station (TMS) and the Crated Waste Assay Monitor (CWAM). The TMS is used to monitor depleted uranium contamination of solid waste generated from Y-12, providing a means of segregating contaminated waste from sanitary/industrial waste. The CWAM will provide surveillance and waste characterization activities of waste streams containing fissile materials.

Continuity of operations supports program project planning, operational upgrades, computer applications, Conduct of Facility Operations, training programs, quality control, Environment Safety and Health (ES&H) activities. It also supports waste tracking, project control and reporting, compliance assessment, business operations, document control, procedure

development, and other site-specific activities. In addition, the following monitoring and reporting activities are included:

- performance indicators;
- compliance tracking;
- the total quality management program;
- configuration management;
- internal and external surveillances;
- audits;
- self-assessments and corrective actions;
- waste generator/waste management interface (including communications with waste generators to reduce, eliminate, and segregate wastes); and
- quality assurance planning and standards, and other support areas required for the safe, compliant, and efficient management of waste operations.

6.1.2.1.2 Waste Minimization. The goal of waste minimization is to reduce the amount of hazardous and industrial waste requiring treatment, storage, or disposal. Three practices exist for waste reduction:

1. eliminate or minimize waste through source reduction;
2. recycle by reusing or reclaiming potential waste materials that cannot be eliminated or minimized; and/or
3. treat all waste to reduce volume, toxicity, or hazardous constituent before storage or disposal.

The four primary elements of the program are:

1. promoting awareness of waste minimization activities carried out by Y-12,
2. exchanging information about waste minimization activities with other sites,
3. participating in design and use of the new Y-12 waste tracking system, and
4. coordinating process assessments aimed at minimizing the production of waste.

Over the past several years, waste minimization activities have been carried out as funding and resources have permitted. For example, Y-12 has significantly reduced the use of several hazardous substances, such as hazardous chlorinated solvents that include tetrachloroethylene, trichloroethylene, methylene chloride, and 1,1,1-trichloromethane. Y-12 plans to completely eliminate these compounds as degreasing solvents.

Efforts in the near-term will be concentrated on performing detailed analyses of key production processes to identify opportunities for waste minimization. Once complete, the focus will shift to implementing results [i.e., recommended projects from Process Waste Assessments (PWA)]. Also in the near-term, significant attention will be given to education and awareness by establishing a plant-wide waste minimization training program.

Waste will be minimized whenever possible. However, increased activity in programs such as decontamination and decommissioning (D&D) and ER will increase the quantities of waste that need to be managed.

6.1.2.2 Status of FY92 SSP Objectives

6.1.2.2.1 Continuity of Operations. The following and other site-wide activities were accomplished on a continuing basis:

- program planning,
- project planning,
- training programs,
- Environment, Safety and Health (ES&H),
- waste tracking,
- reporting,
- document control, and
- procedure development.

Planning for LI GPP and for capital equipment projects was accomplished as approved and as funding permitted.

Funding for capital equipment included waste characterization equipment, material handling equipment, and scales. Sludge delisting efforts, LI engineering studies, and capital-projects planning were conducted.

The waste tracking system was brought on-line in phases, beginning in FY92. The waste tracking program provides readily accessible information on waste being tracked from point of generation to point of disposal.

Computer applications projects and activities during FY92 included:

- Bar Code Project work,
- Computer Hardware and Software procurement and maintenance,
- Development of facilities for the Data Flow,
- Five-Plant Waste Tracking Performance Improvement Project (PIP) Team, and
- Implementation of the first phase of a new Waste Tracking System.

6.1.2.2.2 Waste Minimization. During FY92, the waste minimization program accomplished the following tasks.

- Managed oversight of the PWA program in which assessments were completed on nine production lines/processes. (Completion of the PWA and implementation of resulting waste minimization projects enabled Y-12 to comply with waste reduction goals.)

- Continued quarterly information meetings with DOE to update management on the status of the Waste Minimization Program.
- Reviewed the Waste Minimization Pollution Prevention Program and Plan and maintained information exchange between Y-12, other DOE sites, and the community.
- Assisted in ensuring that waste generation data collected can be used to reflect progress toward waste minimization goals.
- Initiated a plant-wide Waste Minimization Training Program.

6.1.2.3 Status of FY93 SSP Objectives

6.1.2.3.1 Continuity of Operations. The existing facilities/operations/activities in continuity of operations, waste minimization, and characterization will continue. The facilities will require normal project planning for repair, maintenance, and replacement of components and processes. Facility upgrades will be required to maintain best available technology for the characterization/certification of wastes.

Capital equipment for FY93 includes waste certification and replacement parts for various radiation monitoring systems. Capital projects will be in various phases of completion and will include the following:

- In the area of conduct of operations, completion of the procedure requirements for Conduct of Facility Operations implementation of scheduled chapters/issues, and preparation of procedures.
- Assessment of the full WM procedures program, development of a system and support organization to comply with requirements, and completion of an upgrade of all procedures.
- Identification, development, and implementation of quality control (QC) projects. [Work will continue or be initiated, including Certification Sampling QC, maintenance of NPDES Data, production of control charts for TMS calibration curves, identification of weight and volume of waste for off-site disposal, and waste stream characterization.]
- Program/Project Management projects starting in FY93, which will have system requirements preliminary engineering, safety analysis, and environmental documentation [a NEPA compliance activity of the National Environment Policy Act (NEPA)].

Additional projects include the following list.

TMS I - An existing facility will be upgraded for the support and improvement of waste characterization and certification activities.

TMS II - This project will provide a new facility near the landfill for landfill protection through additional waste characterization and certification.

Oil Dike 7 and Oil Dike 8 Fire Suppression - This project will provide fire protection upgrades required by DOE Order 5480.7.

Above Grade Pads Fire Suppression - This project will construct fire lines and a sprinkler system for above-grade pads.

CWSA West Pad Building - This project is needed to complete modifications that are required to meet RCRA regulations for storing PCB and hazardous wastes.

Cooling Water Discharges - This project will provide equipment that will help reduce chlorine and temperature loading to East Fork Poplar Creek for compliance with the Tennessee Water Quality Control Act.

9720-58 Fire Suppression Upgrade - This project is needed to complete the Fire Suppression System to meet DOE Order 5480.7.

Non-permitted Plant Drains - This project will plug and abandon or reroute non-permitted floor drains that discharge to the East Fork Poplar Creek to meet pollution discharge elimination provisions of the Tennessee Water Quality Control Act.

Landfill IV Upgrade Design and Construction - This project will upgrade the existing landfill for disposal of classified wastes to meet new state regulations mandating leachate collection systems for landfills.

Oxide Vault III Design - This project will provide an additional vault for the storage of depleted uranium oxide and sawfines.

6.1.2.3.2 Waste Minimization. Funding requests for FY93 will be used to continue and enhance three of the four key elements of the Waste Minimization Program:

1. the promotional campaign, by providing related training for the general plant population;

2. the waste tracking system, by aggressively pursuing the next phase of system implementation; and
3. the exchange of information with other sites.

The emphasis will shift from performing PWAs to implementing projects that have a high potential for minimizing waste. This is the next crucial step to a successful program.

6.1.2.4 FY94-98 Objectives

6.1.2.4.1 Continuity of Operations. Y-12 WM Division will continue to identify and develop continuity of operations facility GPPs each year. The specific projects related to WM activities will vary as additional strategies and needs are developed. The planning level of funding is sufficient to meet estimated project requirements. Projects which are proposed for FY94-98 include the following list.

CPCF Clarifier - a system to remove heavy metal sludge from wastewater during treatment processes.

Plating Rinsewater Treatment Facility Recycle Loop - a recycle line to return effluent to the beginning of the treatment process and to help ensure that discharge criteria are met before discharging. This project will help assure compliance with the Tennessee Water Quality Control Act.

Drum Cleaning Facility - a dedicated facility for the cleaning/decontamination of empty drums.

Technical Information Center - a central records management facility for procedures, quality assurance plans, and other technical documents in the WM Division.

Scrap Metal Segregation Facility - This project will provide a facility to separate low-level radioactive contaminated scrap metal from noncontaminated scrap metal.

Start-up operation of the Environmental Support Facility and new waste monitoring/characterization/certification facilities CWAM and TMS. PWA, waste minimization efforts, and miscellaneous waste reduction opportunities will continue.

Project management, planning, and support activities will continue. Ongoing and additional expense projects will upgrade and maintain existing facilities. Capital equipment funding will be used to replace facility equipment that has failed or reached the end of its useful life. The baseline efforts necessary to perform program planning will continue to effectively coordinate and integrate planning, projects, and operational activities.

The Compliance Assessment Section will further develop a self-assessment program to upgrade and maintain excellence in ES&H compliance. In addition, new facilities provided by GPP line item project planning will become operational.

Conduct of facility operations work will continue to be optimized along with benchmarking and updating/revising procedures. A system and support organization for complying with requirements and for developing and revising all procedures will be completed. QC projects will be maintained, and initiation, implementation, and maintenance of other projects will continue as identified.

6.1.2.4.2 Waste Minimization. The focus of waste minimization will continue to be on the implementation of PWAs. Waste minimization pollution prevention will be practiced throughout the facility by all employees as a result of the emphasis on reduction awareness. Strategic goals will also be met; for example, one of the Y-12 strategic goals is to reduce total solid waste to 50% of the 1991 levels by 1995. An additional 25% reduction is targeted by the year 2000.

Ongoing efforts toward non-technical waste minimization efforts, such as paper and aluminum can recycling, material substitutions, and miscellaneous waste reduction opportunities, will continue.

6.1.2.5 List of FY93 Scheduled Milestones

The following milestones are scheduled for FY93.

- | | |
|----------------------------------------------------------------------------|-------|
| • Complete Division-wide Conduct of Facility Operations implementation. | 09/93 |
| • Develop/revise all nonoperational procedures to current Plant standards. | 09/93 |
| • Maintain/initiate development/implement QC projects. | 09/93 |
| • Complete upgrading all operating procedures to current standards. | 09/93 |

6.1.2.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
2202	\$15,063

**6.1.3 Production Waste Storage Facility (FY94 ADS: OR-2203)
(FY93 ADS: OR-228)**

6.1.3.1 Description

The Production Waste Storage Facility (PWSF) to be sited at Y-12 and K-25 will enable Y-12 to store hazardous, low-level radioactive, and mixed wastes generated from its weapons-handling operations. Currently, there is no environmentally acceptable or approved method available for disposing of most of this waste. As a result, this waste must be stored until suitable treatment or disposal methods have been developed or made available. All of Y-12's existing or budgeted facilities that are suitable for storing this type of waste will be filled by 1996. The PWSF will provide a five-year waste storage capability, allowing the time needed to place appropriate treatment and disposal techniques in operation. Treatment techniques include those being developed in the Material Treatment Facility (MTF) and PWTF II projects.

6.1.3.2 Status of FY92 SSP Objectives

Design began for the Y-12 WETF Head End Modifications and for the new CWSF II. Design was reinitiated on the Ash Storage Facility (TASF) and the Sludge Storage Facility (SSFK) at K-25. Modifications were also started on an existing warehouse (CWSFI) for providing classified waste storage.

6.1.3.3 FY93 Objectives

Design will be completed for the CWSF II, TASF, SSFK, and WETF HEMODs subprojects. Construction will be completed on CWSFI and will be initiated on WETF HEMODs.

6.1.3.4 FY94-98 Objectives

Construction will be completed on all remaining subprojects.

6.1.3.5 List of FY93 Scheduled Milestones

- | | |
|----------------------------------------------------------|-------|
| • Begin construction of Sludge Storage Facility at K-25. | 10/92 |
| • Begin construction of TSCA Ash Storage Facility. | 10/92 |
| • Complete design of CWSF II. | 01/93 |
| • Complete design of WETF Head End Modifications. | 03/93 |

6.1.3.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
2203	\$4,200

6.1.4 Industrial Waste Compaction Facility (FY94 ADS: OR-2204) (FY93 ADSs: OR-232)

6.1.4.1 Description

Y-12 has traditionally operated industrial waste landfills for the DOE ORR. The Industrial Waste Compaction Facility (IWCF) compacts waste and will extend the life of the industrial waste landfill.

6.1.4.2 Status of FY92 SSP Objectives

Work was initiated on design criteria for this facility.

6.1.4.3 FY93 Objectives

Initiate Titles I and II design.

6.1.4.4 FY94-98 Objectives

Obligations for FY94 will be required to continue Martin Marietta Energy Systems, Inc. (Energy Systems) Engineering involvement in Title I and II design. This funding will also be needed to begin construction and associated support functions. Furthermore, FY94 obligations will be utilized to begin procurement efforts for specialty and long-lead items. Obligation for this period will be utilized to complete construction and associated support activities. They will also be required to complete procurement activities.

6.1.4.5 List of FY93 Scheduled Milestones

- Begin Titles I and II design for IWCF.

03/93

6.1.4.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
2204	\$2,200

6.1.5 Drain Waste Water Treatment Upgrade (FY94 ADS: OR-2205) (FY93 ADS: OR-244WM)

6.1.5.1 Description

A survey of the storm system drains and water sources in Buildings 9202, 9203, and 9995 revealed over 200 sinks, many water fountains, and other miscellaneous sources tied to the storm drain system. These sinks have been placed under administrative controls. Discharges from these sources are not allowed by Y-12 NPDES permit and have been responsible for multiple permit violations and spills to surface waters. The upgrades will eliminate the improper discharges into East Fork Poplar Creek by rerouting drains to the sanitary sewer system. This will mitigate violations of the Y-12 NPDES permit.

6.1.5.2 Status of FY92 SSP Objectives

Design Criteria is complete.

6.1.5.3 FY93 Objectives

Title I and II design of the line item will be completed.

6.1.5.4 FY94-98 Objectives

Construction will begin on the LI project. Completion of the project is scheduled for FY97.

6.1.5.5 List of FY93 Scheduled Milestones

- Complete Titles I and II design. 12/93

6.1.5.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
2205	\$1,800

6.1.6 New Facilities (FY94 ADS: OR-2207)

(FY93 ADSs: OR-232, OR-245WM, OR-246WM, OR-247WM, OR-248)

6.1.6.1 Description

Industrial Landfill V (ILF-V) and Construction/Demolition Landfill VII (CDL-VII) - These landfills are to be opened in 1993 as a subproject of the FY90 LI project entitled Y-12 SPAD Facility Project. Initially, Area 1 of Industrial Landfill V, with a projected life of 2.9 years will be developed under the SPAD Project. An area of Construction/Demolition Landfill VII with a projected life of 2.6 years, will also be developed under the SPAD project. Other support facilities such as the main access road, site utilities building, sedimentation ponds, landfill perimeter roads, groundwater monitoring wells, etc., will also be installed as part of the SPAD project.

Industrial Landfill V and Construction/Demolition Landfill VII Phase II Expansion (ILF-V, CDL-VII Phase II) (FY95) - Area 1 of ILF-V (to be opened under the SPAD project ADS #OR-2101) encompasses an area of approximately 150,000 cubic yards. The scope of Phase II work for ILF-V includes the development of Area 2, which is approximately 5.1 acres, has an estimated volume of approximately 225,000 cubic yards, and has a projected life of 4.3 years. The scope of work also provides clearing, grubbing, minimal grading, and revegetating the remainder of the ILF-V site. The initial area of CDL-VII (also to be opened under the SPAD project) is approximately 4.8 acres and has an estimated volume of approximately 160,000 cubic yards. The scope of Phase II work for CDL-VII includes:

- construction of a second sedimentation pond;
- completion of a landfill maintenance perimeter road; and
- clearing, grubbing, minimal grading, and revegetating the remainder of the CDL-VII site.

Industrial Landfill VIII - Y-12 produces classified nonradioactive, nonhazardous wastes as a result of production and weapons teardown activities. It is anticipated that increased weapons teardown activities will significantly increase the production of these wastes. New regulations require solid waste landfills to contain a liner system, a gas migration control

system, and a leachate collection system. Therefore, it is necessary to develop a landfill for the disposal of classified, nonradioactive, nonhazardous wastes in accordance with the new regulatory requirements.

Production Waste Treatment Facility II (PWTF II) - This project's technical objective is to provide a facility for treating solid, low-level radioactive and mixed wastes from the Y-12 Plant and some wastes from the K-25 Site. This project will provide treatment for removing or lowering the levels of radioactive and/or hazardous contaminants through a variety of processes.

Material Treatment Facility (MTF) - The objective of this project is design and construction of a facility to process contaminated classified waste prior to disposal. The proposed treatment process is intended to alter classified waste streams for disposal in an industrial waste landfill or declassified for off-site disposal.

The Oils and Solvents Treatment Facility (OSTF) - OSTF is a proposed FY96 line item project. It is intended to provide for removal of beryllium and uranium from mixed organic liquid waste, so that the waste can be processed through the TSCA incinerator at the K-25 Site or through a commercial hazardous waste incinerator. The facility will provide several treatment processes for batch processing of organic liquid wastes.

Packaging, Certification, and Staging Facility (PCSF) - The PCSF is a proposed line item project for a centralized facility. Its intent is to certify that low-level and mixed solid waste generated from Y-12 production and restoration activities meets the waste acceptance criteria for receiving treatment, storage, or disposal facilities.

The Sanitary Sewer Upgrades - The objective of this line item is to repair known system deficiencies. These have resulted in outages and stoppages and in sanitary waste water pollution of the storm sewer system and East Fork Poplar Creek. These deficiencies also have caused a steadily increasing amount of surface water and groundwater to enter the sanitary system. This project is currently proposed for funding under Defense Programs. Upgrades will be comprised of the following:

- relining cracked pipe sections and joints,
- replacing sewer pipe and joints too damaged for relining,
- replacing the existing 8-inch diameter main on the west end with a 12-inch diameter line,
- rehabilitating deteriorated manholes by sealing manhole walls or by use of other repair approaches,
- constructing a new pump station to replace an existing undersized pump station,
- decommissioning a second existing pump station and installing an 18-inch diameter line to gravity drain flow from the western portion of the plant to the municipal system,

- removing cross-connections between the sanitary sewer system and storm sewer system, and
- constructing a new facility of approximately 240,000 square feet for the storage of mixed waste (radiological and hazardous) soil excavated during sewer rehabilitation work.

The Sanitary/Industrial Wastewater Pretreatment Facility (SIWPF) will provide pretreatment of Y-12 Plant sanitary and certain industrial wastewaters prior to discharge into the City of Oak Ridge Publicly-Owned Treatment Works (POTW). The objective of pretreatment is to remove uranium, mercury, and other heavy metal contaminants. The heavy metals shall be removed to levels that meet permit requirements and that prevent adverse impacts on POTW operations. This project is currently proposed for funding under Defense Programs.

Treatment Plant Discharges (TPD) - Upgrades include modification and improvement to Y-12 Plant on-site wastewater treatment facilities to enhance treatment capabilities and to ensure compliance with increasingly stringent discharge standards. The project is currently being scoped and will also address reduction of uranium in plant effluents and wastewaters, particularly steam condensate.

6.1.6.2 Status of FY92 SSP Objectives

Depleted Uranium Oxidation Facility (DUOF) - Engineering activities which include site selection and project evaluation to resolve technical uncertainties were performed prior to beginning work on the conceptual design report. This project will be terminated if declining production rates resulting from downsizing Y-12's mission indicate the facility is not needed.

Industrial Landfill V and Construction/Demolition Landfill VII, Phase II - Work included planning and defining the need for Area 2 of Industrial Landfill V and the remaining portion of Construction/Demolition Landfill VII. In addition, the system requirements document was prepared, and work was initiated on the conceptual design report for the project.

Industrial Landfill VIII - Work included planning and defining the need for a landfill to comply with the new regulations. This information is necessary for the development of a system requirements document.

Oils and Solvents Treatment Facility - Results of the treatability studies were reviewed and evaluated.

PCSF - Development work to support the PCSF CDR has been initiated.

PWTF II - The CDR for this facility was initiated.

TPD - Preliminary studies began. Additional requirements may be identified during permit renewal discussions with the State. Recommendations from the study will determine the scope of this project. The line item project, which may include modifications and additions to wastewater treatment facilities to enhance treatment, will be underway on a schedule negotiated with the State.

6.1.6.3 FY93 Objectives

Design on the **CWSF II** and **West End Treatment Facility (WETF) HEMOD** subprojects will be completed. In addition, construction will be completed for **CWSF I** and initiated for the **TASF**, **SSFK**, **CSWF II**, and **WETF HEMOD** subprojects.

MTF - CDR work will begin.

PCSF - Development work initiated in FY92 will continue.

PWTF II - Work that was initiated in FY92 will continue and will be completed. A Project Description Memorandum will be prepared to initiate the NEPA documentation process.

TPD - The CDR for this project will be completed.

Industrial Landfill V and Construction/Demolition Landfill VII, Phase II - The CDR will be completed for the project. In addition, the design criteria will be initiated.

Industrial Landfill VIII - The system requirements document will be completed for the project. The CDR will be initiated.

6.1.6.4 FY94-98 Objectives

Industrial Landfill V and Construction/Demolition Landfill VII, Phase II - Title I and Title II Design will be initiated and completed in FY95. The permitting process, bid and award process, and construction will be performed in FY96 and FY97.

PWTF II - The detailed design criteria will begin and be completed in FY94.

PCSF - Construction Project Data Sheets will be issued based on the cost estimates from the CDR.

Industrial Landfill VIII - The design criteria will be completed in FY95. Design and Construction will be initiated in FY96. The facility will become operational in FY97.

6.1.6.5 List of FY93 Scheduled Milestones

- Complete conceptual design for Production Waste Treatment Facility II (from FY93-FY97 Five Year Plan, W234-01R). 12/92
- Complete conceptual design for Treatment Plant Discharges Line Item (from FY93-FY97 Five Year Plan C245-02R). 02/93
- Complete construction of CWSFI. 03/93

6.1.6.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
2207	\$ 2,780

6.2 OAK RIDGE NATIONAL LABORATORY

Waste Management (WM) encompasses the ongoing operation and upgrade of the Oak Ridge National Laboratory (ORNL) WM facilities needed to support programmatic missions of DOE. Additionally, it provides for management of wastes produced as a result of pioneering radiochemical operations and research that supported the early mission of defense programs and DOE predecessors. The mission of the WM program is to provide quality WM capability, protective of human health and the environment and in compliance with applicable regulatory requirements and improved operating procedures. This mission is carried out through strategic planning; development of new or upgraded facilities; and routine waste collection, treatment, storage, and disposal. Radioactive (LLW as well as TRU), hazardous, mixed radioactive and hazardous, medical/infectious, and solid sanitary/industrial wastes are managed. Waste forms include gases, liquids, sludges, and solids. WM operates 34 facilities and has a staff of about 140 people. In addition, a number of other ORNL and Energy Systems staff provide important support to WM activities.

ORNL supports WM activities in the following areas:

- providing continuous collection, treatment, and discharge of gaseous wastes,
- treatment of 225 million gallons per year of liquid radioactive wastes (not including sewage); and
- management of about 600,000 cubic feet per year of solid radioactive, hazardous, mixed and sanitary/industrial wastes.

The ORNL WM program is committed to bringing facilities and operations into compliance with applicable regulations, guides, orders, and procedures in a timely manner. The program is also committed to maintaining them in a state that is consistent with prevailing ES&H/QA goals and expectations that enhance its facilities.

During the past several years, there have been many important accomplishments. In 1985, the ORNL WM operations program was established to provide needed centralized focus for ORNL waste operations. The first annual ORNL Long-Range Environmental and Waste Management Plan was issued in December 1985. Operation of a dedicated Waste Examination and Assay Facility (WEAF) also began in 1985 to characterize solid waste prior to disposal, enabling in-package classification as LLW or TRU as well as physical form. A new NPDES permit from the EPA was received in 1986, which covers compliance monitoring for 13 point-source outfalls, 30 miscellaneous discharges, and 130 area discharges. A stack and vent survey that evaluated over 2,000 potential air emission sources at ORNL preparatory to application for 110 air permits was completed in 1987.

In 1988, a hazardous and mixed WM area was brought on-line to manage chemically hazardous wastes, characteristically hazardous wastes, and long-term storage of radioactive mixed waste. This area was the first of a series of RCRA permitted solid waste storage facilities. These new storage facilities will replace the nonpermitted facilities and will allow storage of newly generated solid waste. A centralized Waste Operations Control Center (WOCC) was constructed for computer-controlled, round-the-clock waste systems data analysis and operator control of the liquid and gaseous system operations. An \$18 million Nonradiological Wastewater Treatment Plant (NRWTP) was completed in 1989 and began operation in 1990. The NRWTP treats nonradioactive process wastes for removal of organics and heavy metals including chromium, cadmium, zinc, and mercury.

The Second Liquid Waste Solidification Campaign was completed in February 1992. It solidified about 46,900 gallons of LLLW and made available critically needed liquid waste volume. An aggressive LLLW minimization campaign was maintained resulting in a reduction of the LLLW generation rate by about 60% from 1985 through 1991. The tumulus approach was successfully adapted as a means for greater confinement disposal of solid LLW. This technology was demonstrated in 1989. Operational scale use of this disposal technology was implemented in 1990. Waste acceptance criteria have been issued for liquid waste as well as the next generation of tumulus disposal units. ORNL waste reduction accomplishments included routine preparation of annual reports, continuation of the aluminum recycling program, initiation of an office paper and cardboard recycling program, monthly publishing of an ORNL recycling newsletter, and initiation of a study of copier performance using recycled paper.

In FY93, funding for waste treatment activities provide for the following:

- continue the routine operations of ORNL's Liquid and Gaseous Waste Operations Department (LGWOD),
- continue evaluation and enhancement of the in-tank evaporation (ITE) process,
- continue support for and conduct of LLLW solidification campaigns,
- continue development of the long-term treatment for LLLW, and
- replace one of the evaporator vessels used for the concentration of LLLW.

The Federal Facility Agreement (FFA) for active LLLW tank systems will be implemented.

In FY93, ADSs OR-3201 and OR-3251 will continue to provide for the routine treatment, storage, and disposal (TSD) of liquid, gaseous, and solid wastes. Radioactively contaminated lead will be processed for reuse. Corrective action on the remaining 54 greater confinement disposal silos will be completed. The RCRA closure of two CH TRU facilities (Building 7826 and 7834) will be initiated in FY93.

The ORNL Site Wide Activities includes two ADSs: OR-3203 and OR-3252. These two ADSs provide continuity of operations, waste certification and characterization, and waste minimization. Waste minimization activities will support a comprehensive program by providing leadership, guidance, technical support, coordination, tracking, and reporting for reduction of all categories of wastes.

Facility safety documentation for radioactive and hazardous waste treatment and disposal facilities was revised in FY92. A number of upgrades for the LGWOD were conducted including cathodic protection upgrades, transportation upgrades, and the upgrading of personnel training. Ongoing activities of the ORNL TRU Waste Program continued in FY92, and 12 new FY93 GPPs were developed.

In FY93 under ADSs OR-3204 and OR-3253, activities will provide GPPs and related support needed for continued operations, waste treatment, storage and disposal activities at ORNL.

In FY93, New Facility Planning (ADS OR-3207) activities will provide support for five major new waste management facilities that are needed to provide compliant waste management.

These facilities include:

- Waste Handling and Packaging Plant (WHPP),
- Melton Valley Storage Tank - Capacity Increase (MVST-CI),
- Waste Characterization and Certification Facility (WCCF),

- Process Waste Treatment Facility (PWTF), and
- Retrieved Cask Storage Bunker (RCSB).

Activities under ADS OR-3254 (also New Facility Planning) in FY93 will implement requirements of the ORR FFA as they pertain to the Bethel Valley LLLW collection and transfer system.

Waste storage activities for the Nuclear Fuel Services (NFS) project will include certification to transportation and waste acceptance criteria, receipt, and storage at ORNL of the contact-handled (CH) transuranic (TRU) and mixed oxide (MOX) waste from NFS.

FY93 activities will also include validation of the FY92 reprogrammed LI (PWTF) (ADS OR-3205).

Activities for FFA LLLW Tank Compliance (ADS OR-3206) will implement requirements of the ORR FFA as they pertain to ORNL active LLLW tank systems (60 tanks and miles of associated piping).

6.2.1 Facility Operations and Maintenance - Defense and Nondefense

(FY94 ADSs: OR-3201, OR-3251)

(FY93 ADSs: OR-342, OR-343, OR-344, OR-347, OR-348, OR-349, OR-350, OR-366)

6.2.1.1 Description

This activity provides support for routine operation of waste TSD facilities. Capital equipment funding for items required for routine TSD operations or for development efforts to improve TSD operations is included in this activity. Operation of existing facilities is dually funded by both Defense (ADS OR-3201) and Nondefense (ADS OR-3251) Programs, reflecting the fact that waste generators have multiple sponsors. Included in this ADS are:

- routine treatment of liquid and gaseous radioactive and nonradioactive wastes;
- long-term storage and surveillance of solid radioactive and mixed wastes; and
- disposal of radioactive, hazardous, and sanitary/industrial wastes.

The approximate annual quantities of waste destined for the 34 TSD facilities are detailed below.

-----Treatment-----		-----Storage-----		-----Disposal-----	
LLLW	400,000 gal	Mixed	45,000 gal	SLLW	75,000 cu ft
Nonradiological	150,000,000 gal				
PW	75,000,000 gal	CH TRU	450 cu ft	HAZ	160,000 lb
Gaseous	7E10 cu ft	RH TRU	250 cu ft	San/Ind	600, 000 cu ft

Management of wastes generated from Environmental Restoration (ER) activities is not included in the scope of this activity and is expected to be added at such time as waste generation rates and commensurate budget allocations are provided.

6.2.1.1.1 Waste Treatment. These activities support continuous operation of several collection, transfer, treatment, and storage systems for both liquid and gaseous wastes. The LLLW system collects approximately 400,000 gal/year of low-level radioactive liquid waste and transfers, treats, and stores LLLW concentrate. Periodically, 50,000 gal batches of LLLW concentrate are removed from storage and solidified into solid waste forms to maintain storage capacity for newly generated LLLW. The Process Waste (PW) system annually collects, transfers, and treats approximately 75M gal of slightly contaminated radioactive liquid waste. PW is collected and transferred to the PWTP for radionuclide removal by cation exchange. PWTP effluent is then combined with several other liquid waste streams and treated at the Nonradiological Wastewater Treatment Plant (NRWTP), which utilizes clarification for heavy metal removal, air stripping for volatile organic removal, and activated carbon adsorption for removal of nonvolatile organics and mercury. Approximately 150M gal/year of wastewater is processed through the NRWTP.

Radioactive gaseous wastes are processed through the 3039 stack area, which consists of a series of electric and steam-turbine-driven fans, pulling air from numerous radioactively contaminated facilities. Two separate systems are operated at this facility, the Cell Ventilation (CV) system and the Off-Gas (OG) system. The CV system supplies ventilation to areas such as buildings, vaults, and hoods where a large volume of air flow is needed. The OG system services areas such as process vessels or glove boxes where a smaller volume of air is needed at higher negative pressure. The CV system treats approximately 130,000 cu ft/minute of gaseous waste while the OG system treats approximately 4,000 cu ft/minute. All of the aforementioned liquid and gaseous waste facilities and processes are monitored daily on a 24-hour/day basis at the WOCC where data from field operations are received and recorded.

6.2.1.1.2 Waste Storage. These activities provide for the routine storage and associated management of contact-handled (CH) TRU waste, remote-handled (RH) TRU waste, and solid low-level waste (SLLW) that will be classified as either Class III or IV stored at ORNL, mixed waste stored at ORNL, SLLW with surface dose rates less than 50 mrem/hour stored at the Oak Ridge K-25 Site or SLLW with surface dose rates \geq 200 mrem/hour stored at ORNL.

Division (CWMD) Class III or IV stored at ORNL, mixed waste stored at ORNL, or SLLW with surface dose rates less than 50 mrem/hour stored at the Oak Ridge K-25 Site.

Activities include:

- routine inspections of storage facilities,
- repair and overpack of damaged or failed waste containers,
- repackaging of wastes to meet regulatory requirements for transport and disposal,
- completion of inventory work-off and waste certification data package update necessary for transport of waste to final disposal,
- packaging of wastes to meet regulatory requirements and transport of these wastes to the K-25 Site for storage, and
- RCRA closure of solid waste operating facilities.

6.2.1.1.3 Waste Disposal. These activities support management of radioactive, hazardous, mixed, and sanitary/industrial solid waste. Management systems include ensuring compliance with waste acceptance criteria and collecting, staging, inspecting, and disposing of the solid wastes in regulatory approved facilities. The SLLW disposal occurs at Solid Waste Storage Area (SWSA) 6; hazardous waste disposal is to be provided by off-site commercial vendors; and sanitary wastes are disposed in the Centralized Sanitary Landfill II (SLF II) located at the Y-12 Plant. Radioactive solid waste managed under this ADS includes:

- contact-handled transuranic (CH TRU), remote-handled transuranic (RH TRU);
- low-level (CH and RH);
- fissile (U-235);
- biological;
- asbestos; and
- suspect waste.

6.2.1.2 Status of FY92 SSP Objectives

Objectives completed to date include:

- temporary storage of SLLW drums containing filter cake waste in three newly constructed tent structures until most appropriate disposal technique is determined,
- the development and implementation of improved waste management systems for waste TSD, including implementation of greater confinement disposal for SLLW,
- nondestructive assay and examination for radioactive wastes, and
- construction of new liquid waste treatment facilities.

In addition, routine TSD systems operation has continued. Completion of the second campaign to solidify LLLW was completed by mid-FY92 year. Disposal operations at the new Interim Waste Management Facility (IWMF) have been initiated. Initiated grouting operations which will ultimately result in the grouting of 54 sites in SWSA 6. These silos

were used for SLLW disposal prior to the practice of grouting the waste materials. Surveillance operations for long-term storage of TRU, solid low-level, and mixed wastes continues. Efforts to resume shipments of hazardous wastes to off-site commercial vendors have continued, as well as efforts to reinstate shipment of low-surface-dose SLLW to K-25 for storage. Priority has been placed upon reducing impacts of the moratorium, including provision of compliant storage space for these wastes until off-site shipments can be resumed. Preparation for RCRA closure of interim status TRU waste storage facilities is underway. Results from the draft SWSA 6 Performance Assessment (PA) have been reviewed to identify any needed alternatives to disposal of SLLW. Options for disposal of sanitary/industrial wastes will be reviewed in light of closure of the existing sanitary landfill before a replacement site becomes available.

6.2.1.3 FY93 Objectives

Objectives for FY93 include continuation of routine TSD systems operation. Surveillance operations for long-term storage of TRU, low-level, and mixed wastes will continue. Activities to close interim status TRU storage facilities will be initiated, requiring the relocation of approximately 2500 drums of CH TRU waste. Closure operations for SWSA 6 will be initiated by ER, thereby beginning phaseout of all SWSA 6 SLLW disposal operations except for IWMF. The corrective action on grouting of silos in SWSA 6 will be completed.

6.2.1.4 FY94-98 Objectives

The five-year objectives of the LGWOD and the Solid Waste Operations Department (SWOD) are to provide quality waste management capability in compliance with all applicable federal and state regulatory requirements. Thirty four facilities are operated to provide continuous collection, treatment of gaseous and liquid wastes, and storage and/or disposal of solid wastes. These facilities will require normal maintenance of components and processes. Privatization activities will be investigated for utilization in a wide variety of TSD operations, including waste minimization, storage, and disposal. In addition, RCRA closure of Buildings 7826 and 7834 will be completed. Surveillance operations for long-term storage of TRU, low-level, and mixed wastes will continue. Wastes streams previously disposed in fissile and high range wells in SWSA 6 will be retrievably stored in Class III/IV facilities located in SWSA 7.

6.2.1.5 List of FY93 Scheduled Milestones

- Initiate closure of Interim Status Storage Facility (Buildings 7826, 7834, and the New Hydrofracture Facility). 11/92
- Distribute the liquid and gaseous waste operations operating summary report for CY 1992. 03/93

- Provide regulatory compliant operation of process waste collection, transfer, and treatment system with an operational goal of 75 million gallons of wastewater treated at the PWTP and 150 million gallons of wastewater treated at the Nonradiological Wastewater Treatment Plant. 09/93
- Provide regulatory compliant operation of the LLLW collection, transfer, evaporator, and storage system with an operational goal of 400,000 gal of LLLW evaporator throughput. 09/93
- Provide regulatory compliant operation of the 3039 central stack with an operational goal of continuous ventilation service to ORNL facilities except during periods of scheduled routine maintenance. 09/93
- Maintain surveillance operations on CH TRU, RH TRU, LLW, and Mixed Waste Facility through 9/30/93 and report monthly to EM-321 per the Project Tracking System (PTS) schedule. 09/93
- Provide regulatory compliant operation of solid waste facilities with the following goals for disposal and/or storage of solid waste: (a) SLLW - 75,000 cu ft; (b) Hazardous - 160,000 lb; and (c) Sanitary/Industrial - 600,000 cu ft. 09/93

6.2.1.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
3201	\$19,958
3251	<u>\$11,800</u>
Total ORNL TSD	\$31,758

6.2.2 NFS Storage Project (FY94 ADS: OR-3202) (FY93 ADS: OR-389)

6.2.2.1 Description

Waste storage activities include coordination, preparation, characterization, certification to transportation and waste acceptance criteria, receipt, and storage at ORNL of the CH TRU and mixed oxide (MOX) (uranium and plutonium) waste from the Nuclear Fuel Services, Inc. (NFS) site at Erwin, TN. Management and control of this activity has been transferred from ORNL to DOE-Oak Ridge Field Office, at their request.

The priority of this task is consistent with current DOE/HQ legal positions. DOE has directed ORNL to accept the waste as soon as possible. NFS has indicated they will attempt to recover any costs associated with a delay in shipping the CH TRU and MOX wastes to ORNL.

6.2.2.2 Status of FY92 SSP Objectives

The Action Plan for the NFS Storage Project has been prepared in accordance with direction on how CH TRU and MOX waste are to be managed. The draft EA has been prepared and submitted; WAC have been issued; and NFS samples have been analyzed to characterize the proposed waste. The objectives are to receive and store NFS CH TRU and MOX wastes.

Activities include management, planning, documentation, modification, construction, and coordination necessary to ensure ORNL readiness to receive NFS CH TRU waste and MOX waste at ORNL. Program management activities will involve:

- scheduling,
- preparation of NEPA documentation,
- certification documents,
- QA planning,
- obtaining permits, and
- conducting the necessary readiness reviews.

Operations activities will involve:

- preparation and modification of operational procedures,
- training operators,
- providing an on-site inspector at NFS during operations,
- providing sampling and analysis,
- storage facility inspections, and
- the handling and examination of the packages of TRU waste and MOX waste.

Storage facility costs include safety documentation, planning, design, and analysis necessary to support facility construction and modification. Facility construction of the new storage facility at ORNL for the NFS CH TRU waste will be initiated as a FY92 GPP.

6.2.2.3 FY93 Objectives

Coordination, preparation, characterization, certification to transportation and waste acceptance criteria, completion of facility construction and modifications, readiness reviews, and handling and transfer of the waste packages from NFS, and receipt and storage of the

NFS CH TRU and MOX waste, including facilities operations, will be carried out.

6.2.2.4 FY93-98 Objectives

NFS waste will be monitored and inspected, and reports will be formulated as required.

6.2.2.5 List of FY93 Scheduled Milestones

None.

6.2.2.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
3202	\$ 0

**6.2.3 Site-Wide Activities-Defense and Nondefense (FY94 ADSs: OR-3203, OR-3252)
(FY93 ADSs: OR-349, OR-350,
OR-355, OR-356)**

6.2.3.1 Description

Site-wide waste management (WM) at ORNL encompasses the following:

- radioactive,
- hazardous,
- mixed radioactive and hazardous,
- medical/infectious, and
- solid sanitary/industrial wastes.

WM operates 34 facilities and provides continuous collection, treatment, and discharge of gaseous wastes; treats 225 million gal/year of liquid radioactive wastes (not including sewage); and manages about 600,000 cu ft/year of solid wastes. Included are site-wide:

- continuity of operations,
- waste certification/characterization and treatment development, and
- waste minimization activities.

6.2.3.1.1 Continuity of Operations. Continuity of operations includes program planning, operational upgrades, and the development and implementation of a waste tracking system. Program planning and coordination/integration efforts involve:

- developing strategic and long-range plans based on TSD needs and requirements,
- assessing existing capabilities and constraints, and
- identifying and coordinating projects and activities to implement the plans.

Operational upgrade activities include:

- upgrades to safety documentation,
- cathodic protection for the LLLW system,
- transportation,
- personnel training,
- safety and regulatory upgrades to the NRWTP,
- safety upgrades to the 3039 Stack,
- elimination of sludge buildup in the evaporator service tanks, and
- consolidation of all ORNL waste tracking data into a single data base system.

The single data base activity is in support of the Tennessee Oversight Agreement (TOA) requirement for a central tracking system which tracks all waste from generation to disposal for the three ORR sites.

6.2.3.1.2 Waste Certification/Characterization. ORNL certification programs for TRU, hazardous/mixed, sanitary/industrial, and liquid wastes develop and document Waste Acceptance Criteria (WAC) that include all regulatory considerations for each waste category and ensure that wastes are segregated, characterized, and packaged to meet criteria.

6.2.3.1.3 Waste Minimization. This activity evaluates current liquid waste generation and management practices. Options being considered are waste segregation, process modification, improved housekeeping, recycling, pretreatment, and source treatment.

6.2.3.2 Status of FY92 SSP Objectives

6.2.3.2.1 Continuity of Operations. The Waste Management Plan, as required by DOE Order 5820.2A (FY90), has been completed. Phase 0 (hazard identification) of the safety documentation upgrade was completed for all liquid and gaseous waste facilities.

Major FY92 activities have included:

- continued Roadmap updates;
- update of TRU and SLLW strategy documents, and the DOE Order 5820.2A Waste Management Plan;
- continued efforts to finalize the SWSA 6 PA;
- development of strategy for managing large volumes of contaminated soil;
- assessment of special case waste;
- initiation of a plan for the closure of certain ORNL CH TRU waste storage facilities; and
- completion of Phase I (hazard screening) documents required by the safety documentation upgrade process.

6.2.3.2.2 Waste Certification/Characterization. A primary accomplishment for characterization included development of a burn plan schedule for the TSCA incinerator to accept ORNL Land Disposal Restriction (LDR) radioactive mixed waste. The characterization of some 850 drums of ORNL stored mixed waste has subsequently been initiated. A formal waste acceptance criteria (WAC) for ORNL LLLW systems (FY91) was issued, and an engineering study of the cathodic protection systems was completed; the TRU Waste Management Strategic Plan has been issued, as well as the draft ORNL Sanitary Waste Control Plan.

6.2.3.2.3 Waste Minimization. ORNL has reduced LLLW generation by over 60 percent since 1985. Also, initial liquid waste systems analysis and initial modeling have been completed using an expert system to identify where treatability studies or upgrades are needed and to predict impacts of source changes on final waste form.

The issuance of routine reports has been initiated to identify type of waste generation and to report on the assessing of liquid waste reduction. Process waste assessments and system feasibility studies to identify waste reduction options have been conducted. Efforts will continue towards evaluation of liquid waste reduction strategy and evaluation of impacts of Federal Facility Agreement (FFA) activities on that strategy.

6.2.3.3 FY93 Objectives

6.2.3.3.1 Continuity of Operations. Objectives for continuity activities in FY93 include strategic planning for radioactive waste, including definition of needed projects. Projections of waste generation and development of strategy for special case waste will be accomplished. Both the TRU and SLLW waste management strategy documents and the DOE Order 5820.2A Waste Management Plan/Long Range Plan/Roadmaps will be updated. Development of strategy for managing large volumes of contaminated soil will continue. Phase II safety documentation for facilities identified in hazard screening will also be prepared.

6.2.3.3.2 Waste Certification/Characterization. Upgrades for WEAFF equipment will continue. For hazardous and mixed waste, activities will support development of Phase I waste tracking system (WTS) in accordance with TOA. A draft Waste Certification Program Plan for hazardous mixed wastes will be developed that will identify and select treatment technologies. An independent technical review of the LLLW certification program will be performed. Update of the LLLW database with generation, minimization, solidification, and system configuration changes will continue. Update/finalization of certification documents for TRU waste will also be provided. Support for the Waste Isolation Pilot Plant (WIPP) Waste Acceptance Criteria Certification Committee audits will also be provided. Activities for sanitary/industrial waste includes initiation of operation of the vehicle monitoring station and further development of the Sanitary Waste Control Program toward certification standards. A report will be issued for technology demonstrations performed during the year for the purpose of evaluating potential treatment methods for Radioactive Mixed Waste (RMW).

6.2.3.3.3 Waste Minimization. Efforts will continue for identification and development of projects to effect reduction of LLLW. The impact of the FFA upon the generation/reduction strategy will be evaluated. Liquid waste reduction assessments and feasibility studies will be developed. Regulatory reporting will continue as will the implementation of a comprehensive waste reduction program.

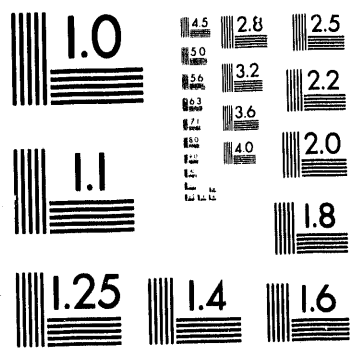
6.2.3.4 FY94-98 Objectives

The objectives for this time period include:

- optimizing waste minimization efforts,
- continuing development of waste certification capability,
- refining waste stream strategic planning, and
- implementing an enhanced waste tracking ability.

6.2.3.4.1 Continuity of Operations. Strategic planning and definition of needed projects will continue. FY93 projections of waste generation will be refined, and a strategy for special case waste will be developed. The DOE Order 5820.2A Waste Management Plan/Long-Range Plan/Roadmaps will be revised. Phase III (complete revised and updated Safety Analysis Report [SAR] for the LLLW system) will be initiated, as will Phase III of the Cathodic Protection Upgrade task.

6.2.3.4.2 Waste Certification/Characterization. Support for the WTS database in accordance with the TOA will continue. A Hazardous Waste Certification Program will be initiated. A Quality Assurance (QA) Plan will be developed. Both development and demonstration of treatment technologies and implementation of a certification program for mixed waste will continue. The LLLW database will be updated, and a Gaseous Waste



3 of 4

Certification Program implemented. The ORNL CH TRU WAC will be revised to incorporate TRUPACT II Authorized Methods for Payload Control and other WIPP requirements.

Baseline efforts necessary to perform effective program and project planning will continue. Phase III (completely revised and updated SAR for the LLLW system) will be finalized during FY98. Phase IV (the final phase) of the Cathodic Protection Upgrade task will be initiated during FY96. Upgrades to WEAFF NDA/NDE instruments will continue.

6.2.3.4.3 Waste Minimization. Efforts will continue to identify and develop projects to effect proposal reductions. Computer modeling capabilities developed during fiscal years 1990 and 1991 will be applied to further identify potential improvements at waste point-of-generation. Efforts will also continue on the evaluation of FFA impact upon generation/reduction strategy. Liquid waste reduction assessments and feasibility studies will be developed, and ORNL progress towards waste minimization goals will be reported.

Objectives for the next five years also include the development of certification/characterization methodologies to enhance the acceptability of mixed wastes for treatment and/or disposal, and to reduce the potential for ORNL to dispose of unacceptable or prohibited material through the sanitary waste stream. Support will be provided for evaluation and identification of methodologies which will effect reductions in the volume and/or toxicity of ORNL liquid wastes, and progress will be reported.

6.2.3.5 List of FY93 Scheduled Milestones

- | | |
|----------------------------------------------------------------------------------------|-------|
| • Update the ORNL Waste Reduction Plan. | 10/92 |
| • Issue report recommending liquid waste systems upgrades projects. | 02/93 |
| • Update the liquid low-level data base. | 06/93 |
| • Complete the liquid low-level waste system model. | 07/93 |
| • Issue a report on Radioactive Mixed Waste (RMW) Treatment Technology Demonstrations. | 09/93 |

6.2.3.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
3203	\$ 5,020
3252	<u>\$ 2,324</u>
Total ORNL Site-Wide	\$ 7,344

6.2.4 General Plant Projects - Defense and Nondefense

(FY94 ADSs: OR-3204, OR-3253)

(FY93 ADSs: OR-342, OR-343, OR-344, OR-347, OR-348, OR-349, OR-350, OR-366, OR-378)

6.2.4.1 Description

This activity provides for GPP and related support needed for continued operations, waste treatment, storage, and disposal activities at ORNL. Expense activity can be broken into three phases:

1. continued support for prior year GPPs,
2. management support for current year GPPs, and
3. planning and coordination for future year GPPs.

Additionally, specialized support areas are needed for each phase and include industrial hygiene and health physics participation, quality assurance support, NEPA documentation assessment and preparation, project scheduling, and general staff support.

Continued support for prior year GPPs consists of expense activities needed for completion of prior year GPPs, including project management through design, construction, and systems testing. Expense support for prior year GPPs is provided in these ADSs. Activities include projects in the following areas:

- regulatory compliance,
- replacement,
- upgrades,
- monitoring, and
- expansion GPPs.

Management support of current year GPPs provide project management and engineering support as well as design and construction of the capital project. In this phase, project management and engineering support are applied to each project during functional requirements document preparation, design criteria preparation, detailed design, procurement, and construction. Activities include GPPs in the following areas: improvements, upgrades, and storm sewers.

Planning and coordination of future year GPPs provides initial project management and engineering support needed to plan and implement outyear GPPs during systems definition, feasibility studies, and detailed design criteria. Efforts include identifying and coordinating projects needed to meet strategic, as well as short-range waste management plans and goals. Preparation of facility functional requirements, preliminary proposal, and design criteria are

included in this phase. Activities include GPPs for modification, compliance, upgrades, improvements, and monitoring projects.

6.2.4.2 Status of FY92 SSP Objectives

Projects have seen completion of planning base letters, functional requirements documents, preliminary proposals, design criteria, and miscellaneous studies.

Environmental projects have continued to be identified and developed. This activity will be coordinated with long-range plans for waste management within ORNL. Projects will vary as additional strategy and needs are developed. General plant projects that start in FY93 will have systems requirements, preliminary engineering, safety analysis, environmental documentation (NEPA compliance activity), and an initial QA evaluation performed in FY92. Various QA, NEPA, HP/IH, safety project scheduling, and general staff support activities will be funded to support submittal of preliminary documents.

GPPs to improve ORNL's capability to monitor and/or control the generation of liquid, solid, and gaseous waste will continue. GPPs to improve or enhance ORNL's ability to monitor air emissions from ORNL and the generation rates of process wastewater will continue. The FY90 GPPs will be completed and the facilities will become operational. The FY92 GPPs will complete the design phase. Preparation of the preliminary proposal for the FY93 GPPs will be accomplished.

Design activities for the GPPs Wastewater Piping Replacement and Surface Water Monitoring Improvements will be completed. The GPP Wastewater Piping Replacement will install a recycle cooling loop to replace a once-through cooling system which dumps chlorinated cooling water to the ORNL watershed. The Surface Water Monitoring Improvements will enhance the ability of ORNL to monitor surface water run-off from sites associated with ORNL.

The storage GPP facilities are in various phases of completion. Pending completion of NEPA documentation requirements, design activities for the hazardous waste storage facilities will be completed this fiscal year and construction activities will begin. The storage facilities have the FY89 through FY91 GPPs in design and/or construction and the FY93 projects are in the preliminary proposal phase.

6.2.4.3 FY93 Objectives

Support for prior year projects will continue. Planning base letters will be finalized for FY94 projects. Functional requirements documents and preliminary proposals will be initiated for FY94 GPPs. Additionally, various HP/IH, QA, NEPA, project scheduling, and general staff support will be provided to support the GPPs. Design, construction, and startup of prior year projects will continue.

Environmental projects will continue to be identified and developed. This activity will be coordinated with long-range plans for waste management within ORNL. Projects will vary as additional strategy and needs are developed.

Construction activities for the GPPs Wastewater Piping Replacement and Surface Water Monitoring Improvements will be completed. The GPP Wastewater Piping Replacement will install a recycle cooling loop to replace a once-through cooling system which dumps chlorinated cooling water into the ORNL watershed. The Surface Water Monitoring Improvements will enhance the ability of ORNL to monitor surface water run-off from sites associated with ORNL.

The storage GPP facilities will be in various phases of completion. The hazardous waste storage facilities will be completed this fiscal year and will begin operation. The storage facilities will have the FY91 and FY92 GPPs in construction, and the FY93 projects will be in the design phase.

GPPs to improve ORNL's capability to monitor and control liquid, solid, and gaseous waste will continue. GPPs to improve or enhance ORNL's ability to monitor air emissions from ORNL and the generation rates of process waste water will continue. The FY90 GPPs will be completed and the facilities operational. The FY93 GPPs will complete the design phase. Preparation of the preliminary proposal for the FY94 GPPs will be accomplished.

6.2.4.4 FY94-98 Objectives

The operations of WM will continue in the areas of continuity and TSD. These WM facilities require upgrades, improvements, and expansion in order to stay in compliance with the DOE Orders and FFA requirements. During the next five years:

- new permitted storage will be built,
- waste streams monitoring will be upgraded,
- improvements will be made to waste treatment processes, and
- disposal facilities will be built.

Support for prior year projects will continue. Planning base letters will be finalized for FY95 projects. Functional requirements documents and preliminary proposals will be initiated for FY95 projects. Additionally, various HP/IH, QA, NEPA, project scheduling, and general staff support will be provided to support the GPPs. Design, construction, and startup of prior year projects will continue.

Environmental projects will continue to be identified and developed. This activity will be performed and coordinated with long-range strategies for waste management within ORNL. Projects will vary as additional strategy and needs are developed.

Design activities for the Upgrade Stack Fans at 3039 will be completed and construction activities initiated.

GPPs to improve ORNL's capability to monitor and control the generation of liquid, solid, and gaseous waste will continue. Improvements to monitoring capabilities will be in various stages of completion. The FY93 GPPs to improve wastewater monitoring will be in various phases of completion. The FY92 GPPs will be completed and the facilities operational. The FY93 GPPs will be completing design and initiating the construction. Preparation of the preliminary proposal for the FY95 GPPs will be accomplished.

Planning base letters will be finalized for the outyear projects. Project needs will be derived from strategic planning to ensure continued compliance with all applicable regulatory drivers. Capital projects will continue to be identified and supported, approximately six to seven GPPs per year.

In general, for all GPPs:

- budget year minus two activities includes issuance of Management Review Data Sheets, issuance of 1-B-7 forms, and coordination of planned projects;
- budget year minus one activities include issuance of a planning base letter, refining the cost estimate for project, preparation and submittal of preliminary proposals, issuance of functional requirements documents, design criteria, project management plan, and configuration control documents; and
- budget year activities include initiation of detailed design and, for critical projects, conduct of formal readiness reviews to ensure project is ready to proceed with next phase of activity.

Construction will begin as the project design is completed.

6.2.4.5 List of FY93 Scheduled Milestones

- | | |
|--------------------------------------------------------------------|-------|
| • Start construction of the Expanded Mixed Waste Storage Facility. | 12/92 |
| • Start construction of the PCB/hazardous waste storage facility. | 02/93 |
| • Start the design of Class III/IV Storage Facility. | 07/93 |
| • Prepare preliminary proposals for FY94 Non-Defense GPPs. | 08/93 |
| • Issue letter report on the PWTP Upgrade flowsheet. | 09/93 |

6.2.4.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
3204	\$10,930
3253	\$ <u>8,676</u>
Total ORNL GPP	\$19,606

6.2.5 Process Waste Treatment Plant (FY94 ADS: OR-3205) (FY93 ADS: OR-366)

6.2.5.1 Description

This activity supports FY92 reprogrammed (under DOE guidance) LI project to correct deficiencies in the existing process waste (PW) treatment system. The funding levels for this ADS do not currently include either the expense or reprogrammed capital funding required for the reprogrammed LI in FY92; however, new capital (LI) and expense funding requirements are included. Capital funds to be reprogrammed and associated expense funds are contained in ADS OR-3204 for FY92. FY93 expense funds have been reallocated to meet ORNL priorities.

The FY92 reprogrammed LI project combines five GPPs related to correcting environment, safety, and health (ES&H) and conduct of operations deficiencies at the Process Waste Treatment Plant (PWTP). Specific problem areas addressed by the project include:

- waste minimization,
- spill containment for hazardous materials and LLLW,
- limited waste treatment capacity, and
- inadequate Cesium-137 (Cs-137) removal capability.

Significant modifications included in the project are:

- the construction of spill containment dikes for the acid and caustic transfer stations;
- the installation of zeolite ion exchange columns to improve cesium removal;
- the installation of a pH adjustment system to reduce plugging of the ion exchange columns, thereby reducing secondary waste production;
- the addition of an evaporator condensate storage tank to minimize PWTP input to the LLLW system;

- the addition of tanks, pumps, and piping to provide adequate process waste treatment capacity; and
- improvements to the PWTP infrastructure.

All modifications are scheduled to be completed by the end of FY95.

6.2.5.2 Status of FY92 SSP Objectives

Five GPPs are included in the FY92 reprogrammed LI. The status of completion of these GPPs varied at the time the decision was made to reprogram them into a LI. In most cases, functional requirements documents, preliminary proposals, and other support documents have been prepared for the projects. These documents will serve as the basis for the systems requirements document, CDR, and other documents that are required for the conceptual design phase of the LI. These LI documents have been initiated but are not yet complete.

Milestone W366-01R (as identified in the FY93-97 Five-Year Plan for old ADS 366) was completed as scheduled. Other milestones that pertained to the GPPs before reprogramming have been deleted from this ADS because the GPPs no longer exist as discrete projects.

6.2.5.3 FY93 Objectives

FY93 objectives include initiation of detailed design and construction of the project and program management of detailed design and construction. Project management and control and QA activities will continue.

6.2.5.4 FY94-98 Objectives

FY94 objectives are to continue support of program management of the design and construction of the FY92 project. Project management, control, and QA activities will continue. Detailed design and construction of the FY92 reprogrammed LI project is supported.

The FY92 project is scheduled for completion of construction by September 30, 1995. FY95-96 expense funds will support project management, control, and QA activities until all modifications have been accepted by the operating organization. No expense funds are expected to be needed in FY97-98 for the FY92 LI project.

No capital funds are required in FY95-98 for the FY92 reprogrammed LI project.

6.2.5.5 List of FY93 Scheduled Milestones

- Initiate construction of the Upgrade Process Waste Treatment System LI.

12/92

6.2.5.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
3205	\$200

6.2.6 Federal Facility Agreement Liquid Low Level Waste Tank Compliance (FY94 ADS: OR-3206) (FY93 ADSs: OR-378, OR-378AA, OR-378AB)

6.2.6.1 Description

The ORR was placed on the CERCLA NPL on 12/21/89. An Federal Facility Agreement (FFA) between the DOE-OR, the EPA, and the TDEC became effective on January 1, 1992. Activities for FFA Liquid Low Level Waste (LLLW) Tank Compliance will implement requirements of the ORR FFA as they pertain to the ORNL active LLLW tank systems (60 tanks and miles of associated piping). The FFA requirements include the upgrade of LLLW tank systems to provide secondary containment, leak detection, and cathodic protection. Also included in this ADS are expense resources needed for development of contingency actions if portions of the tank systems must be removed from service before replacement capability is available.

6.2.6.2 Status of FY92 SSP Objectives

Planning activities were conducted in FY90 and 1991. These included:

- defining requirements for active system FFA compliance,
- categorization and prioritization of tank systems according to FFA requirements,
- contingency planning,
- upgrade and replacement planning, and
- resource identification.

Projects planned to upgrade facilities to meet FFA requirements were also initiated.

FFA-required plans and schedule documents, initiation of feasibility studies of capital projects to upgrade the LLLW systems to meet new containment standards, and performance of required system assessments will be prepared. FFA commitments include:

- written secondary containment design demonstrations for 11 tanks along with leak detection test plans,
- plans and schedules for removing from service all tank systems which do not meet secondary containment standards,
- schedules for structural integrity assessments for the remaining tank systems, and
- initiation of waste characterization of inactive tanks.

Development and implementation of methods for performing leak tests, structural integrity assessments, and secondary containment design demonstrations will be accomplished in FY92. Ion exchange methods, PWTP upgrades, LLLW alternative treatment, and evaporation techniques will be evaluated as contingency methods for systems that may need to be taken out of service. Projects will be initiated to upgrade and/or replace tank systems. Near-term emphasis will be placed on the inactive tank systems that were taken out of service and may be leaking. Contingency plans will be developed for systems that were taken out of service before replacements occurred. Options being implemented include:

- local collection and transport of waste (i.e., bottling or trucking to the central LLLW system),
- source treatment,
- waste reduction at the source, and
- process relocation.

The FFA requirement pertaining to the active LLLW system will necessitate a number of upgrades and improvements in several existing ORNL facilities. This compliance program will consist of several GPPs (See ADSs OR-3204 and OR-3253) and LI projects (See ADS OR-3254, -3102, -3101, and -3207). LI project requirements to meet the FFA are covered in the other ADSs, as indicated. GPPs include:

- partial upgrades of facilities to keep them operational until LI projects can completely upgrade the LLLW system to FFA requirements,
- implementation of alternative treatment methods, and
- diversion of waste streams to other treatment facilities.

Other GPPs will be identified and initiated as required to bring ORNL into full FFA compliance. See ADS OR-3103 for additional discussion of FY92 FFA tasks.

6.2.6.3 FY93 Objectives

Objectives for FY93 include continuation of upgrade and replacement project implementation. Secondary containment demonstrations, structural integrity assessments, research and development for improved treatment for LLLW, and leak test development and implementation will continue. Several major documents defining system assessments will be submitted to the regulators. Projects will be implemented to repair or test tank systems as the results of the secondary containment demonstrations, structural integrity assessments, and leak tests become available. Repair of leaking systems will be implemented. One million dollars has been allocated to support ADS 3101 Bethel Valley LLLW-CAT system upgrade, in FY93 only.

6.2.6.4 FY94-98 Objectives

Objectives for FY94 include the following:

- FFA documents required to define task completion and progress will be prepared.
- Concurrence between DOE, TDEC, and EPA on the ORNL FFA implementation plans will be obtained.
- Structural integrity, design assessments, and leak testing procedures for the LLLW tank systems will be developed and implemented.
- Contingency plans will be implemented for alternative waste treatment/transport for systems which will likely be taken out of service before final upgrade/replacements can be implemented.
- Capital projects to upgrade the ORNL LLLW systems to meet FFA requirements will continue to be initiated.
- Transfer of inactive tank systems to the Environmental Restoration (ER) Program will continue.

Upgrade and replacement project planning and implementation will continue. Removal from service of old tank systems will continue. Operating procedures, Operational Safety Requirements (OSRs), etc., will be changed to accommodate new systems. Activities will be continued to meet the FFA requirements for the inactivated systems and to transfer them to the ER Program. Contingency evaluation and implementation will continue (for systems expected to be removed from service), as will leak testing, structural integrity assessments, secondary containment demonstrations, and planning necessary for upgrade and replacement projects. Repair of systems or alternative waste management options will be implemented as required by the test results.

6.2.6.5 List of FY93 Scheduled Milestones

- Submit to EPA/TDEC written design demonstrations

06/93

showing that the Category B tanks with secondary containment meet, or can be retrofitted to meet, FFA standards.

- Complete detailed leak detection test plans and schedules for all Category C tanks and lines.

09/93

6.2.6.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
3206	\$11,650

One million dollars of the FY93 funding has been allocated to support the ADS 3101 Bethel Valley LLLW-CAT system upgrade. (See Section 4.2.1.6)

6.2.7 New Facility Planning-Defense and Nondefense (FY94 ADSs: OR-3207, OR-3254) (FY93 ADSs: OR-352, OR-378AA)

6.2.7.1 Description

New Facility Planning (ADS OR-3207) activities provide support for five major new waste management facilities needed to provide compliant waste management. These projects include:

- Waste Handling and Packaging Plant (WHPP),
- Melton Valley Storage Tank - Capacity Increase (MVST-CI),
- Waste Characterization and Certification Facility (WCCF),
- Process Waste Treatment Facility (PWTF), and
- Retrieved Cask Storage Bunker (RCSB).

Activities associated with these projects include:

- planning, development, design, and construction of the characterization and repackaging facility for TRU wastes, thereby facilitating safe storage and disposal (WHPP LI project);
- planning, design and construction of additional storage capacity for liquid radioactive wastes (MVST-CI) line item (LI) project;
- planning, design, and construction of a new facility to provide nondestructive examination and assay of radioactive wastes (WCCF LI project);
- planning, design, and construction of a new ORNL facility (PWTF) to replace the obsolete and aging PWTP;

- planning, design, and construction of the RCSB for RH TRU waste currently stored in concrete casks in earthen trenches; and
- conduct of a study to evaluate alternatives for complying with more stringent discharge limits that are expected to be proposed as the basis for renewal of ORNL's NPDES permit under the Clean Water Act (CWA).

The ORR was placed on the CERCLA National Priority List (NPL) on 12/21/89, and a FFA between the DOE-Oak Ridge Operations (OR), the EPA, and the Tennessee Department of Environment and Health Conservation (TDEC) became effective on January 1, 1992.

Activities under ADS OR-3254, Bethel Valley (BV) FFA Upgrade Project, will implement requirements of the ORR FFA. Included are operating and capital resources needed for contingency actions if portions of the CAT system must be removed from service before replacement capability is available.

The general design for this project is summarized below.

- All pipelines that handle LLLW shall have an active system for leak detection and shall have double containment to ensure that the environment is not contaminated should a leak occur in the primary containment system.
- Metal surfaces in contact with soil shall be cathodically protected to reduce the potential for external corrosion.
- Transported waste shall meet all ORNL and DOE requirements for transportation of regulated substances.

This project consists of four parts.

1. **Building 3025 Upgrade - Internal Piping:** The horizontal piping header inside the building which collects LLLW from each of the four hot cells will be replaced, and a drip tray will be added below this header to collect any leaks. The vertical and underground piping runs will be replaced with double wall contained piping with level alarms provided for leak detection. **External Piping:** A new double-wall pipeline will be installed to convey LLLW from the building to the new Monitoring and Control Station (MCS) located at Building 3525. This line will be designed for gravity feed from 3025 to the MCS.
2. **Buildings 2533/2534 Filter Pits Upgrade - Sump Modifications:** Double-wall sump liners will be installed in Buildings 2533 and 2534. A double-wall drain pipe will be installed between the new lined sumps and a sump pump located adjacent to the buildings. Each filter pit will be enclosed by a steel frame building. **External Piping:** A double-wall transfer line will be installed between the sump pump and a tie-in point to the Central Waste Collection Header (CWCH) at Valve Box 1.

3. Hot Off-Gas (HOG) Pot Upgrade - The HOG header drain will be permanently disconnected from the LLLW system and connected to the process wastewater system.
4. Building 2537 - The control house sampling system will be removed, the steam reducing station and steam control valves replaced and relocated to an outside protective housing and heat traced, and the existing control panel will be replaced.

6.2.7.2 Status of FY92 SSP Objectives

WHPP: Several development tasks have been initiated and partially completed. The wiped-film evaporator to demonstrate the first step of proposed WHPP solidification flowsheet has been acquired and installed, but not tested because of a reduction in funding. The one-third scale microwave melter has been designed, fabricated, and successfully tested. The simulated Melton Valley Storage Tank has been installed, but sludge-mobilization testing has not yet been initiated because of a lack of funding. The large double-lid transfer system has been designed and fabricated and was successfully tested.

MVST-CI: The following documents have been prepared and issued:

- Systems Requirements Document (SRD) Revision 0,
- CDR,
- Technical Information Document (TID),
- Cost and Schedule Document, and
- Safety Assessment (SA).

WCCF: Funding began in FY90 with the SRD, Feasibility Study, Survey Study of Automated Guidance Vehicle (AGV), and CDR activities. FY91 funds were redistributed to other higher priority programs, and the project did not receive funding. All activities were suspended until FY92. The CDR phase, including Preliminary Safety Analysis Report (PSAR), environmental assessment (EA) and quality assurance plan (QAP) commenced in July 1990 and continued through the end of FY90. Revision 1 of the SRD was completed at the end of FY90. The revised SRD added radiation shielding requirements to the design of the facility. Work on the CDR resumed in FY92 when funding was restored.

Activities including project planning, engineering, and development were resumed in FY92 to support the WCCF as an FY94 LI project. The CDR, TID, and the Cost and Schedule Document have been completed. The project will be validated. The preliminary safety analysis report (PSAR) will be updated and issued approved. The NEPA documentation activity will resume to support the planned project schedule. Project planning activities will be resumed with a focus on certification planning, QA documentation, configuration management, and coordination.

PWTF: The LI project has been delayed from FY95 to FY96. A working draft of the systems requirements document has been prepared to support efforts on a feasibility study (including preliminary cost estimate) and value engineering study on alternatives for upgrading the PWTP.

RCSB: Studies have been performed to identify the locations of the casks and to determine any potential risks associated with the casks and trenches. Because the casks are buried in earthen trenches, they are subject to groundwater intrusion. There is also a probability of risk of radionuclide or chemical release from these casks which increases with the length of storage time. Release of material from the casks could result from erosion, corrosion, structural failure or seismic events. Monitoring wells near the trenches in SWSA 5 have indicated the presence of curium (Cm-244), an isotope characteristic of ORNL's stored RH TRU waste. The source of the Cm-244 has not been confirmed, but it is likely that the contamination is coming from a cask of TRU waste.

BV FFA UPGRADE PROJECT: Activities including project planning, engineering, and development are underway to support the FY94 LI project. The SRD will be completed. The NEPA documentation activity will be initiated and will support the planned project schedule. Project planning activities will focus on the CDR, TID, and the Cost and Schedule Document. The CDR is subcontracted and will be completed in July 1992. This project will be validated in FY92.

Liquid Active Tank Compliance activities include:

- LLLW system definition;
- waste characterization;
- development of FFA required documents;
- structural integrity assessments, leak testing, and documentation for tank systems; and
- calculation of risk and alternatives from service (or all systems not meeting requirements).

6.2.7.3 FY93 Objectives

WHPP: Project planning support will be continued. Based on the DOE guidance and approved research and development requirements, a strategy will be developed for characterizing solid RH TRU waste stored at ORNL. As part of this effort, crucial parts of the characterization strategy will be implemented. Development of nondestructive techniques for assay and real-time radiography (RTR) will be initiated. Other waste characterization activities will be planned. The capital equipment planned is the development test set-up for Linear Accelerator (LINAC)-based neutron assay and RTR.

MVST-CI: Support activities include finalizing all project documentation to support the FY94 LI. Major items would be completion of the project design criteria document, the Project Management Plan, Contract Management Plan, NEPA documentation, and numerous other supporting project documents. The value engineering study and the Design Readiness Review will be completed in time to incorporate any significant items into the design criteria.

WCCF: Activities planned include finalization of all project documentation to support WCCF as an FY94 LI project. The design criteria, including radiation shielding requirements for the radiation-measuring instruments and the type of automated guidance vehicle to remotely handle waste packages, will be prepared. Support documentation will be prepared including the Project Management Plan, Waste Management Plan, Contract Management Plan, and NEPA documentation. There will also be a bid and award procedure, and the architect-engineer (A-E) selection process will be initiated. The Value Engineering Study and the Design Readiness Review will be initiated.

PWTF: Support activities include completion of the SRD and initiation of the CDR for the FY96 LI project. Also, NEPA, safety, and QA documentation will be initiated. Project management and control will begin.

RCSB: Activities include project planning, engineering, and development to support the project. The SRD will be completed and the CDR initiated. The NEPA documentation activity will be initiated and will support the planned project schedule.

NPDES Study: Expense funds will support initiation of a study to evaluate alternatives for complying with the more stringent discharge limits that are expected to be proposed as the basis for renewal of ORNL's NPDES permit under the CWA.

BV FFA UPGRADE PROJECT: Activities planned in FY93 include finalization of all project documentation to support ORNL BV LLLW CAT as a FY94 LI project. In FY93, the design criteria will be prepared. Support documentation will be prepared including the Project Management Plan, Contract Management Plan, and NEPA documentation. The A-E selection process will be initiated. The Value Engineering Study and the Design Readiness Review will be initiated.

6.2.7.4 FY94-98 Objectives

WHPP: Based on the approved characterization strategy for the RH TRU waste stored at ORNL, the tasks in support of waste characterization will be implemented. Project planning and alternative studies will also be performed. For WHPP, this activity will continue the tasks in support of the approved characterization strategy for the RH TRU waste stored at ORNL.

MVST-CI: The Design Readiness Review will be completed. The A-E will be selected, and Title I and II design will be initiated. Title I design includes post-conceptual investigations to finalize design criteria, expanding sketches and drawings, and preparing cost estimates for Title II design. Title II design includes the preparation of a design document for final approval. The CDR has not been validated. The Tiger Team corrective action plan activities associated with WM/CF-13 will be completed for the MVST-CI project. Construction is planned to start in FY95, along with completion and surveillance, operational readiness reviews and other expense activities.

WCCF: The A-E will be selected, and Title I and II design will be initiated. Title I design includes post-conceptual investigations to finalize design criteria, expand sketches and drawings, and prepare cost estimates for Title II design. Title II design includes the preparation of documents for final approval and release as certified for construction. The Value Engineering Study will be completed. The Design Readiness Review will be completed. For the WCCF project, Title I and II designs and project cost estimates will be completed in FY95. Project construction will be initiated in FY95 and scheduled for completion in FY97. Operational readiness review will be conducted in latter FY97, with the facility expected to be operation in FY98.

PWTF: The CDR (consisting of the Conceptual Engineering Design Package, TID, and the Cost and Schedule Document) will be completed, and the project validated. The PSAR will be completed, and the design criteria will be initiated. NEPA, QA, and project management activities will continue. A project waste management plan will be initiated. For the PWTF, FY95-98 expense funds will be used to complete the design criteria, initiate Title I and II detailed design, and support program management of the detailed design and construction of the proposed FY96 LI project.

RCSB: Project planning activities will continue for the proposed facility and will focus on the CDR, TID, the Cost and Schedule Document. This project will be validated in FY94 and the project documentation finalized. In FY95, the design criteria and the support documentation will be prepared, including the Project Management Plan, Contract Management Plan, and NEPA documentation. In FY96, the A-E will be selected, and the Value Engineering Study and the Readiness Review will be completed. In FY97, Title I and II design and the associated cost estimates will be completed. Construction is scheduled to be initiated in FY98.

NPDES Study: FY94 activities include completion of the alternatives study. However, the results of the study may indicate a requirement for future capital projects to assure NPDES permit compliance.

BV FFA UPGRADE PROJECT: The A-E will be selected, and Title I and II design will be initiated. Title I design includes post conceptual investigations to finalize design criteria,

expand sketches and drawings, evaluate alternatives identified in the CDR, and prepare cost estimates for Title II design. Title II design includes the preparation of design documents for final approval and issued certified for construction. The Value Engineering Study will be completed. The Design Readiness Review will be completed. NEPA documentation will be completed. Long lead procurement will be initiated.

Title I and II design and the cost estimate will be completed in FY95. A Construction Readiness Review will be conducted at the completion of Title I and II design. Construction will be initiated in FY95 and be completed in FY96. The Operational Readiness Review will be conducted in the latter part of FY97 and the early part of FY98. System testing and start up will be performed and completed during FY97 and FY98.

6.2.7.5 List of FY93 Scheduled Milestones

- | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| • Complete the conceptual design report for the FFA LLLW System Upgrade Line Item. | 01/93 |
| • Complete architect-engineer contract negotiation for the MVST Capacity Increase Line Item. | 02/93 |
| • Complete the design criteria for the MVST Capacity Increase Line Item. | 03/93 |
| • Complete the conceptual design report for the MVST Capacity Increase Line Item. | 04/93 |
| • Issue the approved systems requirements document for the ORNL Process Waste Treatment Facility line item project to DOE for signature. | 04/93 |
| • Based on approved research and development requirements, issue a report detailing the strategy for characterizing the solid RH TRU waste stored at ORNL. | 08/93 |
| • Initiate long-lead procurement items for the MVST-Capacity Increase Line Item. | 09/93 |
| • Complete design of the MVST Capacity Increase Line Item. | 09/93 |

6.2.7.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
3207	\$3,800
3254	\$___0
Total ORNL New Facility Planning	\$3,800

**6.2.8 Sanitary Waste System Upgrade (FY94 ADSs: OR-3255, OR-3402)
(FY93 ADS: OR-399)**

6.2.8.1 Description

Construction of liquid sanitary waste projects is considered part of the landlord activities for FY92 and FY93, which is Environment Restoration and Waste Management (EM) funded (see discussion in ADS OR-3402). Energy Research assumes landlord responsibility in FY94, with the exception of this construction project. Liquid sanitary waste operations have traditionally been an overhead-funded activity; therefore, it is included in this ADS beginning in FY95. Because of the continuing negotiations regarding the ultimate responsibility for sanitary sewage systems, a Field Work Proposal (FWP) is also being submitted to Energy Research for liquid sanitary operations in FY94.

Upgrade Sanitary Sewer System Line Item - This project will upgrade the ORNL sanitary sewage collection, treatment, and disposal system. Improvements to the sewage collection system will include reducing groundwater infiltration into the existing collection grid, replacing undersized lines and installing new lines to areas not now served. Improvements to the treatment and disposal systems will reactivate two existing sludge drying beds. A CDR was completed in April 1991. It will be used as the basis for developing the design criteria for Title I design. The project was validated as a FY93 line item.

6.2.8.2 Status of FY92 SSP Objectives

Upgrade Sanitary Sewer System; LI - The design criteria will be completed and the A-E selection process initiated. A project management plan will be prepared. Project support documentation including the safety review, Management Plan, Value Engineering Study, Design Readiness Review, NEPA documents, and QA plans will be developed. Excavation for this project goes through areas potentially contaminated with radioactive and hazardous waste. Screening samples from the excavation site will be taken and evaluated for contamination. Based on the results, a detailed sampling plan will be developed for implementation during Title I design. Activities for this fiscal year are being supported or funded by FY93 ADS OR-349.

6.2.8.3 FY93 Objectives

Upgrade Sanitary Sewer System; LI - Construction readiness reviews will be conducted for portions of the project entering the construction bid cycle. Bids will be solicited for lining the existing system, reactivation of the sludge drying beds, and constructing a 90-day accumulation pad for waste storage and verification. Activities for this fiscal year are being supplied by ADS OR-3402 (FY93 ADS OR-399).

6.2.8.4 FY94-98 Objectives

Over the next five years (1994-1998), the Sanitary Sewer Plant will continue to operate and treat and dispose of ORNL's sewage. During this period, the line item project, Upgrade Sanitary Sewer System, will have been designed and constructed. This project will improve the sewage collection system, install new lines, and improve the treatment and disposal system. The line item project will be funded under ADS OR-3402 in FY93 and under ADS OR-3255 will support sanitary sewer system operations with funding provided by Energy Research.

6.2.8.5 List of FY93 Scheduled Milestones

- Complete Titles I and II design for the entire project.

07/93

6.2.8.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
3255	\$ 0
3402	<u>\$2,200</u>
Total	\$2,200

6.2.9 Landlord Operations (FY94 ADS: OR-3401) (FY93 ADS: OR-399)

6.2.9.1 Description

ORNL landlord support is essential for providing safe, continuing operations for nonprogrammatic residents. Permanent ORNL landlord responsibility has been the subject of much discussion during the past year.

Engineering Studies-Provide support to manage capital projects from systems definition and feasibility through construction including monitoring of project progress, QA, and safety documentation.

Underground Storage Tanks (UST)-The purpose of the UST program is to provide planning and activities to ensure ORNL compliance with RCRA Subtitle I. Costs reflect the minimum requirements to implement UST tightness testing, inventory management, monitoring, upgrade/replacement or closure (removal), and site remediation. There are

approximately 30 USTs and their interconnecting piping that remain to be addressed. These activities will be initiated based on an order of assessed risk. It is assumed that at least 35% of ORNL's USTs will require corrective action because of product leakage. Capital equipment will provide for replacement of three to five tanks per year, replacement piping, and cathodic protection.

Construction of liquid sanitary waste projects is considered part of the landlord activities for FY92 and FY93; these activities are EM funded before they become EM's direct programmatic responsibility in FY94. Liquid sanitary waste operations have traditionally been an overhead-funded activity. ADS OR-3255 will provide funding for line item activities beginning in FY94.

Upgrade Sanitary Sewer Systems; LI - This project will upgrade the sanitary sewage collection, treatment and disposal system for the ORNL. Improvements to the sewage collection system will include reducing groundwater infiltration into the existing collection grid, replacing undersized lines, and installing new lines to areas not now served. Improvements to the treatment and disposal systems will reactivate two existing sludge drying beds.

Sanitary Sewage Treatment and Disposal Operations - This activity provides for the collection and treatment of 100 million gal of sanitary sewage annually. This waste is collected from an extensive grid serving over 120 buildings located throughout ORNL and is transported by gravity main, force main, and by tanker truck to the Sewage Treatment Plant. The Sewage Treatment Plant is a 300,000-gal/day packaged, extended aeration unit consisting of a 1-million-gal aeration tank, a clarifier, and a sludge digester with a sand and gravel tertiary filter for final polishing of the liquid effluent. The treatment process is aerobic, using bacteria to breakdown the influent into liquid and solid waste streams. The liquid stream flows from the clarifier in the aeration tank, through the tertiary filters, and into the chlorine contact chamber where it is sanitized by addition of chlorine to a concentration of 0.5 ppm. The solids are drawn out of the aeration tank into a sludge digester. This sludge is actively aerated to provide for an ideal environment for a continued bacteriological digestion of the solids. From the digester, these solids are drained to sludge drying beds where they are dewatered. Once an acceptable moisture content has been achieved, the sludge is taken to the solid waste storage area and disposed of as suspect biological waste.

6.2.2.2 Status of FY92 SSP Objectives

Activities in prior years included:

- UST removal/closure;
- corrective action;

- tank testing;
- site assessment; and
- site remediation as needed on 8, 5, and 3 tank systems in 1989, 1990, and 1991, respectively.

Landlord GPP, GPE, and Engineering will address the project backlog with funds received based on priority including safety and health concerns.

Underground Storage Tanks - This activity has been designated as part of ADS OR-3203 and ADS OR-3104 in accordance with guidance received.

6.2.9.3 FY93 Objectives

Landlord GPP, GPE, and Engineering will address the project backlog with funds received based on priority and safety and health concerns.

Underground Storage Tanks - Activities for FY93 include:

- assessments,
- development of seven corrective action plans,
- cut-up and disposal of tanks,
- annual tank tightness testing,
- removal of six tank systems,
- site remediation for four tank systems, and
- soil and leak analysis.

6.2.9.4 FY94-98 Objectives

ORNL landlord funding responsibilities are scheduled to return to Energy Research in FY94. Thus, per DOE guidance, no Landlord funding is requested from Environmental Restoration and Waste Management (EM) beyond FY93.

For the next 5 years (1994-1998), the Sanitary Sewer Plant will continue to operate, treat, and dispose of ORNL's sewage. During this period, the LI project, Upgrade Sanitary Sewer System, will have been designed and constructed. This LI will improve the sewage collection system, install new lines, and improve the treatment and disposal system. Funding for this LI will be provided by ADS OR-3255 for FY94 and beyond.

Sanitary sewer activities performed under this ADS will be transferred to waste management responsibility beginning in FY95. (See ADS OR-3255.)

6.2.9.5 List of FY93 Scheduled Milestones

- Complete general plant projects planning base letter. 12/92
- Submit preliminary proposals for DOE approval. 08/93

6.2.9.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
3401	\$12,900

6.3 K-25 SITE

The K-25 Site has activities in five functional areas: waste minimization, waste treatment, waste storage, waste disposal, and continuity of operations. In addition to management of wastes generated at the K-25 Site, the K-25 WM Division provides storage capacity for other generators on the Oak Ridge Reservation.

The TSCA incinerator, located at K-25, is the only incinerator in the country licensed to thermally destroy mixed low-level wastes. Its mission is to provide treatment for facilities on the ORR and DOE/OR sites in Kentucky and Ohio.

The Oak Ridge Filter Test Facility, also situated on the K-25 Site, tests High Efficiency Particulate Air (HEPA) filter and respirator canisters for all of DOE's facilities in the eastern US.

6.3.1 Sewage Collection System Rehabilitation, Waste Management (FY94 ADS: OR-4101) (FY93 ADS: OR-404)

6.3.1.1 Description

A line item project to rehabilitate the K-25 Site sanitary sewage collection system, minimizing violations of the NPDES permit is scheduled to begin in FY92. Twenty-one NPDES violations since December 24, 1990, were caused by rainwater infiltration into the sewer system. The work will involve the replacement of approximately 5,000 linear feet of collapsed lines, relining of approximately 48,000 linear feet of pipe, and upgrading 275 manholes by replacing the upper sections, and then relining the inner walls. This work will minimize the untreated sewage seepage to the ground as well as minimize the infiltration of rainwater into the underground sewage collection system to lower the probability of hydraulic overload of the K-1203 Sewage Treatment Plant.

6.3.1.2 Status of FY92 SSP Objectives

Funds have been requested to complete the Conceptual Design Report for the Sewage Collection System Rehabilitation project. Final design work will begin on this project once the reprogrammed line item money is received.

6.3.1.3 FY93 Objectives

Final design for the sewage collection system rehabilitation project will be completed this year and construction activities will begin.

6.3.1.4 FY94-98 Objectives

Construction activities are scheduled for completion in FY95 for the sewage collection system rehabilitation project.

6.3.1.5 List of FY93 Scheduled Milestones

None.

6.3.1.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
4101	\$7,500

**6.3.2 Facility Operations and Maintenance (FY94 ADS: OR-4201)
(FY93 ADSs: OR-419EW, OR-420EW,
OR-423EW, OR-427)**

6.3.2.1 Description

6.3.2.1.1 Waste Treatment. The CNF was built in 1986 and has served as the primary industrial wastewater treatment facility for the K-25 Site. Waste streams entering the facility contain radioactive and hazardous contaminants, such as high iron in the coal pile runoff, thereby preventing direct discharge of these wastes to receiving waters of the state. An optimization plan for the CNF was produced in late FY91.

This activity includes the operation of the K-1407-H Central Neutralization Facility (CNF) and the K-1232 Hazardous Waste Treatment Unit. The CNF provides waste water treatment prior to discharge. The discharge limits for the facility are regulated under the

National Pollutant Discharge Elimination System (NPDES) Permit No. TN0002950, which is issued by the Tennessee Department of Environment and Conservation (TDEC). The facility treats approximately 40M gal per year. The waste streams treated at the facility include the K-1501 Steam Plant water softener acidic backwash wastewater, K-1501 Steam Plant boiler blowdown wastewater, coal pile runoff from the coal pile storage area (terminating in FY93), K-1435 Toxic Substances Control Act (TSCA) Incinerator blowdown wastewater, and groundwater from well purging prior to sampling and well development, and other miscellaneous wastes meeting the waste acceptance criteria. The CNF is a 24-hour-a-day operation that requires continuous staffing with operations personnel.

The K-1232 Waste Treatment Unit treats hazardous/mixed wastes generated at the K-25 Site. The unit provides batch treatment with capabilities of neutralization, special chemical addition and precipitation, carbon absorption, and centrifugation. The waste streams treated at this unit include a wide range of low-volume, high-concentration wastes such as spent nickel plating baths and corrosive wastes with organic contamination. The facility is a key component of the LDR FFCA treatment strategy presently under development.

6.3.2.1.2 Waste Storage. Historical activities have primarily consisted of routine operations of the various storage facilities at the K-25 Site. RCRA permit applications have been filed or will be filed during FY92 with the State of Tennessee for the 31 units used for hazardous and mixed waste. Functions provided include waste storage [low-level waste (LLW), fissile material, hazardous waste, PCB waste, and mixed waste] operations and associated waste management staff support. Activities included range from actual operation of the storage units to planning activities for future storage needs for the Oak Ridge Reservation (ORR).

6.3.2.1.3 Waste Disposal. The purpose of the K-25 Waste Transportation and Disposal Operations is to provide safe and compliant waste receiving, packaging, coordination, transportation, and off-site disposal of waste including hazardous, mixed, and low-level.

The scope of this task encompasses the following list.

- Receive/inspect incoming shipments of low-level, hazardous, and mixed wastes for interim storage prior to burning in the TSCA Incinerator and long-term storage for ORR wastes, ensuring compliance with shipping regulations, and transporting the accepted material to storage.
- Perform on-site and off-site waste shipments of all categories of waste including LLW, hazardous, mixed, asbestos, and classified.
- Stage and dispose of K-25 Site generated wastes.

- Direct and coordinate the sampling activities for all waste samples collected for waste characterization.
- Provide hazardous material spill response and clean-up services for the K-25 Site.
- Provide data and assistance to K-25 Site waste generators to characterize and certify the waste they generate.

6.3.2.2 Status of FY92 SSP Objectives

6.3.2.2.1 Waste Treatment. Activities for the current year include continuation of routine CNF operations. Additional tasks that will be performed in FY92 include expansion of the self-assessment program as related to the CNF and K-1232 and implementation of DOE Order 5480.19 "Conduct of Operations". Capital equipment purchased this year includes replacement pumps and parts.

6.3.2.2.2 Waste Storage. Activities for the current year have included routine storage operations such as inspections, corrective actions in the storage units, and waste handling and tracking. Funding requirements for FY92 also include the operation and maintenance of radiation monitoring stations for the basement level of the K-25 Building and the K-1423 waste staging facility. The capital equipment funding identified in FY92 includes the purchase of an explosion-proof forklift which is required in flammable storage areas, and two diesel-powered forklifts.

A major activity this year has involved the refurbishment and conversion of vaults in the K-25 Building as mixed waste storage units. All three sites on the Oak Ridge Reservation (ORR) are generators of RCRA, TSCA, and Mixed waste. Much of this waste is designated as Prohibited Land Disposal Restricted (LDR) by RCRA which requires it to undergo a Best Demonstrated Available Treatment (BDAT) within 12 months of generation. However, the BDAT for the LDR mixed wastes are presently not defined. Consequently, facilities for interim storage of these wastes are required while a Federal Facility Compliance Agreement (FFCA) is pursued. In addition, a recent DOE moratorium prohibiting off-site shipments of waste has created a need for increased on-site waste storage.

The objective of the Mixed Waste Storage Expansion Project (MWSEP) is to provide additional permitted storage for RCRA, TSCA, and mixed waste. The permitted storage will be created in nine vault areas of the K-25 Building designated as Waste Storage Units.

6.3.2.2.3 Waste Disposal. Emphasis will be placed on reconciling the off-site shipment procedures to the newly established protocols for hazardous wastes. Efforts to assist with shipments of low-level waste (LLW) to a commercial contractor for supercompaction and/or

incinerations will also be a high priority. Capital equipment purchases this year will include replacement vehicles, two drum crushers, and drum cleaning equipment. Planning will begin for the FY94 and outyear projects. There are no GPP project funds for transportation and disposal operations in FY92.

6.3.2.3 FY93 Objectives

6.3.2.3.1 Waste Treatment. Activities for FY93 include continuation of routine CNF operations. Preparation of a performance based training program for CNF operations will begin this year.

6.3.2.3.2 Waste Storage. Activities for FY93 include the routine storage operations as described in FY92. A project will be undertaken this year to establish optimized floor plan designs for several storage units. This will aid in the optimum placement of waste containers within the unit and maximum floor space utilization while meeting all regulatory aisle space requirements. A pilot study on lighting improvements in the vault storage units will be conducted to enhance illumination during work activities and reduce overall electricity costs. An additional twelve vaults are scheduled for refurbishment under the MWSEP this year.

6.3.2.3.3 Waste Disposal. Activities for FY93 are continuation of routine transportation and disposal operations. Operations added in FY93 include container cleaning operations to avoid storage of empty PCB and RCRA waste containers as regulated waste, nondestructive analysis monitoring operations to ensure radioactivity levels are properly identified before shipment of waste off-site, and waste certification and readiness review support for shipment of waste off-site.

Planning will continue for the FY94 and outyear GPP's. There are no GPP project funds for transportation and disposal operations in FY93.

6.3.2.4 FY94-98 Objectives

6.3.2.4.1 Waste Treatment. Activities for FY94 include continuation of routine CNF operations and initiation of a preventative maintenance program. A conveyance study will be conducted to document the influent streams to the CNF. This is a Tiger Team corrective action. K-1232 will begin treatment of corrosive hazardous waste this year. Capital equipment purchases include replacement parts and pumps and a manlift.

Activities for FY95 through FY98 include continued CNF operation and associated preventative maintenance and operation of K-1232 for corrosive waste.

6.3.2.4.2 Waste Storage. The waste storage program will be fully staffed to manage the hazardous, mixed, and low-level waste storage facilities at the site. This includes the management of the Pond Waste storage units. Twelve refurbished vaults for mixed waste will be made available under the Mixed Waste Expansion Project in FY94. Vaults will continue to be refurbished after FY94 as they become available. The first of the storage units under the ORR Storage Facilities Line Item become operational in FY95. Capital equipment purchases will include forklifts and pumps for the storage units.

6.3.2.4.3 Waste Disposal. Activities for the formulation year include continuation of routine transportation and disposal operations. Shipments of hazardous waste will resume and funding for shipment of LLW to treatment facilities will be provided in FY94. Operation of a clean fill disposal area at the K-25 Site will be added in FY94. Capital equipment to be purchased includes a road tractor for on-site movement of tanker trailers, a LLW compactor, radiation monitoring equipment, forklifts, and a weigh scale for the K-1423 waste staging area.

6.3.2.5 List of FY93 Scheduled Milestones

- | | |
|-------------------------------------------------------|-------|
| • Complete Construction of CNF Changehouse. | 03/93 |
| • Refurbish Vaults. | 09/93 |
| • Complete Construction of K-1420-A Transfer Station. | 09/93 |
| • Complete Construction of K-1423 Changehouse. | 09/93 |
| • Start of NDA Monitoring Program. | 09/93 |
| • Start of Container Cleaning Operations. | 09/93 |

6.3.2.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
4201	\$27,142

6.3.3 Site-Wide Activities (FY94 ADS: OR-4202) (FY93 ADSs: OR-429, OR-444AA, OR-444EW, OR-422)

6.3.3.1 Description

6.3.3.1.1 Continuity of Operations. Engineering and Compliance: The activities that support waste management operations and that are included in this work element are

- interfacing with the Environmental Management Division for permitting of all upgrades to existing or new Waste Management Division (WMD) facilities,

- maintaining cognizance of new technologies and integrating them into the overall waste management program plan,
- maintaining cognizance of new or proposed changes to regulations and assessing the potential impacts on waste operations,
- establishing and maintaining waste management facilities design requirements and performance standards, and
- establishing and maintaining an overall preventative maintenance program for critical parts and equipment.

Programs and Planning: The activities that support waste management operations and that are included in this work element are

- providing for the development and execution of a waste certification program;
- developing and maintaining waste management plans, e.g., short-term tactical management plans and long-term strategic plans, annual 5820.2A Waste Management Plan, etc.;
- developing an integrating waste storage program computerized planning model;
- developing, implementing, and maintaining a comprehensive computerized waste tracking and reporting system for tracking waste from cradle-to-grave and for preparation of numerous reports, both for regulatory and DOE compliance;
- developing and maintaining various data bases, information systems and support for trending performance indicators and tracking other relevant waste management activities, e.g., actions, divisional walkdown corrective actions, WMD commitments, etc.; and
- preparing and issues monthly WMD activity reports.

Quality Services: The activities that support waste management operations and that are included in this work element are

- providing for the development and implementation of an overall waste management oversight program for ensuring operational compliance with federal and state regulations and DOE orders;
- developing and implementing a waste management self-improvement program which provides for elements such as conducting self assessments of operations and integrating elements of Total Quality Management into WMD operations;
- developing, implementing, and maintaining a comprehensive waste management training program, including preparation and maintenance of training modules for specific WMD activities, conducting specific elements of training, and maintenance of a TSD access data base for required training verification;
- implementing conduct of operations guidelines throughout WMD activities; establishes and maintains WMD Document Control Center; and
- providing statistical support to WMD activities and operations.

6.3.3.1.2 Instrumentation and Equipment. This activity provides capital funds for the purchase of analytical instrumentation, modules, and equipment that support waste management activities at the site. Some of the activities supported are waste storage programs; waste disposal programs; waste treatment programs; TSCA Incinerator operations; Off-Site TSCA Waste Acceptance Criteria support programs; and waste management activities in general. For this activity, a single piece of equipment could support two or more waste management activities.

6.3.3.1.3 Waste Minimization. This work element entails coordination and oversight of the K-25 waste reduction/pollution prevention program. It includes maintenance of the site's waste minimization plan, writing the annual waste reduction report, assisting with the maintenance of a hazardous materials inventory data base, and seeking new opportunities for waste reduction/pollution prevention through such activities as process waste assessments. It would also include funding for waste minimization activities internal to the Waste Management Division.

6.3.3.2 Status of FY92 SSP Objectives

6.3.3.2.1 Continuity of Operations. Efforts will continue for RCRA and TSCA compliance activities. Strategic and long-range planning for the division will receive more emphasis this year. Design of the K-25 Site's waste tracking and reporting will continue. A Waste Certification and Characterization Program will be developed and computer security will be provided for the division. An Integrated K-25 Site Waste Management Program Plan will be issued this fiscal year. Intensive efforts will go toward the development of comprehensive training, procedures development and implementation, and maintenance programs. The centralized document center for the division will be established.

6.3.3.2.2 Instrumentation and Equipment. Existing analytical equipment needs to be replaced and procurement plans are being developed. Several pieces of equipment are approaching the end of their useful lives.

6.3.3.2.3 Waste Minimization. A draft Pollution Prevention Program Plan was produced in FY91 and issued in December 1991. It will be reviewed by all affected K-25 organizations and released as the plan of action in accordance with the State of Tennessee Hazardous Waste Reduction Act of 1990. Implementation of the plan will begin in earnest in the spring. The annual waste reduction activities report will be produced.

6.3.3.3 FY93 Objectives

6.3.3.3.1 Continuity Of Operations. Engineering and Compliance, Programs and Planning, and Quality Services: The activities described for FY92 will continue to mature this year. Emphasis will be placed on the waste tracking system, procedures, training, and conduct of

operations activities. Many of these will prove responsive to Tiger Team concerns, which were previously identified by the Waste Management Division's self-assessment.

6.3.3.3.2 Instrumentation and Equipment. Analytical equipment requiring capital funds will be purchased in FY93 for the K-25 Site Analytical Division. Purchase of this equipment and instrumentation will lay the foundation to provide the required analytical support.

6.3.3.3.3 Waste Minimization. Implementation of the Pollution Prevention Plan will continue. The plan details activities for several additional years.

6.3.3.4 FY94 - FY98 Objectives

6.3.3.4.1 Continuity of Operations. Engineering and Compliance, Programs and Planning, and Quality Services: The activities described for FY93 will continue to mature. Strengthening the quality assurance and self-assessment aspects of the division will be added activity in the outyears.

6.3.3.4.2 Waste Minimization. Coordination of K-25 Site waste minimization activities will continue. A detailed process waste assessment is scheduled for the Central Neutralization Facility in FY94. Support to the Hazardous Materials Inventory System will be provided beginning in FY95. This will further integrate pollution prevention efforts at the site.

6.3.3.5 List of FY93 Scheduled Milestones

- | | |
|--------------------------------------------------------|-------|
| • Install Waste Management Analytical Instrumentation. | 03/93 |
| • Annual Waste Reduction Report. | 03/93 |

6.3.3.6 FY93 Funding

	\$
<u>ADS No.</u>	<u>x 1000</u>
4202	\$ 4,857

6.3.4 Disposal of K-1515 Sanitary Water Treatment Plant Waste (FY94 ADS: OR-4203) (FY93 ADS: OR-445)

6.3.4.1 Description

Under the new regulations, any water entering the K-1515-C lagoon must meet the NPDES criteria. Backwash water and water from cleaning settling basins and flocculator basins at

the K-1515 Sanitary Water Treatment Plant are discharged to the K-1515-C lagoon. Settling of suspended solids takes place in the lagoon. Retention time in the lagoon allows residual chlorine to dissipate before discharge to the river occurs.

This project will eliminate the discharge of solids and chlorinated water to the K-1515-C lagoon. This project includes the following major equipment:

- polymer feed system,
- clarifier/Sludge thickener (175,000 gallon tank with rake drive),
- 650,000 gallon equalization basin,
- sand filter,
- filter press for dewatering sludge,
- prefab metal building (40' x 50' x 20' eave height), and
- pumps and electrical equipment for system operation.

Backwash wastewater and basin cleaning water will be routed to a thickening facility (a tank where solids can be concentrated). The thickened sludge will be pumped into a filter press dewatering system. The dewatered solids will be disposed.

A line item project addressing waste problems at the K-1515 Sanitary Water Plant is scheduled to begin in FY93.

6.3.4.2 Status of FY92 SSP Objectives

NEPA documentation for the line item project will be completed.

6.3.4.3 FY93 Objectives

Final design will begin on the K-1515 Sanitary Water Plant Waste Disposal line item project. A small treatment plant will be added to the existing facility to treat the filter backwash effluent before discharge.

6.3.4.4 FY94-98 Objectives

Construction activities will begin on the K-1515 Sanitary Water Plant Waste Disposal.

Construction will continue in FYs 95 and 96 on the K-1515 project. Beneficial occupancy and start-up will occur at the end of FY96.

6.3.4.5 List of FY93 Scheduled Milestones

- Start K-1515 Sanitary Water Plant Waste Disposal Final Design.

10/92

6.3.4.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
4203	\$1,500

6.3.5 Toxic Substances Control Act Incinerator (FY94 ADS: OR-4204) (FY93 ADSs: OR-450, OR-450AA)

6.3.5.1 Description

The Toxic Substance Control Act (TSCA) Incinerator is a unique facility which serves as both a treatment and disposal facility for hazardous organics and organically contaminated liquids and solids. These are typically radioactively mixed waste(s) (RMW). Hazardous organics are disposed of by converting the hazardous constituent to CO₂, H₂O, and acidic gases which are scrubbed and neutralized in the off-gas treatment system. The incinerator has demonstrated compliance with all applicable TSCA, Resources Conservation Recovery Act (RCRA), and air regulation via Trial Burn testing, which were witnessed by the Environmental Protection Agency (EPA) and State Regulators. This activity includes: continuing operations, maintenance, training, utilities, and laboratory support functions necessary for the incinerator to treat and dispose of radioactively mixed wastes in compliance with applicable environmental regulations and Department of Energy (DOE) Orders. The continued operations of the incinerator are critical to ensure that the Oak Ridge Field Office complies with Federal Facility Compliance Agreements (FFCA) and "Land Ban" restrictions imposed by the Hazardous Solid Waste Amendments.

6.3.5.2 Status of FY92 SSP Objectives

During FY92, the TSCA Incinerator will operate in a safe and environmentally acceptable manner while burning 2,400,000 pounds of mixed waste. Emphasis will be focused on program improvement based on information gained from operating experience during FY91.

These include the following:

- Add staff to improve technical oversight during off-shifts of incinerator operations and permits, improve waste tracking capabilities, and improve Conduct of Operations and Maintenance; reduce system downtime; and facilitate/coordinate shipment of waste to TSCA Incinerator;

- Upgrade the Maintenance Program by accelerating implementation of Conduct of Maintenance;
- Institute a program to upgrade the SOPs to the new format required by DOE;
- Formalize and upgrade TSCA Spare Parts Program;
- Develop and implement a Freeze Protection Plan;
- Assume responsibility for and commencement of operations at the K-1425 Facility by TSCA Operations; and
- Initiate checkout, startup, and placement of the Solids Feed capability into operations.

6.3.5.3 FY93 Objectives

FY93 includes operation of the incinerator at similar levels of production as FY92. Also, the following program and project improvements will be made.

- Continue improving the Standard Operating and Maintenance Procedures.
- Finalize implementation of activities associated with the Freeze Protection Plan. This is necessary to comply with new DOE guidance on freeze protection of the DOE facilities.
- Continue work on the ash management program.
- Finalize development of the Waste Tracking System.

6.3.5.4 FY94-98 Objectives

FY94 Objectives include the operation of the incinerator at slightly higher rates than in FY93. The all solids feeds system shall also be in operation. In addition, the following projects and program improvements will be scheduled.

- Perform preparations for RCRA metal testing and conduct RCRA trial burn.
- Perform major overhaul of Kiln Drive System and Ram Feeder.
- Finalize Ash Delisting Program.

In the outyears, the incinerator will operate and burn waste at levels shown below (in millions of pounds). Emphasis will focus on continued operations with existing equipment capacity.

	Liquids	Solids
FY94	2.6	.1
FY95	2.4	.1
FY96	2.9	.1
FY97	1.8	1.5
FY98	1.8	1.9

6.3.5.5 List of FY93 Scheduled Milestones

- Develop Residuals Management and Disposal Plan and Submit Documentation to DOE Headquarters, EM-321. 08/93
- Incineration of 3,000,000 lbs. of Radioactive Mixed Liquid Wastes. 09/93
- Incineration of 100,000 lbs. of Radioactive Mixed Solid Wastes. 09/93
- Begin storing waste at K-1425. 09/93
- Revise the Final Safety Analysis Report (FSAR). 09/93

6.3.5.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
4204	\$28,897

6.3.6 Filter Test Facility (FY94 ADS: OR-4205) (FY93 ADS: OR-425)

6.3.6.1 Description

This activity, the Oak Ridge Filter Test Facility (ORFTF), is one of three U.S. Department of Energy (DOE) Quality Assurance Test Stations for high-efficiency particulate air (HEPA) filters used in DOE facilities for environmental protection. The ORFTF is the only test site in the eastern United States and inspects and tests HEPA filters for all DOE sites east of the Mississippi River. Inspection and test services are also provided for commercial companies and other federal agencies on a cost recovery basis.

ORFTF has been in continuous operation since 1963. Approximately 5,000 filters/year have been tested for DOE sites and non-DOE customers. A semiannual report containing operational data is submitted to the DOE. The most recent report was filed the end of October 1991.

ORFTF is a continuing operation. Visual inspection and performance criteria testing of HEPA filters to be installed in DOE facilities will be provided. Costs of this program include routine operating labor and material costs, routine maintenance of the facility and test instrumentation, routine calibration of test instrumentation, and current plant services and general administration overhead costs.

6.3.6.2 Status of FY92 SSP Objectives

Approximately 5,250 HEPA filters will be tested for DOE, other federal agencies, and commercial customers.

Funding supports labor and material costs for routine operation, routine maintenance of the facility and test instrumentation and routine calibration of test instrumentation.

Labor costs will cover the testing of approximately 5,000 filters. Material costs will provide for necessary chemicals and replacement parts for facility equipment. Maintenance cost will provide for routine prevention maintenance and calibrations associated with three filter testing instruments.

6.3.6.3 FY93 Objectives

Approximately 5,400 HEPA filters will be tested for DOE, other federal agencies, and commercial customers.

Funding supports labor and material costs for routine operation, routine maintenance of the facility and test instrumentation, routine calibration of test instrumentation, and plant services and general administration overhead costs.

6.3.6.4 FY94-98 Objectives

Operation will continue with annual production levels of approximately 5,500 to 6,000 filters.

Funding will support labor and material costs for routine operation, routine maintenance of the facility and test instrumentation, routine calibration of test instrumentation, and plant services and general administration overhead costs.

6.3.6.5 List of FY93 Scheduled Milestones

- Submit Semiannual Filter Test Summary Report.
- Submit Semiannual Filter Test Summary Report.

10/92
03/93

6.3.6.6 FY93 Funding

\$	
<u>ADS No.</u>	<u>x 1000</u>
4205	\$ 324

6.3.7 General Plant Projects, Waste Management, Defense (FY94 ADS: OR-4206) (FY93 ADSs: OR-425)

6.3.7.1 Description

This ADS provides for the project management and engineering support necessary to manage the planning for and execution of the K-25 Site general plant projects (GPPS) as well as the actual construction costs associated with the individual projects.

6.3.7.2 Status of FY92 SSP Objectives

Planning will begin for the FY94, K-1232 upgrades, and FY95, H and J basin roofs, GPP projects. The CNF changehouse design will be completed and construction begun in FY92. The CNF changehouse will provide restroom and changehouse facilities for the operators and maintenance personnel associated with the CNF operation.

Planning will begin for the FY93 and FY94 GPP's. There are no GPP project funds for storage operations in FY92.

A GPP in FY92 at this facility involves reducing residual room Di-sec-octyl Phthalate (DOP) concentrations by redesigning ductwork to route the exhaust from each of the two larger filter test machines, Q-76 and Q-107, and installing a hood over the smallest machine, Q-127, to route the exhaust into the main exhaust duct. These would then exhaust through the electrostatic particulator to the outside. This design configuration would eliminate the DOP emissions presently caused by each filter test machine exhausting into the room. This design would utilize the existing system that collects DOP at the electrostatic precipitator and routes it back to a collector for recycling.

6.3.7.3 FY93 Objectives

Planning will continue for the K-1232 upgrades scheduled for FY94. The CNF changehouse will be completed in FY93 using budget authority granted in FY92.

Planning will continue for outyear GPP's. The following projects will be designed and constructed during the year:

- **K-1420-A Transfer Station** - This activity consists of constructing a tanker loading and unloading area adjacent (south end) to the K-1420-A flammable hazardous waste storage tank.
- **K-1423 Changehouse** - This activity consists of building a changehouse that can accommodate approximately 80 male and female operators.

6.3.7.4 FY94-98 Objectives

Planning will continue for the H and J basin roofs GPP project. The K-1232 upgrades will be conducted during the year. The upgrades will provide piping changes and installation of small scale equipment necessary for treatment of corrosive wastes.

Planning will continue for outyear GPP's. The following projects will be designed and constructed in FY94:

- **K-1202 Transfer Station** - This activity consists of constructing a tanker loading and unloading area adjacent (south end) to the K-1202 flammable hazardous waste storage tank.
- **Roof/Fire Suppression System for K-1202** - This activity consists of constructing a roof and fire suppression system over K-1202 hazardous waste storage tank.
- **Roof for K-1420-A** - This activity consists of constructing a roof over K-1420-A hazardous waste storage tank.
- **LLW Storage Tents** - This activity consists of constructing six LLW storage fabric structures in FY94 and two in FY95. These storage units are metal framed with a stretched fabric skin covering the entire structure.

Planning will continue for outyear GPP's. The following projects will be designed and constructed in FY94:

- **K-1423 Containment Dikes** - The K-1423 Storage and Processing Facility requires a diked staging area which will provide the ability to properly manage either incoming shipments of waste, or waste awaiting full characterization prior to storage or off-site shipment.
- **Battery Storage Facility** - A battery storage area located at the K-25 Site Recycle Center is needed to properly store and segregate the batteries offered for recycle.
- **Labpack Facility** - The K-25 Site has a need to consolidate small "labpack" items of RCRA regulated waste in order to save storage space, limit the number of analyses required, reduce overall disposal costs and make tracking more manageable.

6.3.7.5 List of FY93 Scheduled Milestones

- Complete construction of a changehouse for personnel assigned to the Central Neutralization Facility. 03/93
- Complete construction of a changehouse for waste storage and transportation and disposal personnel. 09/93

6.3.7.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
4206	\$2,647

6.3.8 New Facility Planning (FY94 ADS: OR-4207) (FY93 ADSs: OR-423EW, OR-444EW)

6.3.8.1 Description

This ADS provides for the planning and execution of unvalidated line items. The line items currently proposed are:

- Central Neutralization Facility Pipeline,
- Industrial Waste Water Treatment Plant,
- LLW Compaction/Preparation Facility, and
- Metals Sizing and Packaging Facility.

6.3.8.2 Status of FY92 SSP Objectives

Line item funds have been requested in the past to upgrade the Central Neutralization Facility. Funds have been requested through a reprogramming activity to begin work on the CNF Pipeline CDR. A feasibility study will be conducted at the CNF to determine whether the line item funds should be directed toward upgrade of the existing facility or replacement of the existing facility.

6.3.8.3 FY93 Objectives

The NEPA documentation will be prepared for the CNF Pipeline project. CDR's will be started for the remaining three line items.

6.3.8.4 FY94-98 Objectives

In FY94, the CDR's for the Industrial Waste Water Treatment Plant, LLW Compaction/Preparation Facility, and the Metal Sizing and Packaging Facility will be completed. The CNF Pipeline Title I and Title II design documents will be prepared and construction begun.

Construction of roofs over the H and J basins at CNF is scheduled as a GPP project in FY95. No other GPPs are planned at CNF because a line item is scheduled to begin in FY96 that will either upgrade or replace CNF.

In the outyears, design and construction will be completed for all currently proposed line items.

6.3.8.5 List of FY93 Scheduled Milestones

- Complete the CDR for the CNF Pipeline Project.

02/93

6.3.8.6 FY93 Funding

<u>ADS No.</u>	<u>\$</u> <u>x 1000</u>
4207	\$ 757

6.4 CENTRAL WASTE MANAGEMENT DIVISION

This task provides funding for the execution of EM initiatives at the three Oak Ridge Reservation (ORR) installations through a centralized M&O contractor, the Central Waste Management Division (CWMD) organization. The scope of Division activities has continued to grow and broaden as the organization has matured to include both technical and administrative activities. Technical program activities have expanded to include:

- regulatory compliance support;
- program planning;
- operational controls and improvements;
- engineering coordination;
- readiness review;
- Five Year Planning support;
- scrap metal program (all above in ADS 8203);
- waste minimization (ADS 8204);
- ORR LDR FFCA (ADS OR-8205); and
- central treatment, storage, and disposal facility planning, development and operation (ADS 9202 and 9203).

Administrative Program Management functions include Five Year and Site-Specific Plan coordination and development, routine reporting, and centralized waste management and corrective activities budget control and tracking. This ADS which combines activities formerly included in ADS 421 and ADS 434 will continue throughout the lifetime of the EM program.

6.4.1 Reservation Support (FY94 ADS: OR-8203) (FY93 ADSs: OR-421, OR-424, OR-486)

6.4.1.1 Description

6.4.1.1.1 Program Planning

The goal of the Central Waste Management Division Program Planning Program is to provide top level planning guidance for the three Oak Ridge sites (K-25, Y-12, and X-10). The activity is continuous and will primarily focus on the planning of treatment, storage, and disposal facilities to achieve and maintain regulatory compliance of all waste management operations.

Program management areas will include coordination, direction, and execution of:

- hazardous and mixed waste program planning,
- radioactive waste program planning and waste certification planning,
- long term strategic planning, and
- the interface between the Office of Technology Development and Waste Management Programs.

The scope of the hazardous and mixed waste planning effort is to provide a consistent approach to the handling of hazardous and mixed waste at the three Oak Ridge Reservation (ORR) sites. The specific activities in this functional area are: development of TSD strategies for hazardous and mixed waste generated on the ORR, development of acceptable approaches (integration of regulatory, technical, and political concerns) to the proper management of mixed waste on the reservation, development of an ash management strategy for the TSCA Incinerator, coordination and integration of site-specific mixed waste TSD plans, development of guidance to the sites in the development and review of technical requirement documents for proposed mixed waste TSD facilities, support of Headquarters level initiatives (PEIS, MWTP, etc.) in the area of mixed waste TSD, and support of ad hoc requests for technical support to the Oak Ridge Field Office.

The scope of the Radioactive Waste Planning effort is to provide a consistent technical approach to the handling of radioactive waste at each of the sites on the ORR. The specific activities for this functional area are: development of TSD strategies for strictly solid waste streams generated by the three ORR sites, support of off-site release activities both on the ORR as well as at DOE/HQ, support of the Programmatic EIS and the ORR Waste Management Disposal Facilities EIS and the subsequent Performance Assessments of the CWMD Class L-I and Class L-II disposal sites, acquisition and evaluation of the necessary data to support the central waste disposal activities, support of Environmental Restoration Program waste management planning, support of the Performance Assessment teams at the DOE/HQ level, and support of ad hoc requests for technical evaluations both from DOE-OR and Energy Systems management.

The objective of the Waste Certification Program is the development and implementation of plans and procedures for certifying that wastes generated ORR generators possess the necessary documentation for treatment, storage, or disposal (TSD) facilities to manage those wastes safely, effectively, and efficiently. The program is intended to establish a mechanism to promote free exchange of information among the ORR sites and TSD facilities and encourage adoption of optimum waste management practices. The impetus for development and implementation of this program arises from the necessity to improve compliance and documentation of compliance with existing and planned waste management regulations and standards, to provide a better documented level of protection of the health and safety of the public and the environment, and to improve the efficiency of TSD operations.

6.4.1.1.2 Regulatory Compliance

This activity will provide Central Waste Management Division (CWMD) with a comprehensive compliance program for waste management activities within the Oak Ridge plants. The activity will be continuous, since the Department of Energy will continue to comply with increasing regulation under NEPA, RCRA, TSCA, CAA, CWA, new laws such as the Pollution Prevention Act of 1990 and DOE Orders.

Program management areas will include:

- coordination and technical support for compliance agreements,
- coordination of waste management responsibilities under the Tennessee Oversight Agreement (TOA),
- coordination of regulatory analysis and policy development,
- review and tracking of NEPA determinations for waste management activities, and
- development of waste management compliance reports.

Readiness Review: This activity provides the resources to prepare procedures, prepare other documentation, and to conduct reviews of site proposals for shipping wastes and specified materials to off-site receiving facilities. The reviews are conducted to determine the state of readiness and compliance with requirements for shipping the described items, materials or wastes with a major emphasis on the radioactive constituents present and verification that the receiving facility has the necessary licenses and permits to manage the radioactive constituents present. The criteria for conducting the reviews are given in the form of procedures specifying requirements for presenting information, for justifying the respective proposals, for documenting the review, and for obtaining the appropriate level of concurrence or approval.

The reviews are conducted as the method for assuring that the objectives of the DOE performance objective governing shipment of wastes to off-site facilities (in draft form) as well as other DOE orders and regulatory requirements, and that the off-site shipment activities are conducted consistently. The reviews are conducted according to the format for readiness reviews and are conducted using a committee or board to evaluate the various proposals. The boards are composed of no less than two people per review to gather the information needed for making a decision, a review, discussion and approval from a five-member Readiness Review Board, and resources to document the review and obtain the appropriate approvals from DOE. The board responsible for receiving the initial proposal request and evaluating the information for the purpose of formulating a set of recommendations for shipping waste off-site is generally composed of experienced personnel from the areas of waste management, quality assurance, training, health physics, and a representative familiar with the NRC licensing requirements.

6.4.1.1.3 Operational Controls and Improvement

This activity supports the waste management operations of the three MMES managed DOE/ORFO installations in Oak Ridge and is composed of the following four elements:

1. inspections of Off-Site Commercial Treatment, Storage, Disposal and Recycle Facilities (TSDRF),
2. CWMD Training Program,
3. CWMD Self-Assessment Program, and
4. CWMD Safety Coordination Program.

Commercial TSDRF Inspection Program: This element which has been on going for about ten years provides for the inspection of all off-site commercial Treatment, Storage, Disposal and Recycle (TSDR) Facilities proposed for use and or used by Energy Systems for the TSDR of hazardous, radioactive, or mixed waste. The principle purpose of this program is to assess the suitability of these facilities for handling Energy Systems' waste in order to minimize short and long term risks to Energy Systems and the Department of Energy. A total of approximately 25 TSDR facilities have been used by Energy Systems over the last 10 years. Off-site TSDR facilities used by Energy Systems are inspected on a annual cycle. A standardized checklist is used to evaluate these facilities.

Training Program: The CWMD training program was initiated in FY92 to identify, establish and track job training requirements to insure that CWMD personnel and Energy Systems waste operations personnel have the requisite job training to meet federal and state regulatory requirements, DOE order requirements, Energy Systems policy and procedure requirements, and CWMD requirements.

Self-Assessment Program: The CWMD Self-Assessment Program was initiated in FY92 to coordinate the self assessment programs of the Energy Systems waste management organizations to insure that consistency exists between sites and that lessons learn are incorporated in all waste management operations to foster continuous improvement. The principle elements of the CWMD self assessment program will be:

- to provide guidance and direction on the form and content of the waste management operations self assessment programs;
- to participate in and coordinate external and internal audits/surveillance/appraisals affecting waste management operations;
- to conduct surveillance of installations self-assessment programs;
- to establish the data requirements and assist in establishing compatible database tracking systems for waste operation findings, observation, etc.; and
- to establish and implement communication systems to exchange information on lessons learned.

Safety Program: The CWMD safety program will coordinate the safety-related activities within CWMD and Energy Systems site waste operations with Energy Systems' central safety organization. Safety activities that will be considered for inclusion in this program will include:

- facility safety review and analysis during design and operation of waste facilities, and
- CWMD personnel safety program.

6.4.1.1.4 Scrap Metal Management Program

This task is to provide management oversight and implement the Department of Energy, Oak Ridge Field Office's (DOE/ORFO) Scrap Metal Program. The purpose of this activity is to establish a program for managing newly generated contaminated scrap metal generated from on-going operations from the Oak Ridge installations and process these scrap metals for restricted beneficial use by DOE. In the out years, this program may be expanded to include processing of accumulated scrap metal from past operations.

6.4.1.1.5 Five Year Planning Support

This activity provides support for development of the Department of Energy (DOE) Environmental Restoration and Waste Management (ERWM) Five Year Plan, including preparation of Activity Data Sheets, Site-Specific Plans, and other efforts such as public meetings and regulatory briefings. The Central Waste Management Division (CWMD) provides management and oversight of all Oak Ridge Reservation (ORR) Five Year Plan activities regarding budgetary planning, task prioritization, funding allocation, cost estimate development and appraisal, and reporting through the Progress Tracking System. CWMD coordinates the activities required to respond to the numerous audits of Activity Data Sheets and cost estimates and has the lead for response to audit reports. CWMD is responsible as the primary point-of-contact with DOE-OR Waste Management Division and ensures consistency of approach through dissemination of guidance, review and approval of documentation, and submission to DOE-OR.

6.4.1.2 Status of FY92 SSP Objectives

6.4.1.2.1 Program Planning. The primary focus for the Program Planning Program is the development of program planning methodologies and the finalization of waste certification program planning, continuing work on the SWSA 6 performance assessment, development of off-site release criteria for solid waste, completion of a TSD assessment for the three ORR sites, development of a residuals management plan for the TSCA Incinerator, technical support to the LDR FFCA effort, completion of a scoping study for the disposal of mixed waste at the ORR, and oversight of site waste programs.

6.4.1.2.2 Regulatory Compliance. Regulatory Compliance: The primary focus of activities in FY92 will be to continue development of the Central Waste Tracking System, support the FFCAs for LDR mixed wastes and PCB waste, complete quarterly compliance reports for waste management activities, coordinate the waste management activities under the TOA, and continued development of waste management policy through the review of regulatory issues and continued participation on the RCRA and TSCA Task Teams.

Readiness Reviews: General procedures governing preparation of wastes for off-site shipment will be developed. Review of site-specific procedures will be conducted as these procedures are generated by the respective installations. Readiness Review Boards will be convened as needed. It is anticipated that about 12 readiness reviews will be conducted in FY92.

6.4.1.2.3 Operational Controls and Improvement. Inspection of Off-Site Commercial TSDF: Approximately 20 - 30 TSDR facility visits will be made and audit reports issued. A formalized procedure for the TSDF inspection program including modifications of the evaluation check list to place more emphasis on potentially radioactive waste components will be issued. Quantified ranking of the overall risks to be used in evaluating TSDRF will be developed.

Training Program: Job position minimum training requirements will be established for CWMD and site waste operations staff positions. The baseline planning will be completed including the identification of major program elements.

Self-Assessment Program: The CWMD self-assessment implementation plan will be developed. CWMD personnel will participate in approximately 30 of the DOE/ORFO surveillances of waste management operations and other external audits, surveillances and appraisals affecting waste operations. Data tracking and communications requirements of the CWMD self-assessment programs will be developed. CWMD will conduct approximately 10 waste management facility/activity audits/surveillances, or walkthroughs; document and track finding or recommendations for improvements.

6.4.1.2.4 Scrap Metal Program. The principle action during FY92 will be to support the preparation of an environmental assessment (EA) for the scrap metal program.

6.4.1.2.5 Five Year Planning Support. Under this activity, the CWMD managed the ORR-wide generation of WM Activity Data Sheets, Task Description Documents, and the Site-Specific Plan. CWMD also coordinated WM participation in the various ADS audits and reviews. CWMD prepared the format for activity-based cost estimates to be prepared for all WM operations and projects.

6.4.1.3 FY93 Objectives

6.4.1.3.1 Program Planning. The initiatives outlined for FY92 will continue into FY93 but no new initiatives will begin. Coordination of the planning efforts for Radioactive mixed waste, radioactive waste, and waste certification will continue.

Specific tasks for Mixed and Hazardous Waste Coordination include the following list.

- Continue development of the TSCA Ash Management Plan - The Ash Management Policy will be completed in FY92 and the FY93 activity will be the development of the specific ash management strategy for TSCA Incinerator residues. The strategy will include issues, treatability plans, and completion schedules for treatment and final waste form development.
- Complete Mixed Waste Disposal Feasibility Study (co- funded with ADS 9203) - Complete an engineering feasibility study for mixed waste disposal on the ORR. The study will integrate RCRA, DOE, and CERCLA approaches to the siting of a disposal area on the reservation.
- Coordinate mixed waste TSD needs on the reservation - this activity will provide the review and planning coordination required to assure technically consistent approaches to mixed waste TSD needs on the reservation. This activity provides for the review of mixed waste treatment capital project plans, development of strategic initiatives for mixed waste TSD requirements on the reservation, and an interface between Energy Systems and DOE for mixed waste questions and concerns.

Radioactive Waste and Certification Coordination:

- Completion of the SWSA 6 Performance Assessment - A draft PA for SWSA 6 on the ORNL Site has been reviewed by the PA peer review team. There were several comments on the draft and programs will be implemented in FY93 to address the comments and finalize the PA.
- Certification program implementation - A guidance document will be prepared concerning the off-site shipment moratorium, process description guidance document, a waste acceptance criteria document, and a waste generator guidance document.
- Pilot Waste Characterization program - A pilot program will be completed to implement the waste characterization process for the three ORR Sites.
- Multi-site certification facility optimization - (Co-funded with ADS 9203) A study will be completed to define the optimal configuration for certification facilities on the ORR.

Strategic Planning Support:

- **Update Strategic Road Maps** - The strategic road maps will be updated per DOE/HQ guidance.
- **Update LLWDDD and HAZWDDD Strategies** - The LLWDDD and HAZWDDD strategies were developed in the late 1980's and, in light of changes in the LDR laws and developments in the NEPA status of central LLW disposal facilities, these documents need to be updated and new strategies reviewed and updated.
- **TSD Capacity Evaluation** - The on-going analysis of TSD needs on the ORR will continue. This project provides waste stream projections and ultimately provides the planning basis to assure future regulatory compliance.

6.4.1.3.2 Regulatory Compliance. Regulatory Compliance: the Initiatives outlined for FY92 will continue into FY93 with emphasis on completion of the Central Waste Tracking System. Implementation of activities under a signed FFCA for LDR mixed waste is anticipated.

Readiness Review: Review of site-specific procedures will continue. Readiness reviews will be conducted at the rate of three or four per month.

6.4.1.3.3 Operational Controls and Improvement. Inspection of Off-Site Commercial TSDF: Approximately 20 - 30 TSDR facility visits will be made and audit reports issued.

Training Program: This program will provide for the continued coordination and surveillance of the training programs for CWMD and installation waste operations divisions.

Self-Assessment Program: This program will provide for the coordination and support of the CWMD self assessment program in FY93. As self-assessment is a method of continuous quality improvement, activities identified under the scope of work will continue.

Safety Coordination Program: This program element will be initiated in FY93 and the overall CWMD safety assessment program will be developed.

6.4.1.3.4 Scrap Metal Management Program. A plan for managing all currently generated scrap metal by all DOE/ORFO Oak Ridge installations will be developed and implemented. The plan will include requirements for the segregation by metal types, contamination level and the containerization for all newly generated contaminated scrap metal.

6.4.1.3.5 Five Year Plan Support. Activity-based cost estimates will be prepared for all WM operations and projects.

6.4.1.4 FY94-98 Objectives

6.4.1.4.1 Program Planning: Mixed and Hazardous Waste Coordination - The scope of the hazardous and mixed waste planning effort is to provide a consistent approach to the handling of hazardous and mixed waste at the three ORR sites. Activities to develop a TSCA Ash Management Plan are anticipated to be extremely limited in FY93 because of funding constraints. Activities in FY94 will be similarly constrained but will be driven by the LDR FFCA (see ADS OR-8205).

Activities include development of TSD strategies for hazardous and mixed waste generated on ORR, development of acceptable approaches (integration of regulatory, technical, and development of an ash management strategy for the TSCA Incinerator, coordination and integration of site-specific mixed waste TSD plans, development of guidance to the sites in the development and review of technical requirement documents for proposed mixed waste TSD facilities, support Headquarters-level initiatives (PEIS, MWTP, etc.) in the area of mixed waste TSD, and support of ad hoc requests for technical support to the Oak Ridge Field Office.

Strategic Planning: Update Strategic Roadmaps - The strategic roadmaps will be updated per DOE/HQ guidance.

Update LLWDDD and HAZWDDD Strategies - The updates started in 1993 will be completed in FY94.

TSD Capacity Evaluation - The on-going analysis of TSD needs on the ORR will continue. This project provides waste stream projections and ultimately provides the planning basis to assure future regulatory compliance.

6.4.1.4.2 Regulatory Compliance. The primary emphasis of the program through the planning years is to provide consistent and comprehensive compliance oversight. Completion of all phases of the Central Waste Tracking System will be a priority activity. Critical regulatory initiatives such as FFCAs will be supported to ensure compliant operations. Support to coordination and deliverables for waste management activities under the TOA will continue.

Readiness Reviews: Review of site-specific procedures will continue. Readiness reviews will be reduced to about two per month.

6.4.1.4.3 Operational Controls and Improvement. Continuation of these baseline activities in planning years of FY95 through FY98 are required to support the mission and goals of CWMD. The elements of this activity are delineated in the Activity Scope section.

6.4.1.4.4 Scrap Metal Program. This activity will provide for the continued oversight management of the ORFO scrap metal program and the processing of containerized newly generated contaminated scrap metal. At current generation rates the planning funding level is marginally adequate to process a quantity of the scrap metal about equal to the quantity generated during a year. A new initiative for the processing of accumulated contaminated scrap metal from past operations will begin.

6.4.1.4.5 Five Year Planning Support. CWMD will continue to provide management and technical direction in support of FYP activities.

6.4.1.5 List of FY93 Scheduled Milestones

- Issue TSCA Ash Management Strategy. 03/93
- Issue CWDF Safety Coordination Program Plan. 03/93
- Issue Contaminated Scrap Metal Management Plan 03/93
- Issue Training Plan requirements and recommendations. 06/93
- Issue Report on Optimal Certification Facility Configuration. 08/93
- Complete Mixed Waste Disposal Feasibility Study. 09/93
- Issue Final SWSA 6 Performance Assessment. 09/93
- Issue Annual status report on Self-Assessment Program. 09/93
- Complete and issue FY93 TSDRF Audit Inspection Annual Summary Report. 09/93

6.4.1.6 FY93 Funding

	\$
<u>ADS No.</u>	<u>x 1000</u>
8203	\$ 8,228

**6.4.2 Waste Minimization Planning (FY94 ADS: OR-8204)
(FY93 ADS: OR-421)**

6.4.2.1 Description

The Oak Ridge Reservation (ORR) Waste Minimization and Pollution Prevention Awareness Programs are designed to eliminate or minimize pollutant releases to all environmental media from all aspects of the ORR operations. This ADS activity provides the ORR plants with program direction and coordination while serving as a single source of contact between the plants, DOE, and other parties. In addition, this activity provides oversight for development of administrative techniques, identification of needs and attraction of program technical support, and coordination of multi-site deliverables and projects to

assure that the ORR facilities meet the objectives of the Waste Minimization and Pollution Prevention Awareness Plans (WMPPAP). Among responsibilities for CWMD are:

- management of process waste assessments (PWAs) to determine opportunities for waste minimization,
- coordination of waste reduction reporting for the ORR,
- development of expert systems for conducting PWAs and data management, and
- development and implementation of training and awareness programs.

6.4.2.2 Status of FY92 SSP Objectives

CWMD has completed the following tasks.

- A Central Waste Management Division (CWMD) WMPPAP that establishes overall program objectives and outlines CWMD's support of the ORR facility programs has been developed.
- An Industrial Waste Minimization and Recycling Plan (IWMRP) was issued specifying Energy Systems' current and planned activities and methods that are or can be employed to reduce the quantity of industrial wastes at the sites.
- A Waste Reduction Report specifying progress of the Energy Systems' program activities and comparing previous and current year waste generation data is being issued annually.
- To facilitate support of DOE-OR, a monthly "Coordination" meeting between site coordinators and the DOE-OR point of contact was implemented to identify and prioritize information requests and new directives.

6.4.2.3 FY93 Objectives

In addition to continuing the efforts described in the FY92 objectives, CWMD will develop a plan for a Central Waste Management Assessment System (CWMAS) to interface with Site databases. CWMAS will be an expert system to perform process and waste stream analysis studies.

6.4.2.4 FY94-98 Objectives

CWMD will continue the initiatives begun in FY93.

6.4.2.5 List of FY93 Scheduled Milestones

None.

6.4.2.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
8204	\$477

6.4.3 Land Disposal Restrictions Federal Facility Compliance Agreement Treatment Development and Implementation (FY94 ADS: OR-8205) (FY93 ADS: OR-421)

6.4.3.1 Description

Certain wastes generated on the ORR are banned from disposal in landfills by the Land Disposal Restrictions (LDR) language of RCRA. In many cases, treatment options for these wastes do not exist, particularly for those LDR wastes that are also mixed wastes (i.e., contain radioactive constituents). In June 1992, EPA and DOE entered into an LDR FFCA that sets the schedule that will bring DOE into compliance with LDR requirements. This ADS provides funding to implement the Federal Facility Compliance Agreement (FFCA).

Several objectives will be addressed in this work:

- Survey industry to determine if treatment exists in the private sector for LDR waste streams;
- Develop plans for treatability studies for LDR streams identified in the agreement; and
- Perform treatability studies and technology demonstrations for LDR wastes.

6.4.3.2 Status of FY92 SSP Objectives

Activities under this ADS were not identified in the FY92 SSP. Accomplishments in FY92 for this recently defined work include definition of Access Protocols for EPA oversight and submittal of a Waste Minimization Plan for LDR wastes.

6.4.3.3 FY93 Objectives

Three major deliverables will be completed in FY93: the LDR Waste Storage Plan, the Treatment Strategy Plan, and the Treatment Plan for Identified LDR Wastes. Other work activities will include a survey of DOE facilities and private sector vendor for availability

of technology for the treatment of LDR wastes, identification and characterization of other LDR wastes, and initiation of treatability studies for high priority wastes.

6.4.3.4 FY94-98 Objectives

Treatability studies begun in FY93 will continue and new treatability studies for lower priority wastes will be initiated. Technology demonstrations will be conducted for high priority wastes, potentially including TSCA residue solidification, wastewater treatment sludge solidification, and solvent decontamination.

By March 1995, an Implementation Plan will be prepared to document the results of treatability studies, identify proposed treatment facilities, establish implementation schedules, and identify further development needs.

6.4.3.5 List of FY93 Scheduled Milestones

- | | |
|----------------------------|-------|
| • LDR Waste Storage Plan | 12/92 |
| • LDR Waste Treatment Plan | 12/92 |
| • Treatment Strategy Plan | 03/93 |

6.4.3.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
8205	\$5,000

6.4.4 New Facility Planning (FY94 ADS: 9202) (FY93 ADS: 424)

6.4.4.1 Description

Facilities for disposal of solid low-level Class L-I radioactive waste generated by the Department of Energy (DOE) activities on the Oak Ridge Reservation (ORR) are nearing capacity. While serious efforts are underway to recycle and otherwise minimize the amount of low-level waste (LLW) produced through DOE activities on the ORR, some quantity of LLW will continue to be generated. Existing LLW disposal facilities are predicted to be filled during the 1990s and cannot be expanded. Additional storage capacity is planned but storage is expensive and is not a permanent solution. If new disposal and/or storage capability is not in place when the current facilities are filled, operations at the production and research facilities may be seriously impacted or curtailed. An understanding between

the Tennessee Department of Environment and Conservation (TDEC) and the Environmental Protection Agency (EPA) is in place to develop new LLW disposal technologies and facilities by the mid-1990s and to utilize interim storage and enhanced disposal techniques in existing areas until these new LLW disposal facilities are operational. These new disposal facilities are required in order to provide DOE defense production, research facilities, and environmental restoration with an uninterrupted, environmentally acceptable disposal capability for Class L-I and Class L-II wastes.

Class L-I: Facilities to be designed by this line item include a site for below-grade disposal, two disposal units, support utilities, and support facilities, including effluent treatment, monitoring, waste verification, maintenance, and health physics control. The disposal units will be designed to meet performance criteria of doses to an intruder not to exceed 10 millirems per year.

Class L-II: Facilities to be designed and constructed by this line item include a site for above-grade disposal, two disposal units, support utilities, and support facilities, including effluent collection, monitoring, waste verification and stabilization, maintenance, and health physics control. The disposal units will be designed to meet performance criteria of doses to an intruder not to exceed 10 millirems per year.

6.4.4.2 Status of FY92 Objectives

Using operating funds from ADS 8203 (Section 6.4.1), a CDR for the project will be revised and issued for approval, and various support documentation including readiness reviews, Quality Assurance (QA) Planning documentation, and project plans, will be prepared.

6.4.4.3 FY93 Objectives

Using operating funds from ADS 8203 (Section 6.4.1), project Design Criteria will be revised and issued. Support activities, including safety documentation, readiness review, and quality assurance implementation, will be completed.

6.4.4.4 FY94-98 Objectives

In FY94, Title I design will be initiated for the project, and support activities will continue, including readiness review, safety documentation, and others.

FY95-98 tasks will include continuation and completion of the Title I & II designs. Construction will be deferred.

6.4.4.5 List of FY93 Scheduled Milestones

- Issue Design Criteria. . 07/93
- Complete Design Criteria Readiness Review. 09/93

6.4.4.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
9202	\$ 0

6.4.5 Oak Ridge Storage Facilities (FY94 ADS: 9203) (FY93 ADS: 486)

6.4.5.1 Description

Facilities for disposal of solid low-level radioactive waste generated by the Department of Energy (DOE) activities on the Oak Ridge Reservation (ORR) are nearing capacity. While serious efforts are under way to recycle and otherwise minimize the amount of low-level waste (LLW) produced through DOE activities on the ORR, some quantity of LLW will continue to be generated. The elimination of previous disposal facilities coupled with a moratorium on off-site shipment of many wastes has resulted in a requirement for environmentally acceptable storage for many waste types until on-site or off-site treatment or disposal is available.

The Oak Ridge Reservation Storage Facilities (ORRSF) project will provide storage for LLW, hazardous wastes, Toxic Substances Control Act wastes, and mixed wastes. The storage facilities will be pre-engineered metal buildings with appropriate utilities and safety features. The first phase of this project will include approximately 470,000 square feet of storage area. Additional facilities may be required by FY99, but are not included in the \$49M TEC described in this ADS. These additional facilities will be included in the ADS at a later date.

6.4.5.2 Status of FY92 SSP Objectives

Using operating funds from ADS 8203 (Section 6.4.1), a Design Criteria for the project will be issued for approval, and support documentation will be prepared, including an Environmental Assessment and Safety Assessment. The Site Plan and Cost Estimate will be revised to reflect the new site.

6.4.5.3 FY93 Objectives

Title I design will be completed and Title II design will be initiated; and the preparation of support documentation, including a RCRA permit, safety documentation, and readiness review, will continue.

6.4.5.4 FY94-98 Objectives

Title II design will be completed and construction activities will commence. Title III services will proceed along with the construction activities, as will the preparation of permits and support documentation. The first storage unit is expected to be operational during FY95. All units associated with this line item project are expected to be complete during FY98.

6.4.5.5 List of FY93 Scheduled Milestones

- Complete Title Design.

09/93

6.4.5.6 FY93 Funding

<u>ADS No.</u>	<u>\$ x 1000</u>
9203	\$4,000

7.0 TECHNOLOGY DEVELOPMENT AND TRANSPORTATION MANAGEMENT

7.1 TECHNOLOGY DEVELOPMENT AND TRANSPORTATION MANAGEMENT

Technology Development/Transportation Management (TD/TM) is the applied research, development, demonstration, testing, and evaluation arm of Environmental Restoration and Waste Management (EM). As such, TD/TM is responsive to the needs of EM and works closely with each at both the U.S. Department of Energy (DOE) Headquarters and Martin Marietta Energy Systems (Energy Systems) levels.

To better respond to EM needs, TD/TM periodically solicits from EM a list of high priority problems for which no good solution currently exists. Following identification of these needs, a prioritized list of possible approaches to solve the problems is developed, and proposals to the Office of Technology Development (EM-50) are solicited based on the results of this list. Energy Systems is not unique in its problems. Many of the problems at Energy Systems also occur throughout the DOE complex; solutions will be applicable to both.

Typically, a project begins with an applied research and development (R&D) or bench scale phase. Once the technology has reached the point at which a field trial is necessary, it then enters the demonstration, testing, and evaluation phase. A field test is set up, results analyzed, and successful candidates are then turned over to EM for routine administration.

EM-50 has set up an Integrated Demonstration (ID) program to evaluate and compare the risks and benefits of various technologies. A single DOE site with a complex-wide problem is chosen as the testbed. Various technologies to solve the problem at this site are then demonstrated using a cradle-to-grave approach, followed by evaluation. This approach includes characterization, remediation, and disposal technologies. Based on the results of this one demonstration, various DOE sites with similar problems then take the applicable technologies and use them to remediate their problems. In this manner, the entire DOE complex benefits from the collective DOE experience.

The R&D precursor to the ID is the Integrated Program. Integrated Programs address one or more sets of environmental restoration/waste management needs by identifying promising new technologies, evaluating their suitability for various IDs, and advancing development rapidly to the demonstration, testing, and evaluation phase. Integrated Programs (IPs) are coordinated among DOE locations and other participants to ensure that the broadest range of applications possible is pursued and that unnecessary repetition of effort does not occur.

A number of IDs have already been initiated, and Energy Systems staff are participating both in an advisory capacity, as committee members of Technical Support Groups, and also in the actual demonstration of appropriate technologies. An ID dealing with volatile organic

chemicals in saturated soils is located at the Savannah River Site in Aiken, South Carolina. Two of the technologies currently being demonstrated by Energy Systems staff for solvent identification at this ID include the Direct Sampling Ion Trap Mass Spectrometer and a multisorbent/multitrap arrayed sampler. Once developed, these technologies will be directly applicable to similar problems at Oak Ridge and other sites.

Significant contributions have also been made to the uranium-contaminated soil demonstration at Fernald, Ohio. Remote surface-mapping techniques developed at Energy Systems were used to ensure that capping materials being placed over waste storage silos met a minimum thickness requirement.

At present, Energy Systems is actively participating in the technology areas listed in each of the IDs and IPs listed below.

ID/IP	TECHNOLOGY AREA
VOC in Non-Acid Soils (Savannah River)	Characterization, Bioremediation
Uranium in Soils (Fernald)	Treatability, Program Support
Mixed Waste Landfill	Treatability
Buried Waste (Idaho)	Characterization, Treatability
Underground Storage Tanks	Treatability
Newly Generated Mixed Waste	Treatability
D&D of Concrete and Metal	Decontamination and Decommissioning
Depleted U Waste Minimization	Waste Minimization
Dynamic Stripping	Characterization
International Programs	Bioremediation, Treatability
Mixed and Hazardous Waste Processing	Bioremediation, Program Support
In Situ Vitrification (Richland)	Treatability
Analytical Laboratory	Program Support, Characterization
Decision Support	Program Support
Robotics	Robotics
Program Support	Program Support
Technology Integration	Technology Transfer

An IP Coordinator has been selected from Oak Ridge to manage the Mixed Waste IP. This IP has been initiated to address the mixed-waste treatment needs of the entire DOE complex. Proposals are being reviewed for funding in FY93. In addition, Energy Systems will also manage the Decontamination and Decommissioning (D&D) ID to be located at the K-25, Site with implementation planned for Fernald.

The Energy Systems Technical Program Manager for EM-50 has been assigned to the Strategic Task Force on National Laboratories. The Task Force has been formed to devise a plan for maximizing the benefits to the U.S. economy, human health and safety, and the environment from DOE's investment in EM.

Increasing efforts are being focused on technology transfer activities. The emphasis areas include transferring technologies:

- into DOE from commercial vendors,
- among DOE sites, and
- out to the private sector.

The Technology Transfer Act led to the development of Cooperative Research and Development Agreements (CRADAs) as one method to leverage DOE funds. Memoranda of Understanding are also being signed between DOE and other federal agencies to provide joint funding for projects benefitting several agencies.

To support DOE's shipping activities, TM:

- develops policies that direct and facilitate nationwide shipping of DOE materials;
- trains employees to ensure that transport procedures comply with applicable federal, tribal, state, and local regulations;
- develops computerized systems to make operations more efficient and to document activities;
- develops and tests new materials and equipment, including the packages in which radioactive materials are transported; and
- conducts programs to foster the productive exchange of information with the public.

The level of effort for TM has also increased over the past few years. Some areas being addressed include:

- automation,
- regulatory compliance,
- transportation logistics,
- packaging engineering and analysis,
- training,

- risk analysis, and
- regulatory development.

The challenge facing TM is to modify and expand the program to meet shipping requirements of the future. This program will continue to ensure appropriate transportation support to meet future shipping requirements of the comprehensive EM Program.

7.2 Y-12 PLANT

Technology Development (TD) activities at the Y-12 Plant (Y-12) have focused on pollution prevention, treatability, and low-level radioactive waste management. Waste minimization efforts emphasize reduction of material and low-level contaminated waste disposal volumes. These efforts were being coordinated and disseminated throughout the Weapons Complex. Recent changes in defense production activities have reduced the emphasis on the Depleted Uranium Waste Minimization Program at Y-12. Thus, funding in this area has been significantly reduced. Y-12 will be utilized to evaluate recycling potential of various alloys within the DOE system.

7.2.1 Description

Waste minimization efforts have included the successful use of low-level waste monitors in radiation areas to segregate contaminated waste from non-contaminated waste. Solvent substitution work within the plant has continued. Replacement of various toxic solvents has reduced or eliminated different waste streams and employee exposure without affecting quality. Ultrasonic cleaning was shown to be an acceptable alternative to nitric acid cleaning for certain parts at Y-12. The use of this process results in cost savings by decreasing the amount of waste generated by the plant and by reducing the movement of parts throughout the plant. The work that resulted in successful replacement of some chlorinated solvents with non-toxic alternatives in parts of Y-12 is being shared with interested parties. Two treatability studies have been conducted on removing beryllium and uranium from organic liquid waste. The end goal is to meet acceptance criteria for either the K-25 Site Toxic Substance Control Act (TSCA) Incinerator or commercial hazardous waste incinerators. U-2Nb was successfully cast in a non-carbon furnace, which allows the resulting scrap to be recycled.

7.2.2 Resources

Resource requirements for each subtask are described in the following sections of this document.

7.2.3 Schedule and Milestones

Because of funding uncertainties, no major milestones for TD at Y-12 have been determined at this time.

7.2.4 FY93 Funding

<u>Area</u>	<u>\$</u> <u>x 1000</u>
Waste Minimization/Recycle	\$ 0

7.2.5 Accomplishments

Demonstration of three low-level waste monitors at Y-12 was completed. The monitors are used in radiation areas to separate contaminated waste from non-contaminated waste, which reduces the volume of hazardous waste to be disposed. Previously, all waste contained in these areas was classified as hazardous waste requiring disposal.

The Y-12 ultrasonic cleaner demonstration unit was installed. Ultrasonic cleaning of carbon from pump assemblies took 20 minutes, whereas previous methods required soaking the parts overnight in solvents.

Summary reports for Mixed Waste Organic Liquid Treatability studies at Y-12 were completed. The studies evaluated methods for removing beryllium and uranium from organic liquid waste to meet acceptance criteria at either the K-25 Site Toxic Substances Control Act (TSCA) Incinerator or commercial hazardous waste incinerators.

7.3 OAK RIDGE NATIONAL LABORATORY

The multiprogram nature of Oak Ridge National Laboratory (ORNL) means that current Environmental Restoration and Waste Management Program/Organization (EM) needs are diverse; Technology Development/Transportation Management (TD/TM) efforts parallel the EM needs and efforts at ORNL that support TM needs at Y-12, K-25 and all other DOE facilities. Work includes biotechnology, characterization, in situ remediation, robotics, waste management (WM), decontamination and decommissioning (D&D), transportation, and technology integration. Many programs involve staff of other Martin Marietta Energy Systems (Energy Systems) sites.

7.3.1 Description

While EM needs at ORNL are diverse, the site's multiprogram nature also provides the TD capabilities and staff necessary to address many of these needs.

For instance, one area in which ORNL plays a major role is site characterization. Site characterization is a time-consuming and expensive process. Inexpensive, real-time characterization data are required, and current efforts in those areas involve developing enhanced methods to identify solvents in soils and groundwater. A number of methods are being developed which will even allow "on-the-spot" testing at field sites. Joint funding with the Department of Defense currently is being received for some characterization work. Department of Defense funding also is being provided for developing an environmental quality information analysis center capable of providing information about technology-based environmental responses to issues such as site restoration, pollution prevention, environmental compliance, and environmental hazard assessment.

Biotechnology projects are focusing on in situ remediation of soils and groundwaters contaminated with chlorinated solvents and polychlorinated biphenyls (PCBs) that were formerly used by industry and DOE facilities as degreasers and cleaning agents. Following successful completion of the research and development phases, some technologies will be demonstrated at the VOCs in Non-Arid Soils Integrated Demonstration (ID). Other in situ remediation projects involve "fixing" or melting contaminants in place using in situ vitrification and providing technical support to the In Situ Remediation Integrated Program (IP).

ORNL and K-25 Site (K-25) staff are working together to improve D&D methods by developing and demonstrating techniques to decontaminate concrete surfaces using microwave technology, and to remotely decontaminate facilities using robotics. Cooperative efforts between the two sites are also focused on assessing available analytical techniques and, where necessary, developing new regulatory-agency-approved methods for the safe characterization of mixed wastes and radioactive environmental samples. Both ORNL and the Y-12 Plant (Y-12) staff are involved in developing of robotics and manufacturing alternatives to minimize waste.

The goal of all these TD activities at ORNL is to develop technologies that are better, cheaper, safer, and faster than those currently available to the Environmental Restoration and Waste Management Program.

ORNL supports TM needs at all DOE facilities. Currently, ORNL's transportation activities include logistics/operations, training, packaging engineering and analysis, automation, and regulatory compliance.

Interfacing existing/planned material tracking systems with TM shipment tracking is one of ORNL's logistics/operations activities. This activity will assist in providing "cradle-to-grave," accountability to facilitate both on- and off-site shipping for processing, storage, and/ or disposal. Another activity is developing on-site transportation analysis tools which will provide DOE facilities with improved, easy-to-use, accepted methodologies and additional tools for determining and ensuring equivalent safety. Also, knowledge of the on-site transportation infrastructure capabilities and limitations on DOE sites throughout the U.S. should provide DOE with pertinent information applicable to transporting hazardous materials safely. ORNL is also identifying and evaluating transportation logistics functions and packaging management functions that may benefit from centralization/integration and integrating the transportation and packaging functions into DOE-wide programs and management systems. To ensure efficient DOE transportation operations, operations documentation is being developed to provide advisory information on how to comply with transportation regulations and policies. In addition, ORNL is assisting DOE in reviewing and revising DOE transportation orders, policies, and correspondence to ensure consistency in the promulgation of requirements.

Through ORNL, TMD will provide training courses in regulatory requirements applicable to safe packaging and transportation of hazardous materials. Courses offered reinforce safe operations and regulatory compliance in all modes of transport and compliance (where applicable to transportation) with: 1) Department of Transportation (DOT) regulations; 2) DOE Orders; 3) Occupational Safety and Health Administration (OSHA) standards; 4) Environmental Protection Agency (EPA) hazardous waste regulations; 5) Docket HM-181; and 6) Docket HM-126F. In addition, innovative approaches to providing training will be identified, as will new avenues for interfacing transportation training with other site-specific training. The result will be recommendations on how to effectively ensure that the personnel performing transportation functions acquire the necessary knowledge to perform those functions.

Recent incidents illustrate that better, standardized packaging is needed for small quantities of radioactive materials. As a result, ORNL will be developing a multi-use, Type A package design that will be available to all DOE contractors and which will meet the regulations for both domestic and international transport of all modes, including air.

The Automation Transportation Management System (ATMS) is a primary tool being developed for use at sites across the DOE complex. The ATMS program will continue to support technology transfer between contractors and field offices. The Expert Motor Carrier Selection System (EMCASS), a potential module of ATMS, is a computer system that accepts a shipment location's zip code and a shipment's weight, then provides the lowest cost, highest-quality motor carrier for that shipment. The development and implementation of EMCASS will be closely coordinated with ATMS activities at DOE-Richland, with an ultimate goal of full integration into ATMS. The Shipment Mobility/Accountability

Collection (SMAC) is a transportation management information system for commercial freight shipments made by DOE and its contractors. Participation in the ATMS Task Force will continue to ensure that ATMS implementation is coordinated effectively with the SMAC system. The Transportation Tracking and Communications System (TRANSCOM) is an around-the-clock, near real-time tracking and two-way communications system designed to monitor the movement of spent fuel, high-level waste, and other high-visibility shipping campaigns, as selected by TMD. In addition, ORNL is developing an expert computerized system to ensure consistent and error-free application of the hazardous materials regulations. Linking the expert system with the ATMS will also be investigated.

Regulatory compliance is critical to the continued success of TM. ORNL is developing Regulatory Facility Guides to support Transportation Operations Managers (TOM) and their staff, appraisers, auditors, and other managers at major DOE facilities. These detailed site-specific compilations of Federal, State, and local transportation regulations should lead to better compliance, fewer errors, and less confusion. Topical Regulatory Compliance Guides are also being developed to encourage and obtain uniform implementation of regulatory requirements. To ensure TMD's compliance with new and revised regulations, ORNL is reviewing and identifying for DOE and its contractors important items in the *Federal Register* that pertain to TM activities.

ORNL will continue to provide appropriate transportation support to meet future transportation requirements of DOE's Environmental Restoration and Waste Management Program.

The strong technology transfer organization at Energy Systems is able to provide assistance to the Office of Technology Development (EM-50) in its mission to create a rapid exchange of technology to appropriate parties.

7.3.2 Resources

Resource requirements for each subtask are described in the following sections of this document.

7.3.3 Schedule and Milestones

Major milestones for TD at ORNL are listed below.

- Complete benchtop reactor tests for denitrification of aqueous sodium nitrate using continuous mode and issue letter report and results. 01/93
- Complete system requirements for developing a modular and reconfigurable platform for D&D. 01/93

- Issue letter report on determining the technical, operational, and manufacturing feasibility of producing a cleanable high efficiency particulate air (HEPA) filter.

03/93

7.3.4 FY93 Funding

<u>Area</u>	<u>\$ x 1000</u>
Bioremediation	3,000
Characterization	2,100
D&D	700
Program Support	2,300
Robotics	6,900
Technology Transfer	4,100
Treatability	3,700
Transportation	<u>7,500</u>
Total	\$30,300

7.3.5 Accomplishments

In situ vitrification of a simulated radioactive trench was successfully demonstrated. The demonstration proved that radioactive materials in trenches can be "fixed" in place.

Among the robotics developments in FY92 was the computer-based laser imaging technique successfully applied to mapping the surface of radon-emitting uranium ore residue stored in silos at the Fernald Environmental Management Project. The accuracy of the surface maps has enabled workers to precisely apply a one-foot-thick contamination barrier over the waste to reduce radon emissions and has resulted in an estimated savings of approximately \$20 million in remedial action costs.

A field transportable Direct Sampling Ion Trap Mass Spectrometer has been successfully demonstrated to detect the presence of volatile organics in air and water samples. The on-the-scene quick response of the instrument will allow corrective actions to be undertaken rapidly.

Various frequencies of microwave energy were evaluated for effectiveness in decontaminating concrete. The results showed that a microwave unit operated at 18 GHz will produce a higher concrete removal rate per unit power and will remove a thinner layer of concrete than when operated at lower frequencies. Microwave scabbling produces less dust than conventional methods, does not drive the soluble contaminants further into the

concrete, and is less hazardous to the operator. By removing the top layer, which is contaminated, the remaining concrete can be disposed as sanitary, rather than radioactive, waste that will reduce disposal costs.

A Cooperative Research and Development Agreement (CRADA) with General Electric (GE) in bioremediation of PCBs is in place. GE is a leader in the field of PCB research, and this task will cover research into both aerobic and anaerobic destruction of PCBs.

A methanotroph-based bioreactor was installed at a trichloroethylene (TCE) -contaminated seep on the K-25 Site. This is projected to be a more effective method of TCE removal that uses naturally occurring bacteria and is applicable for demonstrations at both arid and non-arid sites.

An evaluation report of currently available methodologies for assessing the safety of onsite shipments of hazardous materials was completed. The report evaluated different hazard evaluation techniques, different approaches to risk assessment, and safety acceptance criteria.

The scheduled logic diagram for transporting radioactive materials has been completed. Implementing portions of the logic diagram in prototypes of the expert system using Prolog and Guide (computer programming languages) has also been completed. This combination of computer programs allows access to logic reasoning as well as to hypermedia features, producing an overall powerful package. One of the final features to be included in the expert system prototype is the implementation of video images. The video hardware system has been implemented and tested with software developed by ORNL.

The draft 1540-series of DOE Orders have been reviewed and revised. Numerous comments have been received from approximately 30 reviewers and the comments range from editorial to policy issues. Comments also continue to be received past the announced deadline and will be considered as much as possible.

Draft final sections on regulatory impacts and transportation logistics management were prepared for incorporation into the draft final "Transportation Assessment and Integration" (TRAIN) report. The TRAIN report is the key basis for expanding the scope of transportation activities at ORNL.

7.4 K-25 SITE

Technology Development (TD) activities at the K-25 Site (K-25) heavily focus on decontamination and decommissioning (D&D) buildings and equipment.

7.4.1 Description

The currently funded projects are in the research and development (R&D) phase and include developing a technology logic diagram for K-25 and planning a D&D Integrated Demonstration (ID). FY93 plans include supporting private-sector demonstration of groundwater and soil remediation technologies.

7.4.2 Resources

Resource requirements for each subtask are described in the following sections of this document.

7.4.3 Schedule and Milestones

Major milestones for TD at K-25:

- Complete R&D technical report draft for test loop and long-term low-temperature lab testing of the Advanced Gas Phase Decontamination Technology Project.

03/93

7.4.4 FY93 Funding

<u>Area</u>	<u>\$ x 1000</u>
D&D	\$3,300
Treatability	300
Program Support	<u>200</u>
Total	\$3,800

7.4.5 Accomplishments

Conceptualization of a preliminary thermodynamic model for the behavior of metals in an incinerator was completed. This is the first step in understanding the behavior of metals during incineration.

A D&D workshop was held in August 1991. This workshop was held to determine the most pressing D&D needs of the entire Department of Energy (DOE) complex. A draft strategy and needs document was developed as a result of this workshop and is being prepared for distribution.

Developing a draft Quality Assurance requirements document for analytical laboratory management was completed. This document details the necessary steps and procedures for a laboratory or sampling firm to become approved to perform work for the DOE Environmental Restoration Waste Management.

8.0 COMPLIANCE WITH THE NATIONAL ENVIRONMENTAL POLICY ACT

National Environmental Policy Act (NEPA) review process is implemented for the Department of Energy (DOE) actions with the potential to have an effect on the environment. The NEPA review process results in one of three types of documentation:

- a categorical exclusion,
- the preparation of an environment assessment, or
- the preparation of an environmental impact statement.

Only designated personnel at DOE can determine the appropriate level of NEPA documentation and authorize proceeding. Energy Systems personnel must review all proposed actions and provide the necessary technical information (and recommendations for the level of NEPA documentation, if appropriate) to DOE for review and determination.

As new actions are identified, it is important to review the actions and prepare a project notification form, which advises DOE of the project and requests preliminary guidance on the correct level of NEPA documentation. Once a DOE tracking number is assigned, NEPA documents should be prepared for submittal. Once finalized and approved, it is important to implement and track every commitment made in the documents.

Although many of the other environmental statutes (such as the Resource Conservation and Recovery Act and Comprehensive Environmental Response, Compensation and Liability Act) have unique documentation requirements, integrating planning, document preparation, investigation, and review with NEPA from the start is crucial to ensuring projects are started on time. Further, the DOE NEPA Implementing Procedures require that NEPA documentation must be considered for the project in its entirety. Proceeding in this manner will avoid delays and redundant documentation that can be caused by proceeding separately under each statute.

Before reaching the demonstration phase, all technology development activities are reviewed by the appropriate site NEPA staff. Alternatives analysis is performed, the best alternative is selected, and documentation is then prepared by the site NEPA staff, with input from the technical staff according the level of documentation appropriate to the action. Final determination of the appropriate level of NEPA documentation is decided by DOE. (See Figure 8.1 for a flow chart of the basic steps of the DOE NEPA review process.)

NEPA REVIEW PROCESS

1. All projects, activities, or facility modifications must be reviewed and project notification forms prepared.
2. If the review (from #1) indicates that action is appropriate for categorical exclusion (as described in Subpart D of the DOE NEPA Implementing Procedures or the DOE approved categorical exclusion list of plant activities defined as maintenance) then one is prepared (see #3). If not categorically excluded, then an EA or an EIS must be prepared.
3. A CX recommendation is prepared for approval by DOE.
4. The determination of EA or EIS is based on one of two things:
 - (1) on the EA or EIS classes of action in Subpart D of the DOE NEPA Implementing Procedures, or
 - (2) if the proposed action is not listed in Subpart D of the DOE NEPA Implementing Procedures, on an ADM that is submitted to DOE Environmental Restoration.
5. If an EA is required, DOE will review the EA, and either issue a Finding of No Significant Impact (FONSI) (see #6) or request an EIS (see #7).
6. DOE issues a FONSI
7. If an EIS is required, the NEPA process is completed by DOE issuing a Record of Decision (ROD).

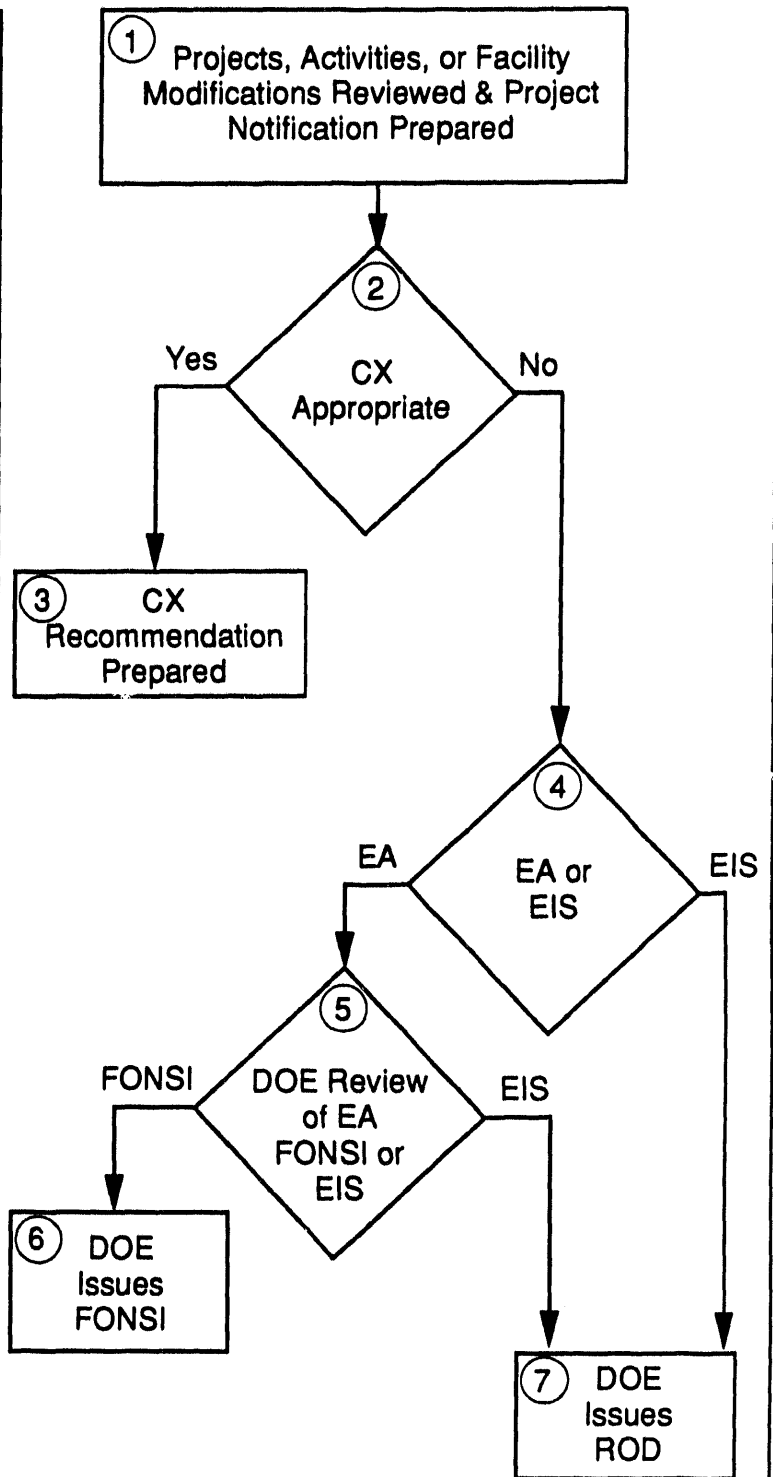


Figure 8.1

8.1 ACTIONS RELATIVE TO NEPA

In addition to the existing NEPA documentation for activities involving CERCLA, RCRA, DOE Orders and other ongoing actions, additional NEPA documentation to support future activities is scheduled for submission during FY93.

**Table 8.1 NEPA Documents in Preparation or Planned
Fiscal Year 1993**

Level of document*	Project name/description	Scheduled Submission
Y-12 Plant		
CX, B6.1	Remediation of Soil, RUST Fuel Facility UST	October 15, 1992
EAD/EA	Kerr Hollow Quarry Closure Debris Storage Facility	December 15, 1992
CX, B6.1	Lower East Fork Poplar Creek Culvert Clean-out	October 1, 1992
EAD/EA	S-3 Ponds CAPCA Phase II/FS	September 30, 1992
EAD/EA	Oil Landfarm CAPCA Phase II/FS	September 30, 1992
EAD/EA	Bear Creek Burial Ground CAPCA Phase II/FS	September 30, 1992
EAD/EA	Chestnut Ridge Security Pits	September 30, 1992
CX, B6.1	Disposal Area Remedial Action (DARA) Solid Waste Storage Facility (SSF)	October 31, 1992
CX, B6.3	Upgrade of Mercury Monitoring Equipment	June 30, 1993
CX, B1.22	Bldg. 9204-1 (Alpha 4) Utilities Design/Relocation	June 30, 1993

Level of document *	Project name/description	Scheduled Submission
Oak Ridge National Laboratory		
CX, B6.2	ORNL WAG 7 Seepage Pit #1 In Situ Vitrification Technology Demonstration	October 15, 1992
EAD/EA	ORNL Fission Product Pilot Plant D&D	February 28, 1993
EAD/EA	ORNL Waste Evaporator Facility D&D	February 28, 1993
EAD/EA	ORNL Metal Recovery Facility D&D	February 28, 1993
EAD/EA	ORNL Old Hydrofracture Facility D&D Plan	February 28, 1993
CX	Molten Salt Reactor Experiment Upgrades	September 30, 1992
K-25 Site		
CX, B6.2	K-25 Analytical Upgrades	March 1, 1993
ERWM Program Technical Integration		
CX, B5.1	Analytical Equipment Upgrades	September 30, 1992
ERWM Program Central Waste Management		
CX, B6.1	Central ORR Offsite Waste Disposal	March 30, 1993
CX, B6.1	PORTS TCE/Mixed Soils Treatment	June 30, 1993
EAD/EA	ORR Central Waste Storage Facility	June 30, 1993
CX, B6.1	Paducah Mixed PCB Soil Treatment	September 30, 1993

NEPA Documents in Preparation or Planned (continued)

Level of document*	Project name/description	Scheduled Submission
Oak Ridge Reservation and Off Site		
EIS	EIS for East Fork Poplar Creek	April 15, 1993
CX, B6.1	Atomic City Auto Parts	October 15, 1992
CX, B6.1	CSX Remediation	April 1, 1993
CX, B6.1	Girl's Club Property Assessment and Remediation	October 31, 1992
Programmatic CXs		
None Currently		

***Legend**

CX Categorical Exclusion
EA Environmental Assessment
EAD Environmental Assessment Determination
EIS Environmental Impact Statement

9.0 REPORTING AND DATA MANAGEMENT

9.1 REQUIRED REPORTS

The listing of environmental and waste management reports routinely submitted by Martin Marietta Energy Systems, Inc. to the Department of Energy/Oak Ridge Field Office (DOE/OR) and Federal and State regulatory agencies is below.

9.1.1 Clean Air Act - General Reports

9.1.1.1 Oak Ridge Reservation (ORR)

Annual National Emission Standards for Hazardous Air Pollutants (NESHAPs) Report for ORR.

9.1.1.2 Y-12 Plant

- Quarterly excess opacity reports for four boilers, submitted within 30 days of the last day of the quarter to Tennessee Department of Environment and Conservation (TDEC).
- Monthly ambient SO₂ reports for two ambient SO₂ monitors to TDEC by the 30th of the following month.
- Radionuclide emissions annual report to the Environmental Protection Agency (EPA), due June 1.
- Quarterly report to TDEC of the amount of sodium-potassium alloy that is openly burned, due 45 days after the end of the quarter.

9.1.1.3 Oak Ridge National Laboratory

Radionuclide emissions annual report to EPA, due June 1.

9.1.1.4 K-25 Site

Radionuclide emissions annual report to EPA, due June 1.

9.1.2 Clean Air Act - Asbestos-Related Reports

- Monthly asbestos removal reports describe the asbestos removed during that month and the removals to occur during the next month, due 15 days after the end of the month to TDEC.
- Annual asbestos yearly estimates of material to be removed, due in December to TDEC.

9.1.3 Clean Water Act - Effluent Data Reports

- Quarterly discharge monitoring reports (DMR) must be submitted within 28 days following the three-month period being reported.

9.1.4 Clean Water Act - National Pollutant Discharge Elimination System Permits Monitoring Programs

- Quarterly toxicity monitoring reports submitted to the TDEC and EPA as required by National Pollutant Discharge Elimination System Permits Monitoring Programs (NPDES) permit.
- Polychlorinated biphenyl (PCB) monitoring reports submitted quarterly by Oak Ridge National Laboratory (ORNL) to TDEC and EPA, submitted for Y-12 with the monthly DMR data.

9.1.5 Resource Conservation and Recovery Act and Toxic Substances Control Act

- Resource Conservation and Recovery Act (RCRA) annual hazardous waste report/RCRA annual groundwater monitoring report, K-25, ORNL, and Y-12 submit to EPA Region IV and TDEC, due March 1 of each year for previous year.
- Annual report of PCB activities, K-25, ORNL, and Y-12 prepared by July 1 for previous year; not required to be submitted to EPA, but must be available on-site during an inspection.
- Annual report on Solid Waste Management Units (SWMU), K-25, ORNL, and Y-12 submit a complete listing of all SWMUs at the facilities to EPA Region VI and TDEC, due January 30 of each year.
- The Superfund Amendments and Reauthorization Act Title III reports are submitted annually to EPA on approved forms.

1. Section 311, Material Safety Data Sheets--lists of chemicals are submitted annually to the local emergency planning committee, the State emergency response commission, and the local fire department.
2. Section 312, Emergency and Hazardous Chemical Inventory Form--submitted annually by March 1 to the local emergency planning committee, the State emergency response commission, and the local fire department.
3. Section 313, Release Reports--provides information on the categories of chemicals used at the facility, waste treatment and disposal methodologies, and quantities of toxic chemicals released to each environment medium; issued annually to EPA and to State and local emergency management agencies.

9.1.6 Specialized Reports - DOE Orders/Compliance Orders, Spills/Unusual Event

- Annual environmental monitoring reports, K-25, ORNL, Y-12, issued June 1.
- Federal Facility Compliance progress reports, ORNL Nonradiological Wastewater Treatment Plant, issued quarterly to TDEC and EPA, 24 days after end of quarter.
- Spills/unusual events that exceed reportable quantity amounts are verbally reported as soon as possible (but no later than 24 hours after occurrence) through the DOE/OR Operations Center to the National Response Center. Written notification and followup reports are submitted to Federal and State agencies through DOE/OR as required by applicable regulatory requirements.
- Office of Management and Budget A-106 report issued semi-annually to DOE/headquarters, DOE/OR, and is reviewed by EPA.
- Annual Waste Reduction Activities Report, issued March 15 each year to DOE/OR.
- Quarterly SEN-7A Report for OR Environmental Restoration Program.
- Non-compliance monthly status reports for OR Environmental Restoration Program.
- Annual CERCLA Facility Report, October 1.
- Annual Notice of Deficiency and Notice of Violation Status Report, October 1.
- Annual update on permits per DOE Order 5900-2A.

9.1.7 Technology Development Reports

The Project Tracking System has been implemented as the Technology Development monthly reporting system. Monthly progress reports are prepared by principal investigators for each project funded by the Office of Technology Development (EM-50). Reports are transmitted electronically to the Energy Systems' Waste Research and Development Program (WRDP) by the tenth working day of the month for compilation by Program Office staff. WRDP staff reviews the material and transmits to DOE/OR in a timely fashion for incorporation into a Field Office Monthly Report, which is then transmitted to EM-50 by the first working day of the following month.

A Research and Development (R&D) Technology Status Report is prepared at the completion of the R&D phase of the project and is the basis for determining if a technology should move into the demonstration, testing, and evaluation (DT&E) phase. The principal investigator writes the report in cooperation with a demonstration customer. The objective of the report is to show the technical and economic reasons for justifying a demonstration project.

Following acceptance of the Technology Status Report by EM-50, a DT&E Project/Test Plan is prepared; this is the initial step of the DT&E phase of the project. Test plans, data collection methods, data analysis, cost, and schedule are described. The objectives are also identified clearly. It must be approved by EM-50 before initiating the project demonstration.

At the conclusion of the demonstration phase, a DT&E Evaluation Report is prepared. The purpose of this document is to validate the technical, economic, and legal aspects of the project before transferring the technology to environmental restoration/waste management for full-scale development and implementation. Final approval of the document is obtained from EM-50.

Other documents may be prepared, but these are determined on a project-by-project basis.

9.2 MAINTENANCE OF RECORDS

Each site shall conduct a records management program in accordance with DOE Order 1324.5, "Records Management Program."¹ The organizational responsibilities for records life cycle management (creation, distribution, maintenance, storage, retention, and disposition), as well as records management programmatic areas (forms management,

¹"Records Management Program," DOE Order 1324.5, U.S. Department of Energy, Washington, DC, January 6, 1987.

reports management, correspondence management, reprographics, vital records, disaster planning, etc.), shall be specified by implementing procedures and shall be controlled at each site. Retaining and disposing of records shall be conducted in accordance with DOE Order 1324.2A, "Records Disposition,"² and National Archives and Records Administration General Records Schedule.

Development, issue, and change control of documents that specify quality objectives or describe activities affecting quality will also be controlled. Quality requirements for the control and maintenance of records are discussed in Chapter 10, "Quality Assurance," of this document, and will be described in the quality assurance program plan developed for each site.

Various legislative, regulatory, and programmatic requirements impact upon environmental and waste management records. Requirements affecting cycle records management shall be incorporated into procedures for such record groups and series. In particular, indefinite, lifetime, or permanent retention records shall be identified, categorized, and controlled. Changes to environmental and waste management records will be controlled by conducting a review and approval process to the same extent as the original approved document. This will include controlling and maintaining document distribution lists.

The Oak Ridge Environmental Information System (OREIS) is being developed to fulfill environmental data management requirements prescribed in both the Federal Facility Agreement for the Oak Ridge Reservation and the Tennessee Oversight Agreement. The types of data expected to be incorporated include measurement data on groundwater, surface water, sediment, soils, air, and biota. OREIS will allow the compilation of data of known quality, maintain the integrity of the database, and provide data to users. OREIS will also function as the environmental information geographic information system.

The Administrative Record (AR) for Comprehensive Environmental Response, Compensation and Liability Act/RCRA cleanups is being developed by Radian, Labat Anderson, and Science Applications International Corporation. The AR is housed in the Information Resource Center at 105 Broadway, Oak Ridge, Tennessee.

The Technical Task Plan (TTP) is the controlling document for all Technology Development activities. The principal investigator prepares the document and transmits it to the Waste Research and Development Program (WRDP) for review and acceptance. The WRDP maintains the official set of TTPs. Changes to the TTPs follow the "Procedure for Basic Control Document Baselineing and Change Control for Office of Technology Development Activities."

²"Records Disposition," DOE Order 1324A, U.S. Department of Energy, Washington, DC, September 13, 1983.

9.3 SAMPLING AND ANALYSIS

Energy Systems Environmental Surveillance Procedures³ define the requirements and instructions for data gathering, sampling, and analysis of environmentally related data collected by Energy Systems.

The preservation methods, holding times, storage conditions, and container materials are described in environmental surveillance procedure, "Sample Preservation and Container Materials."⁴ This procedure provides guidance in sample preservation methods, defining special equipment needs, selecting containers, and appropriate holding times.

Field quality control activities, established to maintain field activities that meet the established data quality objectives, are described in environmental surveillance procedure, "Field Quality Control."⁵

Chain of custody is required to ensure the integrity of samples collected through all transfers of custody until final disposition by document possession, including archiving as applicable. The environmental surveillance procedure, "Manual Chain of Custody Procedures,"⁶ describes the requirements and instructions for these chain of custody activities.

³"Environmental Surveillance Procedures Quality Control Program," ESH/Sub/87/27106/1, Martin Marietta Energy Systems, Inc., Oak Ridge, Tennessee.

⁴"Sample Preservation and Container Materials," Environmental Surveillance Procedure ESP-701, Martin Marietta Energy Systems, Inc., Oak Ridge, Tennessee, August 26, 1988.

⁵"Field Quality Control," Environmental Surveillance Procedure ESP-400, Martin Marietta Energy Systems, Inc., Oak Ridge, Tennessee, January 31, 1991, Rev. 1.

⁶"Manual Chain of Custody Procedures," Environmental Surveillance Procedure ESP-500, Martin Marietta Energy Systems, Inc., Oak Ridge, Tennessee, January 31, 1990, Rev. 1.

10.0 QUALITY ASSURANCE

10.1 ENERGY SYSTEMS QUALITY ASSURANCE

The Quality Assurance (QA) program established by Martin Marietta Energy Systems, Inc. (Energy Systems) provides a mechanism for establishing, controlling, and verifying quality at the U.S. Department of Energy (DOE) Oak Ridge Reservation (ORR). The ORR includes the Y-12 Plant (Y-12), the K-25 Site (K-25), and Oak Ridge National Laboratory (ORNL) facilities, all of which are operated by Energy Systems for DOE.

The Energy Systems QA policy¹ and program is committed to quality and the DOE policy described in DOE Order 5700.6C.² This order defines the requirements and assigns responsibilities for implementing a QA program to ensure that risks and environmental impacts are minimized, and that safety, reliability, and performance are maximized through the application of effective management systems commensurate with the risks posed by the facility and its work.

Before DOE Order 5700.6C, Energy Systems QA standards and procedures were designed to meet the requirements established in NQA-1 and DOE Order 5700.6B. With the inception of DOE Order 5700.6C, standards and procedures described in volume 4, "Quality" of the Energy Systems Policy, Standards and Procedures Manual are being realigned to meet the requirements of DOE Order 5700.6C.

10.2 ENVIRONMENTAL RESTORATION QUALITY ASSURANCE

The Energy Systems Environmental Restoration (ER) Quality Assurance Program is designed to meet the Energy Systems Quality Assurance Program requirements and is supplemented with applicable EPA QA requirements (i.e., EPA QAMS 005/80) appropriate for the ER Program. The ER QA Program requirements are established and documented in the ER Division Quality Assurance Program Plan ES/ER/TM-4/R1. The ER QA Program Plan is also being realigned to meet the requirements of DOE Order 5700.6C.

¹"Quality Assurance," ES-QA-1.0, Revision 0, May 12, 1992.

²"Quality Assurance", DOE Order 5700.6C, U.S. Department of Energy, Washington, D.C., August 21, 1991.

Central Waste Management Division (CWMD) QA requirements are contained in CWMD-04, "Quality Assurance Implementation Plan"³. This plan includes the organizational chain of command, program objectives, and personnel responsibilities for the implementation of the QA program requirements.

The ER Quality Division Manager has the overall responsibility for implementing the Y-12 ER QA program.

It is the policy of the Environmental and Health Protection Division at ORNL to maintain and implement a documented QA program in compliance with ANSI/ASME NQA-1, as mandated by DOE Order 5700.6C. QA requirements flow down to the QA program from the Energy Systems QA Procedures Manual and the ORNL QA program.

The K-25 QA program is defined in K-25 Standard Practice Procedures (700 Series)⁴. The K-25 Quality Division Manager maintains the overall responsibility for the QA program implementation in compliance with DOE Order 5700.6C. The QA program procedures are controlled and maintained by the K-25 Quality Division.

QA requirements for Technology Development activities fall under the Quality Assurance Program Requirements for the Waste Research and Development Programs, QAP-X-92-WMRD-048. That document requires that all projects under the auspices of the Office of Waste R&D Programs incorporate QA into the planning process, identify and implement at the earliest practicable time QA controls appropriate to the work, and maintain the controls selected throughout the project life cycle. QAP-X-92-WMRD-048 invokes the Energy Systems, Policy Standards and Procedures Manual, Volume 4, "Quality," which then serves as the basis for QA planning. That manual meets the requirements of DOE 5700.6 "Quality Assurance" (latest revision) and the national consensus standard ASME NQA-1 "Quality Assurance Program Requirements for Nuclear Facilities." In addition, sponsor-specific quality requirements must be included in Quality Assurance planning.

³"Quality Assurance Implementation Plan," Central Waste Management Division - 04, April 1992.

⁴"Quality Assurance", Oak Ridge K-25 Plant Procedures 700 Series, Standard Practice Volume III, Martin Marietta Energy Systems, Inc., Oak Ridge, Tennessee.

11.0 FEDERAL, STATE, AND LOCAL INTERACTIONS

11.1 OVERVIEW

Compliance agreements with federal, state, and local government agencies may be concluded in several forms: Federal Facility Compliance Agreements (FFCAs), Federal Facility Agreements (FFAs), Settlement Agreements, Consent Orders, Consent Decrees, Unilateral Environmental Orders, and Enforcement Actions against DOE management and operating contractors.

Oak Ridge Reservation (ORR) installations have been issued Unilateral Environmental Orders at various times since 1983. These orders are directives issued by a Federal or State agency requiring actions (usually on a specified schedule) to correct violations of environmental permits or regulations. The terms of these orders are not negotiated with the party receiving the order. Unilateral Environmental Orders have been issued by the State of Tennessee for Y-12 noncompliance with the:

- Clean Water Act (CWA) in 1983,
- Clean Air Act (CAA), as amended in 1990, and
- Resource Conservation and Recovery Act (RCRA) in 1984, and 1989 for all three ORR plants for RCRA violations.

These 1989 orders also include FFA enforcement actions taken against Martin Marietta Energy Systems, Inc. (Energy Systems) and against DOE.

In 1983, Environmental Protection Agency (EPA), DOE, and Tennessee Department of Environment and Conservation (TDEC) negotiated an FFA for ORR environmental restoration activities. This interagency agreement required Y-12 cleanup in compliance with RCRA and Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) regulations. The three Oak Ridge facilities are now negotiating other cleanup/compliance agreements with EPA and the State of Tennessee over RCRA/CERCLA statutes.

Two agreements between Y-12 and EPA, one in 1982 and one in 1983, and another agreement between Oak Ridge National Laboratory (ORNL) and EPA in 1986 were negotiated in regard to compliance with the CWA. In November 1991, DOE, EPA, and TDEC entered an FFA for the Oak Ridge Reservation, effective January 1, 1992, which provides for the integration of RCRA activities with CERCLA activities at all three ORR facilities.

Direct communication between ORR, DOE/OR, regulatory agencies, and environmental groups constitutes an important part of ORR's interaction plans for outreach activities. Some organizations that have historically participated in reviewing environmental activities include:

- the Energy Systems Environmental Advisory Board,
- Statewide Sierra Club Group,
- Oak Ridge Environmental Peace Alliance,
- Save Our Cumberland Mountains,
- Natural Rights Center,
- Tennessee Environmental Council,
- Tennessee Conservation League,
- Tennessee Lung Association,
- Oak Ridge Environmental Quality Assurance Board,
- TDEC, and
- EPA Region IV.

Interactions with these groups and the public will give citizens the opportunity to comment on ORR environmental activities and allow ORR to gather information from the community.

FFCAs have been developed for DOE, ORR, and the Paducah Gaseous Diffusion Plant for Radionuclide National Emission Standards for Hazardous Air Pollutants. These agreements bring the facilities into compliance with monitoring provisions of the Clean Air Act for radionuclides. An FFCA between EPA and DOE for Toxic Substance Control Act compliance was signed in February 1992, requiring the orderly removal of all polychlorinated biphenyls (PCBs) at K-25 on a specified schedule.

To facilitate the interaction between the public and Environmental Restoration Division, a Community Relations Plan (Document # DOE/OR 928) has been developed and approved by EPA and TDEC. The implementation of this plan involved establishing two-way communication methods that facilitate communication between DOE and its regulatory agencies, DOE and its contractors, and DOE and the community.

A state oversight agreement between the State of Tennessee and DOE was entered May 13, 1991. The agreement reflects the obligations and agreements between the Department of Conservation and DOE regarding DOE's provision to Tennessee of technical and financial support for state monitoring, access, and emergency response initiatives to ensure compliance with applicable federal, state, and local environmental laws and regulations and justified and administrative orders at the ORR and areas related to activities at the ORR.

Solicitation of Public Comment on the Site-Specific Plan

Through the communication channels established in the Community Relations Plan, DOE/OR will solicit the local communities for comments on the FY93 Site-Specific Plan for the Oak Ridge Reservation. These methods include public notice of the comment period in the local newspapers, through news releases, and advertising. The releases and advertisements will contain the names of the appropriate individuals who can provide answers to questions and to whom comments should be sent.

A public meeting will be held during the comment period to allow community members to ask questions about the plan and to provide them with the opportunity to make comments, either written or oral, regarding the plan. The community members will be notified of the meeting through press releases and advertisements in the local paper, news announcements on radio and television, and in environmental restoration (ER) and waste management (WM) program publications.

The periodic "Environmental Update" publication, which is distributed to community members through the local newspapers and mailed directly to more than 400 individuals who have expressed interest in the ER and WM programs at ORR, will contain a summary of the plan and provide readers with information on how they can obtain a copy of the plan and make comments. A mail-in coupon will be contained in the publication to make it as convenient as possible for the public to make comments or request information.

All comments obtained through these methods will become part of the Administrative Record and will be available at the DOE Information Resource Center at 105 Broadway, Oak Ridge, Tennessee.

12.0 U.S. DEPARTMENT OF ENERGY/OAK RIDGE FIELD OFFICE - DIRECT ACTIVITIES

Department of Energy/Oak Ridge Field Office (DOE/OR) administers eight programs based in the States of Tennessee, Ohio, and Kentucky; all have environmental restoration (ER) activities, five maintain waste management (WM) operations. DOE/OR also oversees the Weldon Spring Site Remedial Action Project (WSSRAP), Formerly Utilized Sites Remedial Action Program (FUSRAP), selected projects within the Oak Ridge Associated Universities, and a transportation program. The Oak Ridge Reservation (ORR) and Paducah and Portsmouth Gaseous Diffusion Plants were originally created to produce fissionable materials for national defense purposes. ORR now has diversified programs that include producing medical radioisotopes, developing power reactor fuel, conducting life and physical science research, enriching uranium for commercial reactors, and manufacturing components for other defense agencies. A large portion of work associated with these facilities is focused on treating, storing, and disposing of radioactive, hazardous, and mixed waste resulting from past operations and minimizing wastes from present activities. DOE/OR's Waste Management Division (WMD) provides direction, oversight, and control for these waste operations. DOE/OR, through the Environmental Restoration Program (ERP) Division, ensures management and technical consistency for ER activities at these facilities and serves as an interface with the public and regulatory agencies.

Implementing DOE's Environmental Restoration and Waste Management Five-Year Plan (FYP) requires compliance with many Federal requirements, such as Resource Conservation and Recovery Act; the National Environmental Policy Act; the Clean Air Act; the Clean Water Act; the Comprehensive Environmental Response, Compensation and Liability Act; the Toxic Substances Control Act; the Safe Drinking Water Act; DOE Orders; plus State and local regulations. An on-going DOE program of formal self-assessments of WM facilities is directed toward ensuring that the facilities comply with these laws and that a best- management-practice approach is followed in facility operations.

ER and WM tasks undertaken to implement DOE's FYP are the responsibility of the Assistant Manager for Environmental Restoration and Waste Management (AMERWM) at DOE/OR. The AMERWM is responsible for planning, budgeting, and monitoring regulatory compliance and is the management link with DOE/HQ. ERP, WMD, WSSRAP and FUSRAP organizations report to AMERWM. Some facilities have DOE site representatives who support the appropriate Division Managers at DOE/OR on day-to-day operations. Other DOE/OR Division Managers work with the operating contractor's central management, which is responsible for implementing activities and planning future work.

12.1 WASTE MANAGEMENT PROGRAM (FY94 ADS: OR-8201; OR-8202) (FY93 ADS: 801; OR-802)

The WM Division is responsible for managing all WM, CA, and TD activities on the Oak Ridge Reservation. The WM Division provides oversight and direction to the M&O contractor for implementation of the Tennessee Oversight Agreement, the LDR FFCA, the development and implementation of strategic plans for the management of radioactive, mixed, hazardous, sanitary/industrial, and other special case wastes; development of central waste tracking system; and compliant storage, treatment, and disposal of waste. In addition, the WM Division provides integration among ER, WM, FUSRAP, and WSSRAP on crosscutting issues.

Support for conduct and oversight of WM activities includes:

- developing and reviewing Site-Specific Plan, Activity Data Sheet, Activity Packages, and Progress Charts;
- program control development and implementation, cost/budget evaluation, and cost estimate validation; and
- supporting environmental compliance, safety and health, waste minimization and privatization programs (FY93-ADS: OR-802, FY94-ADS: OR-8202).

Site representatives support program management in reviewing and evaluating technical submittals, feasibility studies, cost estimates, WM reports, permit applications, Notices of Deficiency and Violations, inspection reports, technical documents, routinely required reports, technical management reviews, and environmental impact statements. DOE/OR-direct staff also manage decontamination and site recovery at the commercial irradiator facility in Decatur, Georgia.

12.2 ENVIRONMENTAL RESTORATION PROGRAM (FY94 ADSs: OR-8301 and OR-8302) (FY93 ADSs: OR-801, OR-825, OR-826, OR-827, OR-828)

The ERP Division is responsible for managing all ER activities, including remedial actions and overview of decontamination and decommissioning activities. DOE/OR sites receive direct support from technical integration teams who evaluate, plan, and design analytical and waste management facilities needed to meet regulatory deliverables. As part of this task, a comprehensive analytical needs assessment study has been completed. ERP coordinates and manages the DOE/OR multisite groundwater program. Also, DOE/OR directly manages the ORR-wide environmental impact statement project and funding preparation of decision documents for East Fork Poplar Creek (EFPC) remediation in Oak Ridge. Activities to implement the DOE/OR program management plan include tracking

milestones and schedules, submitting monthly management reports, and preparing budgets and work packages. ERP also supports the DOE/HQ Remedial Action Information Center. Defense funds in OR-0800-AP will be used to clean up a facility in Apollo, Pennsylvania. DOE will monitor progress made at the site, with the Nuclear Regulatory Commission retaining regulatory oversight responsibility.

DOE/OR implements and supports the Federal Facility Agreement (FFA) and Agreement In Principle (AIP) for the ORR. Under OR-825, DOE provides support for the State of Tennessee's independent oversight of ORR environmental activities. Tennessee also receives support (OR-826) for its review of and response to documents to be required under the pending FFA. The AIP with the State of Kentucky provides support for that Kentucky's independent oversight of the Paducah Gaseous Diffusion Plant site (ORO-827). These two AIPs became effective in May 1991. Another AIP is being negotiated with the State of Ohio concerning Ohio's oversight of the Portsmouth Gaseous Diffusion Plant; this is supported through OR-828.

12.3 FEDERAL, STATE, AND LOCAL INTERACTIONS

Individual citizens, government officials, and organizations are encouraged by DOE/OR to participate in developing and reviewing DOE/OR site activity plans. Site-Specific Plans and other documents are made available to the public at the sites for this purpose.

12.4 FY93 FUNDING

<u>ADS No.</u>	<u>\$</u> <u>x 1000</u>
ER	
8301	\$12,482
8302	\$ 6,585
WM	
8201	\$2,450
8202	\$ <u>4,300</u>
Total	\$25,817

13.0 OAK RIDGE ASSOCIATED UNIVERSITIES

Oak Ridge Associated Universities (ORAU), a consortium of universities and colleges, operates several facilities/sites for Department of Energy (DOE). Under the Environmental Restoration/Waste Management (ER/WM) Employment and Education Assessment program, ORAU assesses:

- the type of occupational employment required in ER/WM work,
- the fields likely to be of importance for quantitative and qualitative reasons, and
- the currently available education programs and student pipeline.

ORAU also administers several DOE programs that are intended to increase the number of professionals who are appropriately trained in WM and ER to meet mission requirements. The programs included:

- the ER/WM Graduate Fellowship Program,
- the ER/WM Scholarship Program,
- the ER/WM Young Faculty Program,
- the ER/WM Minority Scholarship/Fellowship Program, and
- the Minority Students Hazardous Materials Management Training Program.

ORAU assists the Division of Educational Program Development within the Office of Technology Development in ensuring that staff in the DOE system responsible for developing and implementing ER/WM programs have the knowledge and skills to perform competitively and safely. ORAU also performs independent verification surveys at DOE sites and reports findings to DOE. This ORAU activity and report provides DOE with the information required to make a decision regarding future site use.

13.1 OAK RIDGE ASSOCIATED UNIVERSITIES

(FY93 and FY94 ADS: OR-8390) (FY93 ADS: OR-931) (FY92 ADS: OR-801)

13.1.1 Description

Oak Ridge Associated Universities (ORAU) projects address three sites: (1) the South Campus Facility (SCF) at the intersection of Scarboro and Bethel Valley Roads; (2) the Freels Bend area (FBA); and (3) several local facilities throughout Oak Ridge. At present, only the SCF and FBA facilities are being actively investigated. Local facilities include office and administrative buildings and are thus not expected to include contamination sources.

The SCF was used for research on the effects of radiation on plants and animals. The facility contains office and laboratory buildings, feedlots, animal pens, and support buildings. A Preliminary Assessment/Site Inspection (PA/SI) conducted in 1991 found contaminants in soils, drainage ditch sediments, and groundwater. A screening risk assessment based on the results of the PA/SI indicated a potential, but very low, risk to human health from chronic (i.e., long-term) exposure to organics. However, risk modeling was based on a very conservative scenario, and there are no imminent risks to public health.

The PA/SI and screening risk assessment recommend further investigation. A Remedial Investigation/Feasibility Study (RI/FS) will begin in FY93. The RI will gather additional detailed data on the nature and extent of contamination in soils, sediments, surface water, and groundwater. The FS will use the information developed in the RI to examine remedial alternatives and to recommend one or more options for implementation.

The FBA was used for the burial of non-contaminated animal carcasses from SCF. Radiologically contaminated carcasses were disposed of at Oak Ridge National Laboratory (ORNL). Several pits contain buried animal carcasses. Although no hazardous or radioactive wastes were to be placed in the pits, limited existing data suggest that some solvents may be present in soils near the pits. None of the existing data indicates the presence of radioactive contaminants at FBA.

To determine if radioactive or chemical contamination is present at FBA, a PA/SI will be conducted during FY93. This study will conduct a detailed review of available records, and sampling and analysis of soils, sediments, surface water, and groundwater for a wide spectrum of compounds will be performed. The PA/SI will recommend either additional studies or no further action. If additional studies are recommended, an RI/FS will be planned and carried out within the next several years.

Because the ORAU local facilities were used primarily for administrative functions, they are not expected to include contaminant sources. Therefore, these buildings are scheduled for limited assessment only within the current budget planning window.

13.1.2 Status of FY92 SSP Objectives

The RI/FS Work Plan for SCF has been approved by the Tennessee Department of Environment and Conservation. Review comments have been received from the Environmental Protection Agency (EPA) Region IV. EPA comments will be incorporated or resolved by September 1992, and the Work Plan will be finalized. Field efforts should begin in early FY93.

13.1.3 FY93 Objectives

FY93 objectives include:

- **Implement the SCF RI Work Plan by conducting field investigations. This will include soil boring and well installation and soil, sediment, surface water, and groundwater sampling.**
- **Analyze SCF environmental samples for the contaminants of concern.**
- **Conduct an assessment of human health and ecological risk.**
- **Prepare a RI Report detailing the results of the field investigation and risk assessment, including nature, concentration, and full extent of contamination.**
- **Implement the FBA PA/SI Work Plan by conducting records reviews and field investigations. This will include soil boring and well installation and soil, sediment, surface water, and groundwater sampling.**
- **Analyze FBA environmental samples for the contaminants list in the EPA Target Analyte List and Target Compound List, together with appropriate radiologic parameters.**
- **Conduct a screening-level assessment of human health and ecological risk, if warranted by the findings of the field sampling and analysis effort.**
- **Prepare a PA/SI Report detailing the results of the field investigation and screening risk assessment. These data and conclusions may be reported in an RI Work Plan, if warranted.**

13.1.4 FY94-98 Objectives

- **Conduct a FS for the SCF, if warranted by the findings of the RI.**
- **If an FS is conducted for SCF, prepare a Proposed Remedial Action Plan (PRAP) detailing the selected remedial alternative(s) for public review and comment. The PRAP will be followed by a Record of Decision that incorporates public comments and records state and federal regulator approval of the selected remedial action(s).**
- **Conduct a NEPA Environmental Assessment for SCF if remedial actions are planned.**

- Conduct remedial design (RD) for the selected remedial action.
- Initiate remedial action at the SCF site.
- As warranted by the findings of the Freels Bend area (FBA) PA/SI, continue studies at FBA through the RI/FS process. Scope and intent of further studies, if any, are to be developed as information indicates.

13.1.5 List of FY93 Scheduled Milestones

- Submit draft SCF RI Report to TDEC and EPA Region IV. 09/93
- Submit draft SI Report for FBA to TDEC and EPA Region IV. 09/93

13.1.6 FY93 Funding

<u>ADS No.</u>	\$ <u>x 1,000</u>
8390	\$1,863

14.0 NON-FEDERAL FACILITY AGREEMENT PROJECTS

14.1 NON-FEDERAL FACILITY AGREEMENT PROJECTS (FY93 and FY94 ADS: OR-9303) (FY93 ADS: OR-830, OR-831) (FY92 ADS: OR-801)

14.1.1 Description

Non-FFA site projects are limited to: (1) CSX Railroad Spur, Oak Ridge, TN, (2) Atomic City Auto Parts (ACAP), Oak Ridge, TN; and (3) David Witherspoon, Inc., (DWI) Knoxville, TN. None of these sites are included within the scope of the Federal Facility Agreement (FFA). These sites are located outside the current Department of Energy (DOE) Oak Ridge facilities, but they have received radiologic, toxic, or hazardous wastes which resulted from DOE or predecessor operations.

The CSX Railroad Spur has been used to transport materials to and from the DOE Y-12 facility since its inception. Radiologic surveys conducted by the Oak Ridge National Laboratory (ORNL) and Oak Ridge Associated Universities (ORAU) identify isolated areas of low level radioactive contamination along the CSX tracks. The radioactive contamination is due to a single isotope, Cesium (Cs)-137. The source of the Cs-137 is not certainly known but appears to be the result of leaking concrete caskets used for shipping animal carcasses to ORNL for disposal. The animal carcasses probably originated from DOE (then AEC)-sanctioned experiments on the effects of radiation on animals carried out during the 1950s and early 1960s at a number of sites.

Areas of Cs-137 contamination are limited to the sitings near the main gate of Y-12 and the switching yard near Belgrade Road at the east end of Oak Ridge. Cesium-137 contamination appears to be limited to track ballast, soils within 1 to 1.5 meters of the surface, and some areas of sedimentation. Exposure to the low levels of radioactivity present along the tracks presents no immediate health threat. However, public perceptions of contamination and the potential for health risk has caused DOE to commission the current work as a voluntary action.

The current radiological status of the CSX Railroad Spur and the selected remediation objective will be presented in an Engineering Evaluation/Cost Analysis (EE/CA) report which is being prepared in FY 1992. The EE/CA is planned to define the volume of contaminated ballast, soil, and sediment which requires removal and treatment or disposal. The EE/CA will identify removal methods and will select a treatment or disposal option.

The ACAP site is owned by Mr. William Harmon but has operated as a salvage yard from 1954 to the present by Mr. DuPont Smith. Currently, ACAP is also the site of an automobile salvage operation run by a group of private individuals. Mr. Smith is known to have purchased electrical equipment containing polychlorinated biphenyl (PCBs) from DOE Oak Ridge plants. In addition, Mr. Smith apparently purchased scrap and surplus materials which contained radioactivity, mercury and heavy metals, from DOE Oak Ridge facilities and possibly other, non-DOE, sources. The facility was operated under state license as a radioactive storage facility from 1968 until 1983.

Several studies have been conducted at ACAP by Environmental Protection Agency (EPA) Region IV. The most comprehensive EPA study was a Preliminary Assessment/Site Inspection (PA/SI); this report was released in 1991. This study indicates PCB, dioxin/furan, heavy metal, and radioactive contamination in near-surface soils and sediments. No surface water or groundwater was analyzed. Oak Ridge Associated Universities conducted an extensive soil sampling and analysis project during 1987. The data from this study, while not formally published in a report, show results similar to that of the EPA PA/SI. A brief study by the Tennessee Department of Environment and Conservation (TDEC) also indicates surface contamination by PCBs and heavy metals, including mercury. Although radioactive materials were to be entirely removed when the radioactive storage license was withdrawn, previous studies state that there remains some radioactive scrap and environmental contamination in the areas in which radioactive materials were stored. DOE is negotiating with TDEC with regards to the Commissioner's Orders addressing the environmental contamination as described above. DOE has submitted to TDEC an action plan to accomplish this work.

The David Witherspoon, Inc. (DWI) site, Knoxville, Tennessee, is known to have significant environmental contamination. DWI received surplus and salvage from many sources, including DOE operations in Oak Ridge. The full scope of DOE involvement with the DWI site has not yet been defined. Activity at this site will be in accordance with results of negotiations between DOE and TDEC.

14.1.2 Status of FY92 Objectives

A previously prepared Remedial Investigation Work Plan for the CSX site has been modified to an EE/CA Work Plan. Field investigation under the CSX EE/CA Work Plan began in mid-May 1992. The start of field activities was delayed two months while negotiations were carried out with CSX Transportation, Inc. Field activities were expected to be completed by late June 1992. An EE/CA Report is scheduled to be submitted to DOE by late September 1992.

14.1.3 FY93 Objectives

FY93 objectives include:

- Prepare and submit to DOE a NEPA Categorical Exclusion for a removal action on soils and track ballast for the CSX site.
- Perform a removal action on soils and track ballast identified in the CSX EE/CA Report as being contaminated by Cesium-137.
- Conduct DWI site activity in accordance with the results of negotiations between DOE and TDEC.

14.1.4 FY94-98 Objectives

- Perform independent certification of effectiveness of CSX removal action.
- Implement action plan for ACAP in accordance with results of negotiations between DOE and TDEC.
- Plan and implement long-term remediation, if required by site conditions.

14.1.5 List of FY93 Scheduled Milestones

- Complete CSX EE/CA Report. 10/92
- Complete CSX Removal Action. 09/93

14.1.6 FY93 Funding

<u>ADS No.</u>	<u>\$</u> <u>x 1,000</u>
9303	\$1,414

APPENDIX A
GLOSSARY

GLOSSARY

Action Plan. A plan describing specific cleanup or Corrective Activity.

Ambient. Surrounding.

Applicable or Relevant and Appropriate Requirement (ARAR). Requirements, including cleanup standards, standards of control, and other substantive environmental protection requirements and criteria for hazardous substances as specified under Federal and State Law and regulations, that must be met when complying with the Comprehensive Environmental response, Compensation, and Liability Act (from the Superfund Amendments and Reauthorization Act).

As Low As Reasonably Achievable (ALARA). A radiation protection principle applied to radiation exposures, with costs and benefits taken into account.

Assay. Determination of the components of a material.

Atomic Energy Act (AEA). The Act (1954) that placed production and control of nuclear materials within a civilian agency, originally the Atomic Energy Commission.

Biota. Animal and plant life of a particular region.

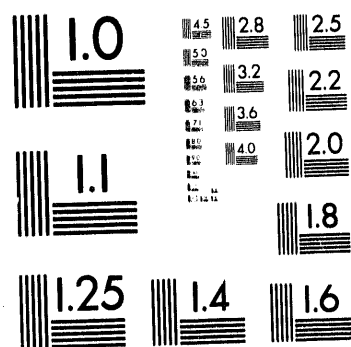
Blowdown. Removal of liquids or solids from a process vessel or storage vessel or a line by the use of pressure.

Byproduct material. A product from a manufacturing process that is not considered the principal material.

Cathodic protection. Protecting a metal from electrochemical corrosion by using it as the cathode of a cell with a sacrificial anode.

Centrifuge. A rotating device for separating liquids of different specific gravities or for separating suspended colloidal particles, such as clay particles in an aqueous suspension, according to particle-size fractions by centrifugal force.

Characterization. Facility or site sampling, monitoring, and analysis activities to determine the extent and nature of a release. Characterization provides the basis for acquiring the necessary technical information to develop, screen, analyze, and select appropriate cleanup techniques.



4 of 4

Clean Air Act (CAA). Its purpose is to "protect and enhance the quality of the Nation's air resources." Its primary application is through Prevention of Significant Deterioration permits to regulate new potentially polluting facilities. Of increasing importance are the National Emissions Standards for Hazardous Air Pollutants. The CAA was passed in 1970 as amendments to 42 USC 7401.

Clean Water Act of 1977 (CWA). Amended the Federal Water Pollution Control Act first passed in 1956. Its objective is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The Act's major enforcement tool is the National Pollutant Discharge Elimination System permit.

Closure Plan. Documentation prepared to guide the deactivation, stabilization, and surveillance of a waste management unit or facility under the Resource Conservation and Recovery Act.

Compliance Agreements. Legally binding agreements between regulators and regulated entities that set standards and schedules for compliance with environmental statutes. Includes Consent Order and Compliance Agreements, Federal Facility Agreements, and Federal Facility Compliance Agreements.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Federal statute (also known as Superfund), enacted in 1980 and reauthorized in 1986, that provides the statutory authority for cleanup of hazardous substances that could endanger public health, welfare, or the environment.

Conductivity. The ratio of the electric current density to the electric field in a material.

Continuity of Operations. Each DOE site has activities that include developing strategic and long range waste management plans, surveillance and maintenance of facilities and equipment, waste certification, proper training programs for personnel, and record/information administration.

Corrective Activities. Projects that are required to bring facilities managed by the DOE/OR into compliance with Federal, State and local requirements and with DOE Orders or policy.

Criticality. The condition in which a nuclear reaction is self-sustaining.

Decommissioning. The process of removing a facility from operation, followed by decontamination, entombment, dismantlement, or conversion to another use.

Decontamination. The removal of unwanted material (typically radioactive material) from facilities, soils, or equipment by washing, chemical action, mechanical cleaning, or other techniques.

Depleted Uranium. Uranium from which the fissionable isotope uranium-235 has been removed.

Disposal. Waste emplacement designed to ensure isolation of waste from the biosphere, with no intention of retrieval for the foreseeable future, and requiring deliberate action to regain access to the waste.

DOE Orders. Internal requirements that establish DOE policy and procedures for compliance with applicable laws and regulations.

Drinking Water Standard. Concentration limits for certain elements and pollutants that may occur in drinking water; established by the Safe Drinking Water Act.

Effluent. Treated liquid waste or wastewaters discharged from a treatment unit.

Enrichment (uranium). The process that increases the percentage of uranium-235 isotopes in uranium from 1 to about 3 percent so that it can be used as fuel in a powerplant.

Environmental Restoration. Cleanup and restoration of sites contaminated with hazardous materials during past production or disposal activities.

Feasibility Study. A step in the environmental restoration process specified by CERCLA. The objectives of the feasibility study are to identify the alternatives for remediation and to identify a remedial action that meets the requirements for confirmed contamination. Successful completion of the feasibility study should result in immediate followup development of a design for bringing about the remedial actions.

Federal Facility Agreement (model FFA). See Compliance Agreements.

Federal Facility Compliance Agreement. See Compliance Agreements.

Field Offices (DOE). Albuquerque, Chicago, Idaho, Nevada, Oak Ridge, Richland, San Francisco, and Savannah River.

Fissile. Capable of being split. In nuclear materials, capable of causing or undergoing fission.

Fissionable Materials. Material whose nuclei are capable of undergoing fission, or being split apart.

Flow metering. Measurement of pressure, flow rate and discharge rate of a liquid, vapor, or gas flowing in a pipe.

Formerly Utilized Sites Remedial Action Program (FUSRAP). A program that addresses the cleanup of sites and adjacent properties contaminated by activities of the Manhattan Project.

Friable Asbestos. Asbestos insulation that is loose and capable of becoming airborne.

Gaseous Diffusion. A technology for separating fissionable uranium-235 isotopes from the more abundant nonfissionable uranium isotopes by pumping gaseous uranium hexafluoride through resistant barriers.

Geological Repository. A mined facility for disposal of radioactive wastes that uses natural geologic barriers to provide waste containment over geological time scales.

Graphite reactor. A reactor in which a very pure form of carbon is used as a moderator.

Groundwater. Liquid water occurring beneath the earth's surface in the interstices between soil grains, in fractures, or in porous formations.

Groundwater Remediation. Treatment of groundwater to remove pollutants.

Hazardous Waste. As defined in the Resource Conservation and Recovery Act, a solid waste or combination of solid wastes that, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may cause or significantly contribute to an increase in mortality or an increase in serious, irreversible, or incapacitating reversible illness or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed. Hazardous wastes may be listed or characteristic.

High-Level Waste. The highly radioactive waste material that results from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid waste derived from the liquid, that contains a combination of transuranic waste and fission products in concentrations requiring permanent isolation.

Hot Cell (Cave). A heavily shielded compartment in which highly radioactive material can be handled, generally by remote control.

Hydrogeology. The science dealing with underground water and its movement.

Implementation Plan. A document that contains the detailed actions needed to achieve a set of specified goals and objectives.

In Situ. In position; in its original location or site.

Inactive Waste Site. Sites formerly used for the treatment, storage, or disposal of wastes.

Incineration. A treatment technology using combustion to destroy organic constituents and reduce the volume of wastes.

Industrial Waste. Worthless materials remaining from industrial operations.

Interagency Agreement (IAG). A formal document in which two or more Federal Agencies agree to cooperate.

Land Disposal Restrictions (LDRs). Provisions of Hazardous and Solid Waste Amendments requiring phased-in treatment of hazardous wastes before disposal.

Leachate. A contaminated liquid resulting when water percolates, or trickles through waste materials and collects components of those wastes. Leaching may occur at landfills and may result in hazardous substances entering soil, surface water, or groundwater.

Life Cycle. Thirty years or the useful life of the item, whichever is less.

Low-Level Waste. Radioactive waste not classified as high-level waste, transuranic waste, spent nuclear fuel, or byproduct material.

Memorandum of Understanding. A document stating the terms of agreement between two agencies.

Migration of contaminants. Unaided movement of particles of contaminants (liquids, metals, etc.) into the surrounding environment.

Mixed Waste. Mixed waste contains both radioactive and hazardous components, as defined by the Atomic Energy Act and the Resource Conservation and Recovery Act, respectively.

National Emission Standards for Hazardous Air Pollutants (NESHAP). Clean Air Act limits for release of hazardous pollutants for which no ambient air quality standard is applicable.

National Environmental Policy Act (NEPA) of 1969. Act that established the requirement for conducting environmental reviews of Federal actions that have the potential for significant impact on the human environment.

National Pollutant Discharge Elimination System (NPDES). Section 402 of the Federal Water Pollution Control Act (a.k.a. Clean Water Act) that establishes a permit for discharges to water and provides standards by which such permits may be granted.

National Priorities List. Formal listing of the Nation's worst hazardous waste sites, as established by the Comprehensive Environmental Response, Compensation, and Liability Act.

Neutralization. Treatment of corrosive hazardous wastes to yield a pH near 7.

Operable Unit. A discrete portion of a site consisting of one to many release sites considered together for assessment and cleanup activities.

Performance Assessment. A term used to denote all activities (qualitative and quantitative) carried out to (1) determine the long-term ability of a site/facility to effectively isolate the waste and ensure the long-term health and safety of the public and (2) provide the basis for demonstrating regulatory compliance. Performance assessment serves as a focal point for site characterization, model development, and uncertainty analysis research activities.

Prime Contract. DOE's major contracts. Principally, DOE's Management and Operating contracts.

Privatization. The turning over of a public entity (property, service, etc.) to private interests.

Quality Assurance. Internal program of oversight and verification to ensure highest level of accuracy and conformance to established standards.

Radioactive Waste. A solid, liquid, or gaseous material of negligible economic value that contains radionuclides in excess of threshold quantities. Does not include material contaminated by radionuclides from nuclear weapons testing.

Radiogenic. Produced by radioactivity.

Radioisotope. An unstable isotope of an element that will eventually undergo radioactive decay (i.e., disintegration). Radioisotopes with special properties are produced routinely for use in medical treatment and diagnosis, industrial tracers, and for general research.

RCRA Facility Investigation (RFI). The RCRA process of determining the extent of hazardous waste contamination; similar in intent to the Comprehensive Environmental Response, Compensation, and Liability Act Remedial Investigation.

RCRA Part A Permit. The first part of a Resource Conservation and Recovery Act permit application that identifies treatment, storage, and disposal units within a to-be-permitted facility.

RCRA Part B Permit. The detailed second part of a Resource Conservation and Recovery Act permit Application that describes wastes managed, quantities, and facilities.

Record of Decision (ROD). The Comprehensive Environmental Response, Compensation, and Liability Act document used to select the method of remedial action to be implemented at a site after the Feasibility Study/Proposed Plan process has been completed.

Regulated Substance. Any chemical, compound, or material the manufacture, generation, transportation, alteration, or disposition of which is regulated under any of the Federal or State statutes.

Remedial Investigation (RI). The Comprehensive Environmental Response, Compensation, and Liability Act process of determining the extent of hazardous substance contamination and, as appropriate, conducting treatability investigations. The RI provides the site-specific information for the feasibility study.

Remediation. Those activities performed to remove or treat hazardous waste sites or to relieve their effects.

Reprocessing. The dissolution of spent reactor fuel and separation of uranium, transuranic elements, and fission products.

Robotics. Use of electromechanical devices that incorporate sensors and computer control to operate intelligently in remote environments.

Safe Drinking Water Act. The maximum contaminant levels developed under this Act are used in groundwater monitoring programs.

Sanitary Waste. Wastes, such as garbage, that are generated by normal housekeeping activities and that are not hazardous or radioactive.

Shallow Land Burial. Disposal of wastes in shallow trenches; commonly used for low-level wastes.

Site. For the purposes of this plan, sites are lands, installations, and/or facilities for which DOE has or shares responsibility for Environmental Restoration and Waste Management activities.

Site Inspection. The process under the Comprehensive Environmental Response, Compensation, and Liability Act to acquire the necessary data to confirm the existence of environmental contamination at identified potential sites and to assess the associated potential risks to human health, welfare, and the environment. The data collected at each site must be sufficient to support the decision for either continuing with a remedial investigation/feasibility study or for removing the site from further investigation through a decision document.

Sludge. Pumpable material of naturally occurring or man-made origin possessing a relatively fixed volume and a moisture content ranging from 15 to 90 percent.

Sole-Source Aquifer. As defined by the Safe Drinking Water Act, an aquifer that is the only source or potential source of drinking water in an area.

Solid Waste Management Unit (SWMU). Any unit at a facility from which hazardous constituents might migrate, irrespective of whether the unit was intended for the management of solid and/or hazardous waste. Includes, but is not limited to, container storage areas, tanks, surface impoundments, waste piles, land treatment units, landfills, incinerators, injection wells, recycling operations, miscellaneous units, and releases from such units.

Stabilization. The process of reducing the hazardous potential of a waste by chemically or physically converting the toxic contaminants into their least mobile or reactive form.

Storage. Retention and monitoring of waste in a retrievable manner pending final disposal.

Subassembly. A component or structural unit manufactured separately but designed to be incorporated with other parts of a final assembly or finished product.

Superfund Amendments and Reauthorization Act (SARA). The 1986 Act amending and reauthorizing the Comprehensive Environmental Response, Compensation, and Liability Act.

Tiger Team. A team of independent experts appointed by the Secretary of the U.S. Department of Energy (DOE) to identify environmental and safety issues at DOE facilities.

Toxic. Relating to a harmful effect by a poisonous substance on the human body by physical contact, ingestion, or inhalation.

Toxic Substances Control Act (TSCA). TSCA was enacted in 1976 to protect human health and the environment from unreasonable risk due to exposure to, manufacture, distribution, use, or disposal of substances containing toxic chemicals. Under TSCA, any hazardous wastes that contain more than 50 parts per million of polychlorinated biphenyls are subject to regulation under this Act.

Treatment. Any activity that alters the chemical or physical nature of a hazardous waste to reduce its toxicity, volume, mobility, or render it amenable for transport, storage, or disposal.

Transuranic (TRU) Waste. Waste that is contaminated with alpha-emitting transuranium nuclides with half lives greater than 20 years and concentrations greater than 100 nanocuries per gram of waste.

Tumulus. Above-ground low-level waste disposal in concrete bunkers covered by a protective liner.

Underground Storage Tank (UST). Any tank or associated piping containing hazardous materials as defined by the Hazardous and Solid Waste Amendments (Subtitle C or Subtitle I).

Vitrification. The process of immobilizing waste that produces a glass-like solid that permanently captures the radioactive materials.

Waste Area Grouping (WAG). A grouping of facilities and/or release sites with areawide soil and/or groundwater contamination that is not readily traceable to individual facilities or sites. Generally, a WAG would be limited to an area adjoining the contamination and having a specific water movement pattern.

Waste Isolation Pilot Plant (WIPP). Research and demonstration facility located at Carlsbad, New Mexico, intended to demonstrate safe disposal of radioactive waste in a deep geologic environment. A decision on whether to convert WIPP to a disposal facility for transuranic waste will be made after successful testing is demonstrated.

Waste Minimization. The reduction, to the extent feasible, of hazardous waste that is generated prior to treatment, storage, or disposal of the waste. Waste minimization includes any source reduction or recycling activity that results in either (1) reduction of total volume of hazardous waste (2) reduction of toxicity of hazardous waste or (3) both.

Waste Stream. Terminology used to refer to waste leaving a facility or operation.

Zeolites. Any of various hydrous silicates used as ion-exchangers frequently used in water softening.

APPENDIX B
LIST OF AGREEMENTS AND ORDERS

Appendix Table B-1
Federal and State Agreements
Oak Ridge Reservation

Facility	Regulator	Statute(s)	Date
Y-12	EPA	CWA	4/12/82
Y-12	EPA/Tennessee	CWA	5/26/83
Y-12	EPA	SWDA	11/28/84
Y-12	EPA	CWA	3/9/85
ORNL	EPA	CWA	2/12/86
Y-12, ORNL, K-25	Tennessee	RCRA/CERCLA	5/13/91
K-25*	EPA	TSCA	2/20/92
Y-12, ORNL, K-25	EPA/Tennessee	RCRA/CERCLA	1/1/92
Y-12, ORNL, K-25	EPA	RCRA (LDR)	6/12/92

Source: Department of Energy, Environmental Restoration and Waste Management Five-Year Plan.

*Not in Source document

**Appendix Table B-2
Unilateral Environmental Orders*
Oak Ridge Reservation**

Facility	Regulator	Statute(s)	Date
Y-12	Tennessee	CWA	09/15/83
Y-12	Tennessee	RCRA	12/06/84
Y-12	Tennessee	RCRA	12/06/84
Y-12	Tennessee	RCRA	03/17/88
Y-12, ORNL, K-25	Tennessee	RCRA	03/14/89
K-25	Tennessee	RCRA	09/17/91

Source: Department of Energy, Environmental Restoration and Waste Management Five-Year Plan.

- * A unilateral environmental order is a directive issued by a Federal or State agency requiring actions (usually on a specified schedule) to correct violations of environmental permits or regulations. The terms of a unilateral order are not negotiated with the party receiving the order.

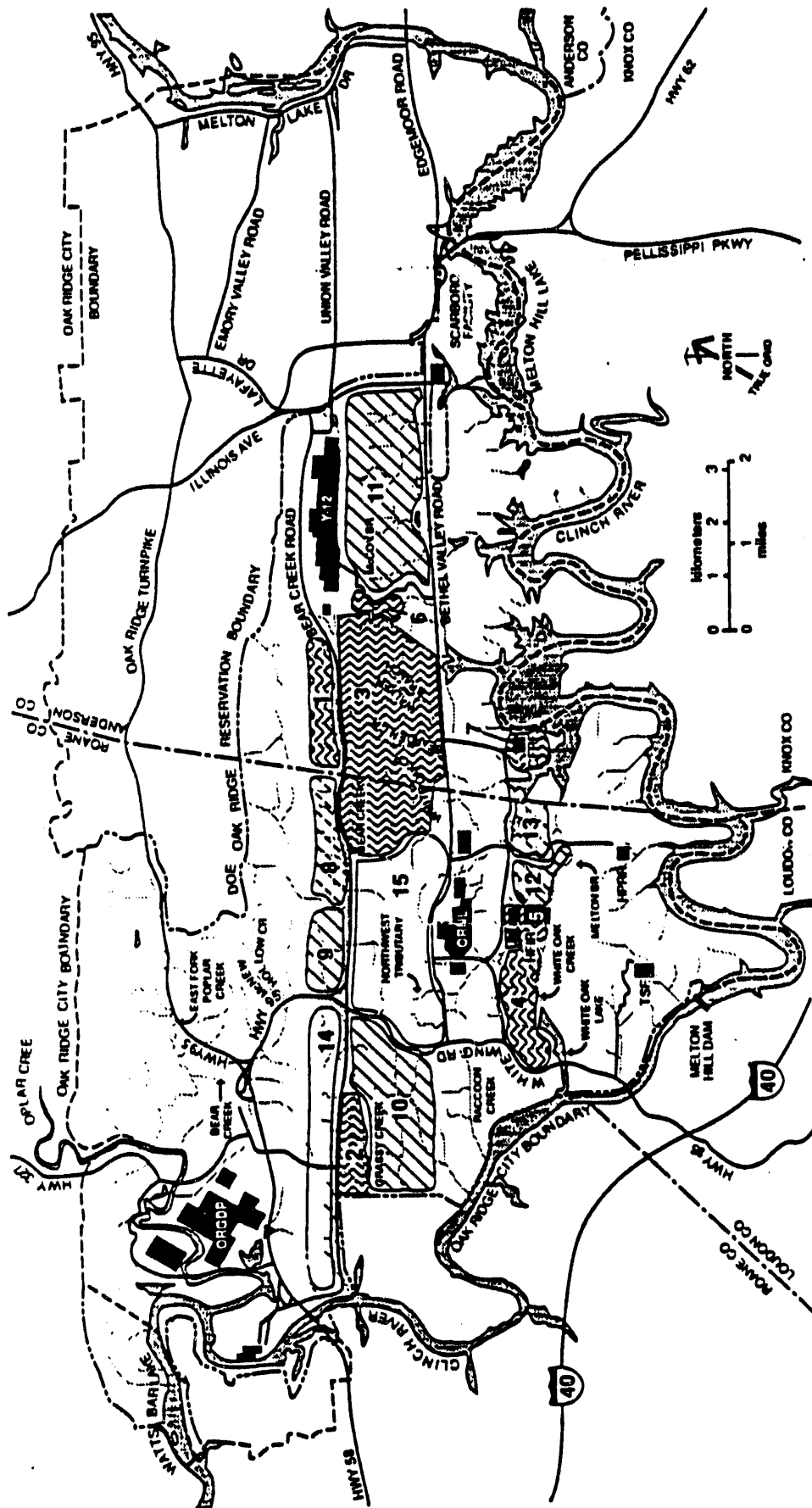
Appendix Table B-3
Enforcement Actions Against DOE
Management and Operating (M&O) Contractors

Facility	M&O	Regulator	Action	Date
Y-12	Martin Marietta Energy Systems	State of Tennessee	Order* (RCRA)	3/14/89
ORNL	Martin Marietta Energy Systems	State of Tennessee	Order* (RCRA)	3/14/89
K-25	Martin Marietta Energy Systems	State of Tennessee	Order* (RCRA)	3/14/89
Oak Ridge	Union Carbide Corporation (past operator)	State of Tennessee	Order (Tennessee CERCLA)	1/8/90
K-25	Martin Marietta Energy Systems	State of Tennessee	Order* (RCRA)	9/17/91

Source: Department of Energy, Environmental Restoration and Waste Management Five-Year Plan, June 1990.

*Action also taken against DOE.

APPENDIX C
MAPS OF OAK RIDGE RESERVATION



KEY

CURRENTLY OR FORMERLY USED

-  Waste Management
-  Other

- 1 Bear Creek Burial Ground
- 2 Central Training Facility
- 3 Walker Branch Watershed Research Area
- 4 West Melton Valley
- 5 HFIR-TRU Reactor Area
- 6 Central Sanitary & Industrial Landfill
- 7 Consolidated Fuel Recycle Facility

PROPOSED FOR USE

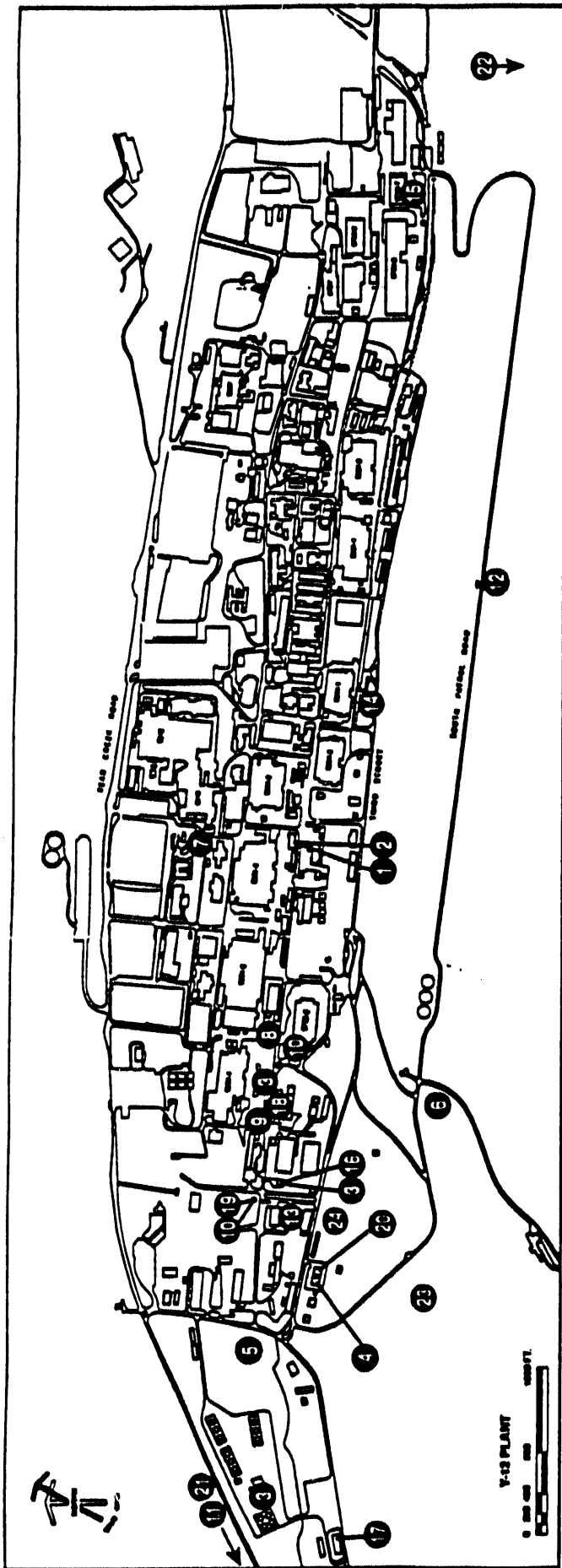
-  Waste Management
-  Other

- 8 Central Bear Creek Valley
- 9 West Bear Creek Valley
- 10 West Chesnut Ridge
- 11 East Chesnut Ridge
- 12 Solid Waste Storage Area #7
- 13 Advanced Neutron Source

AVAILABLE FOR NEW PROJECTS

-  Use Not Specified

- 14 Exxon Site
- 15 Central Chesnut Ridge



TREATMENT

- 1 Central Poll Control Facility - mixed, liquid impurities & non-soluble bearing acids and caustic waste
- 2 Plating Rinsewater Treatment Facility - mixed, liquid impurities containing heavy metals
- 3 West End Treatment Facility - mixed, liquid soluble bearing wastes
- 4 Waste Coolant Process Facility - low-level, liquid machine coolant
- 5 Uranium Chip Oxidation Facility - low-level, solid natural uranium machine turnings
- 6 Waste Material Preparation Facility - low-level, solid diversified uranium-contaminated scrap

STORAGE

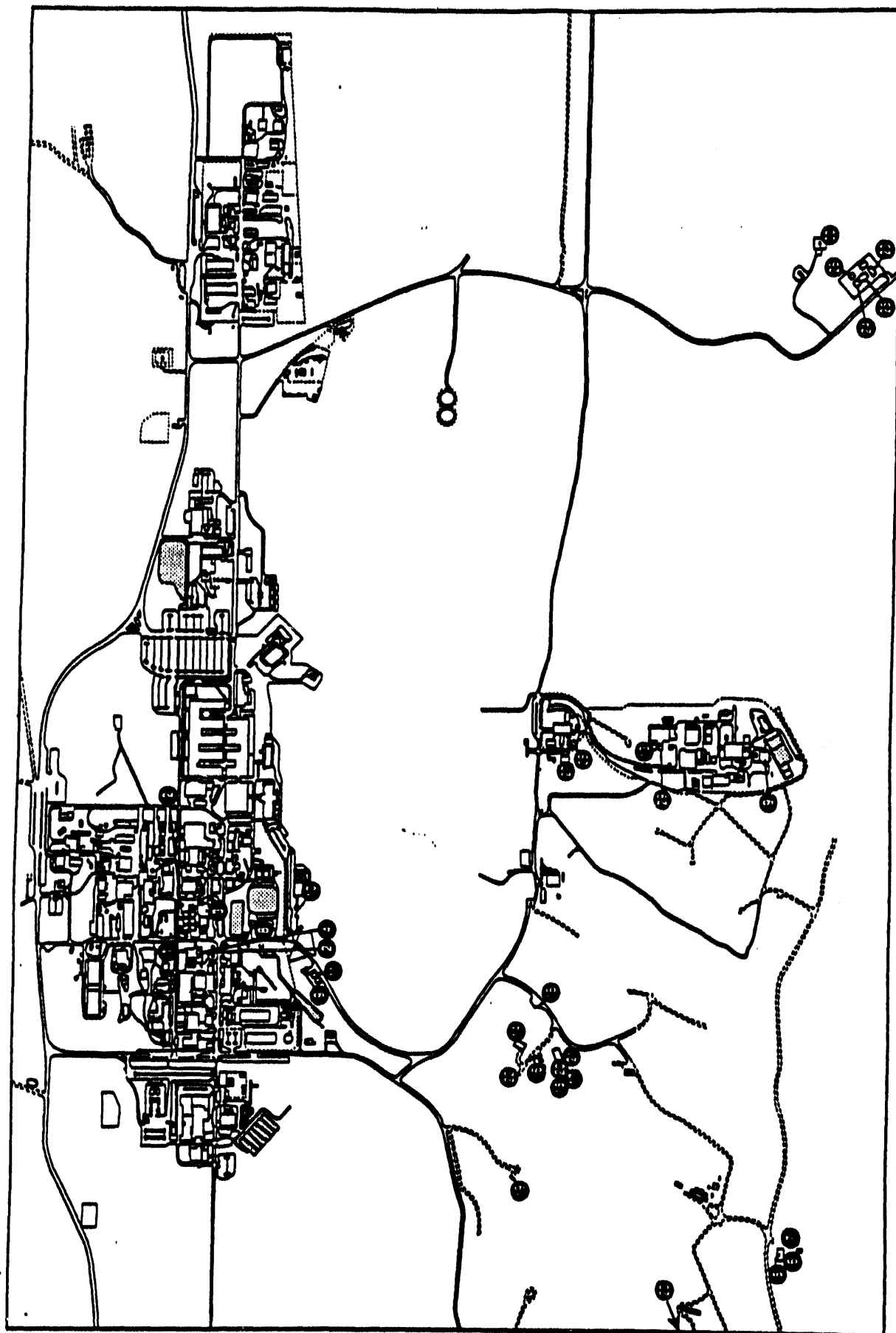
- 7 West Tank Farm - mixed sludge
- 8 Uranium Oxide Storage Vault - low-level, solid depleted uranium oxide
- 9 UCRM Sludge and Storage Facility - hazardous, PCB interim storage of drums before offsite disposal
- 10 Organic Liquid Storage (OD7) - mixed, PCB, liquid
- 11 Waste Oil Solvent Drum Storage - mixed, hazardous, PCB, liquid
- 12 Organic Liquid Storage Area (ODA) - mixed, hazardous, PCB, liquid
- 13 Organic Liquid Storage Area (ODA) - waste oil, recyclables, hazardous, liquid

STORAGE (continued)

- 14 Contaminated Waste Storage Area - solid mixed
- 15 Classified Waste Storage Area - low-level, mixed, solid
- 16 PCB Waste Storage - PCB, mercury, mixed uranium contamination
- 17 Mixed/PCB Waste Storage - mixed, PCB
- 18 Interim Drum Yard - hazardous, mixed outdoor gravel pad solvent contaminated debris
- 19 RCRA/PCB Container Storage Area - PCB, solid
- 20 Non-SNM Warehouse - low-level
- 21 Non-Uranium Contaminated Salvage Yard - clean metals, soil not recycle
- 22 Waste Materials Prep. Facility - low-level, solid diversified uranium-contaminated scrap

DISPOSAL

- 23 Bear Creek Burial Ground - low-level, solid
- 24 Sanitary/Industrial Landfill II - solid for ORR
- 25 Industrial Landfill IV - classified waste



ORNL Waste Management Facilities

ORNL Waste Management Facilities

LIQUID LOW LEVEL WASTE

- ① Liquid Waste Collection & Transfer Pipeline - Collection & Monitoring Tanks/Transfer System (hard-piped) Covers system from source generators to Valve Box No. 1
- ② Liquid Waste Bottling & Transfer - Above Ground Transport of LLLW Bottling & Trucking
- ③ Five 50,000-gal. Tanks at Evaporator (C-1, C-2, W-21, @-22, & W-23)
- ④ Evaporator System Process Equipment
- ⑤ Melton Valley Storage Tanks (W-24 through W-31)
- ⑥ LLLW Solidification Facility
- ⑦ New Hydrofracture Facility

PROCESS WASTE/NON-RAD SYSTEM

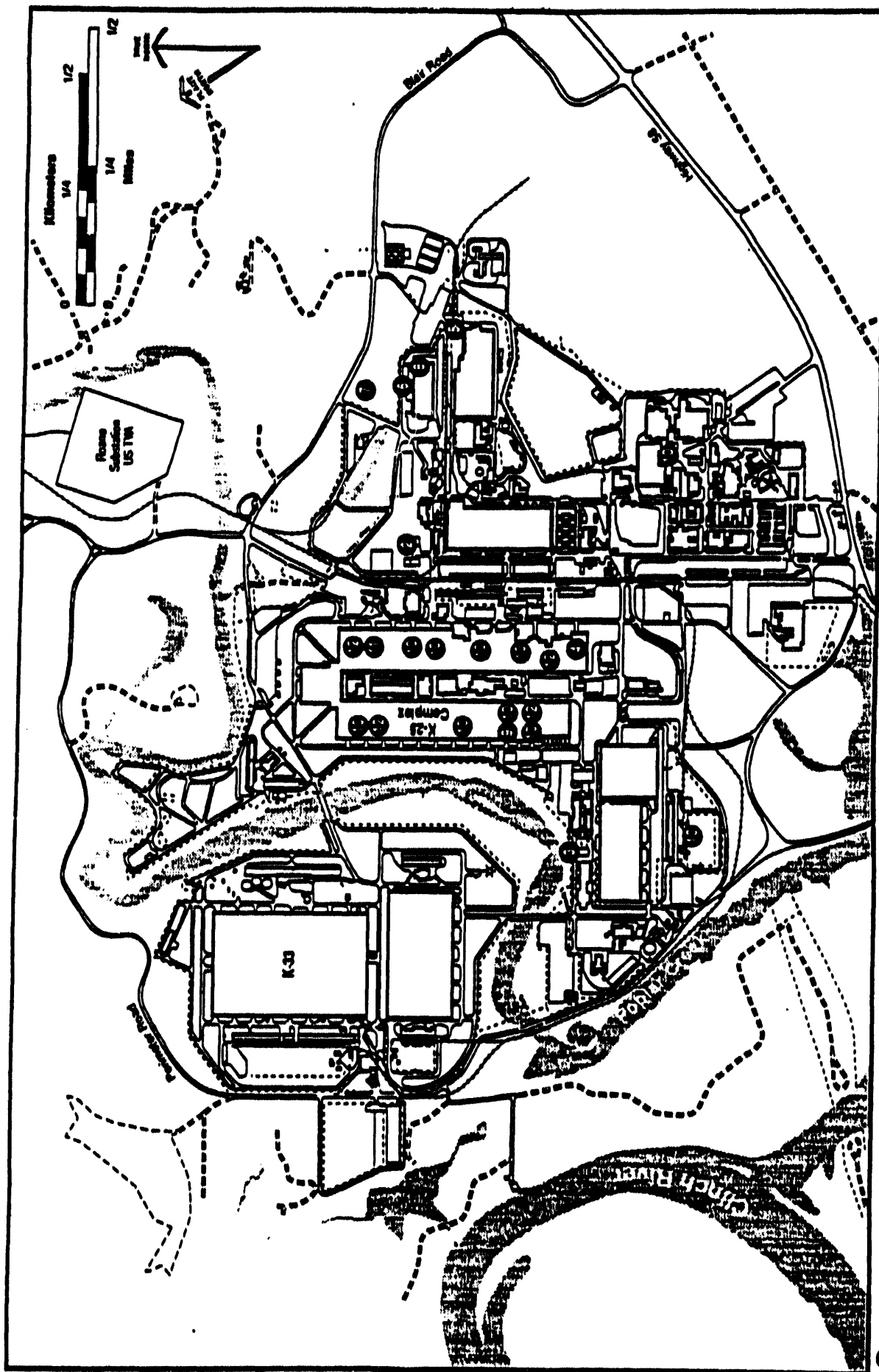
- ⑧ Process Waste Treatment Plant Process Equipment
- ⑨ Six Process Waste Collection Tanks (including New Pumping Station F-4001)
- ⑩ Non-Rad Wastewater Treatment Plant (Building 3608)
- ⑪ Process Waste, Collection & Transfer - Collection, Monitoring, Transfer System Covers system from source generator to new tanks or pump stations

OFF-GAS AND CELL-VENTILATION SYSTEM

- ⑫ 3039 Stack Area

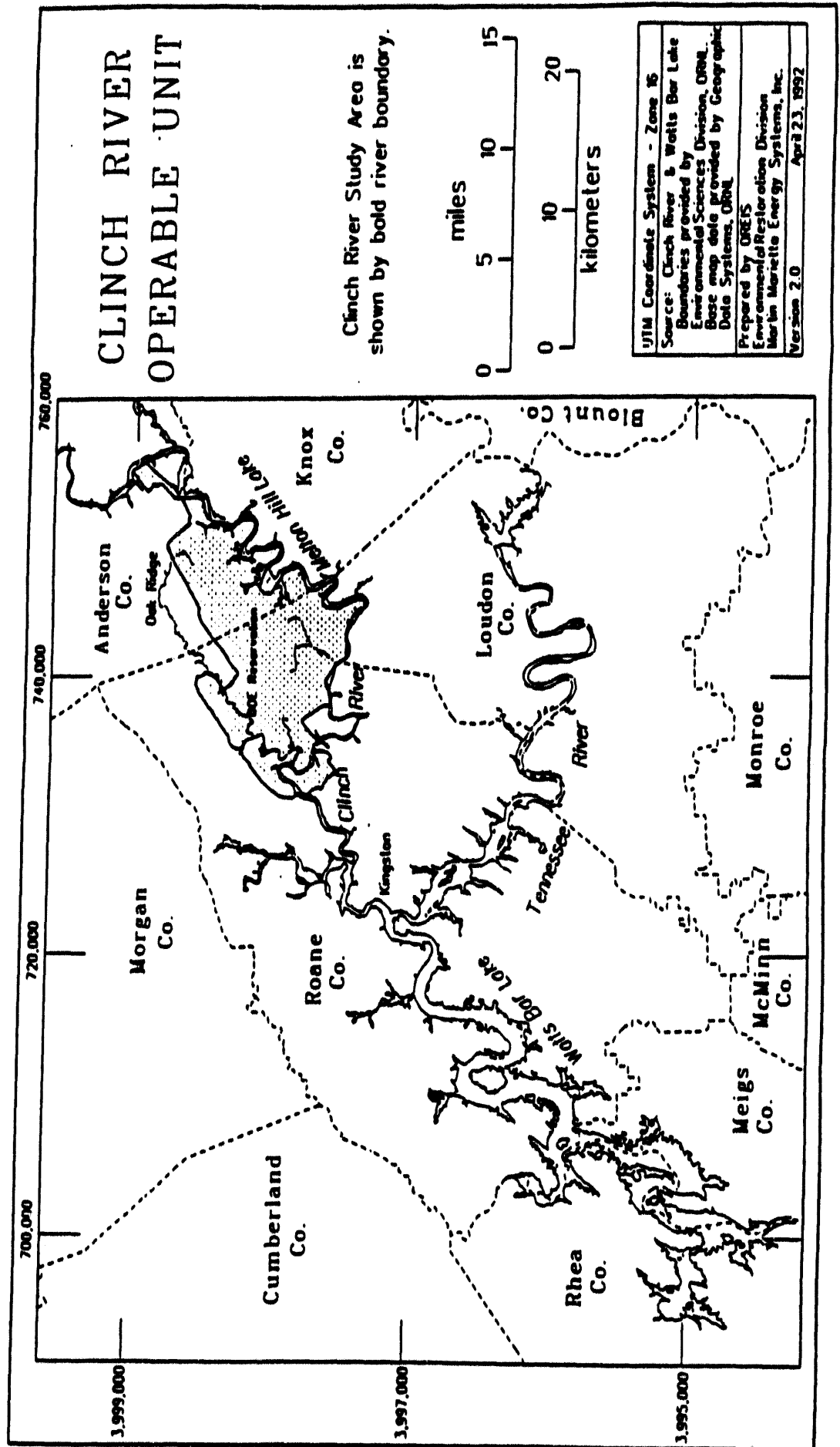
MISCELLANEOUS

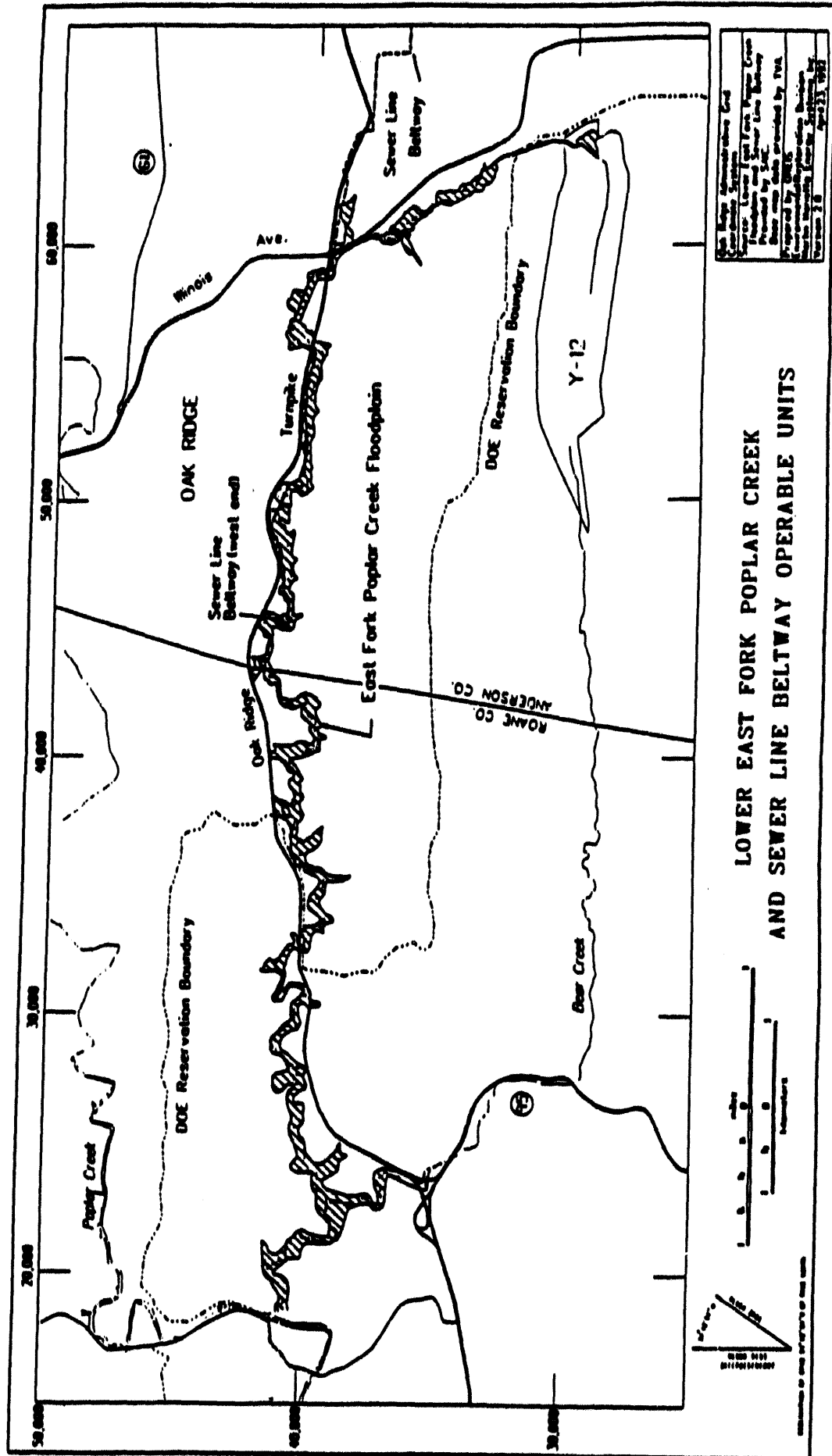
- ⑬ Equipment Cleaning Facility
- ⑭ Underground storage building used for storage of solid LLW and TRU waste
- ⑮ Waste Examination Assay Facility (WEAF) - used for the nondestructive assay of SLLW and TRU
- ⑯ Retrievable Waste Storage Facility for CH-TRU waste
- ⑰ Retrievable storage wells provide retrievable storage of RH-TRU waste, LLW exceeding shallow land disposal limits, fuel elements, or reactor components
- ⑱ Waste Compactor Facility
- ⑲ Contaminated equipment storage area
- ⑳ SWSA 6:
Storage Facility
Tumulus I & II - SLLW disposal facilities
Silo, wells, trenches - SLLW (low range and high range), fissile, asbestos, biological, and suspect waste disposal
SWSA 6 Storage Area
- ㉑ RH-TRU Cast Storage Facility
- ㉒ TRU/LLW Staging Facility
- ㉓ Clean Oil Storage
- ㉔ Hazardous bulk liquids and solids
- ㉕ Lab Pack chemicals, explosives, and water reactive metals and chemicals
- ㉖ Mixed waste
- ㉗ Mixed waste
- ㉘ PCBs
- ㉙ Photographic Waste
- ㉚ Leaking gas cylinder storage Detonation Facility



- | | | |
|----------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------|
| ① Hazardous Waste Storage Building | ⑩ Waste/CR Hazardous Waste/PCB Storage Unit | ⑮ PCB/Hazardous Waste Container Storage Unit |
| ② Gas Cylinder Storage Unit | ⑪ Waste/CR Hazardous Waste/PCB Storage Tanks | ⑯ Hazardous Waste Storage Units |
| ③ Hazardous Waste Treatment Unit, Hazardous Waste Storage Unit | ⑫ Sludge Flotation Unit, Sludge Flotation Unit Storage Tanks | ⑰ PCB Container Storage Units |
| ④ Refractory Lead Storage Wall | ⑬ Concrete Block Casing and Storage Area | ⑱ LIW Storage Sites |
| | ⑭ Flammable Liquid Storage Unit | |

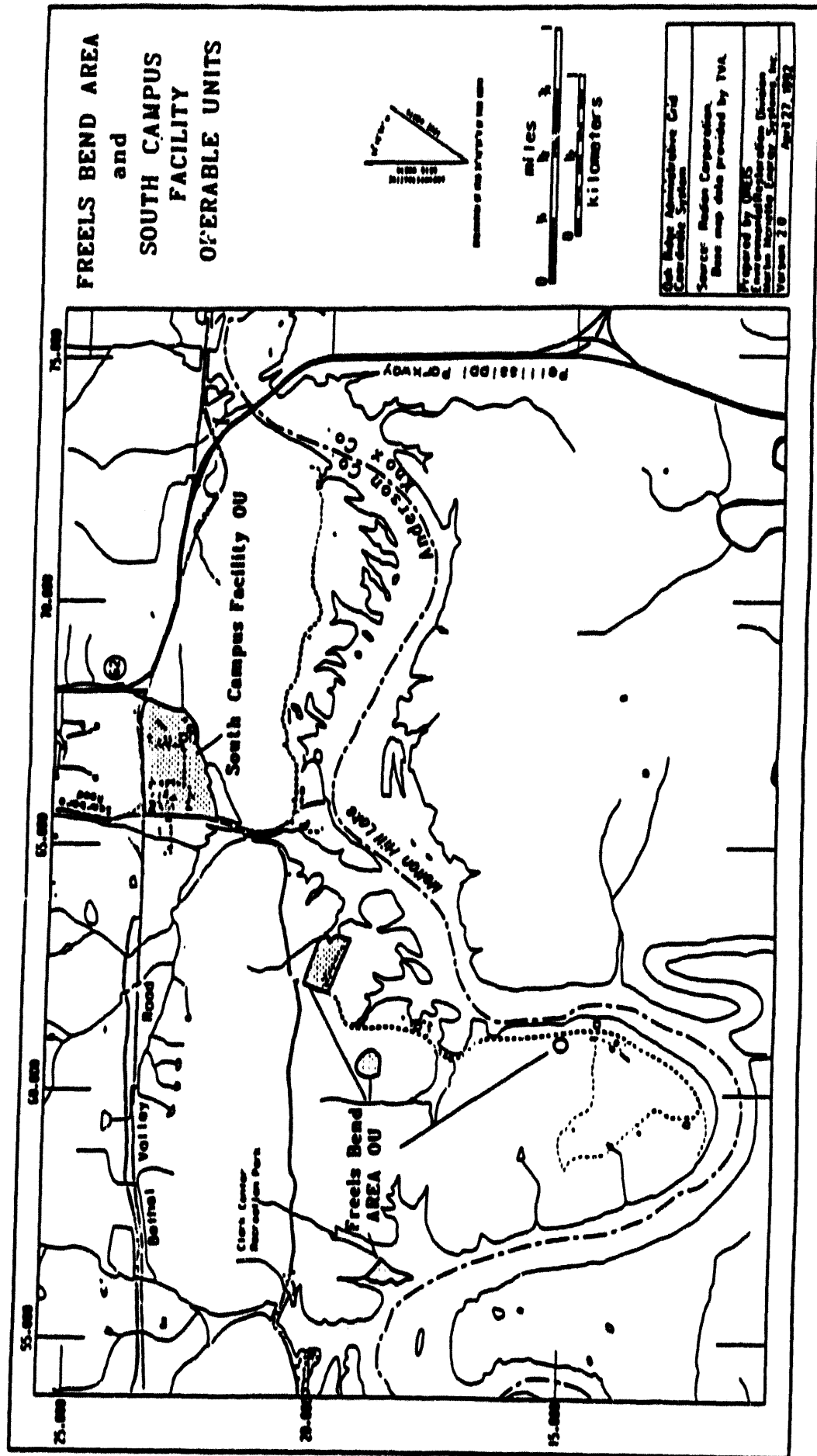
K-25 Waste Management Facilities



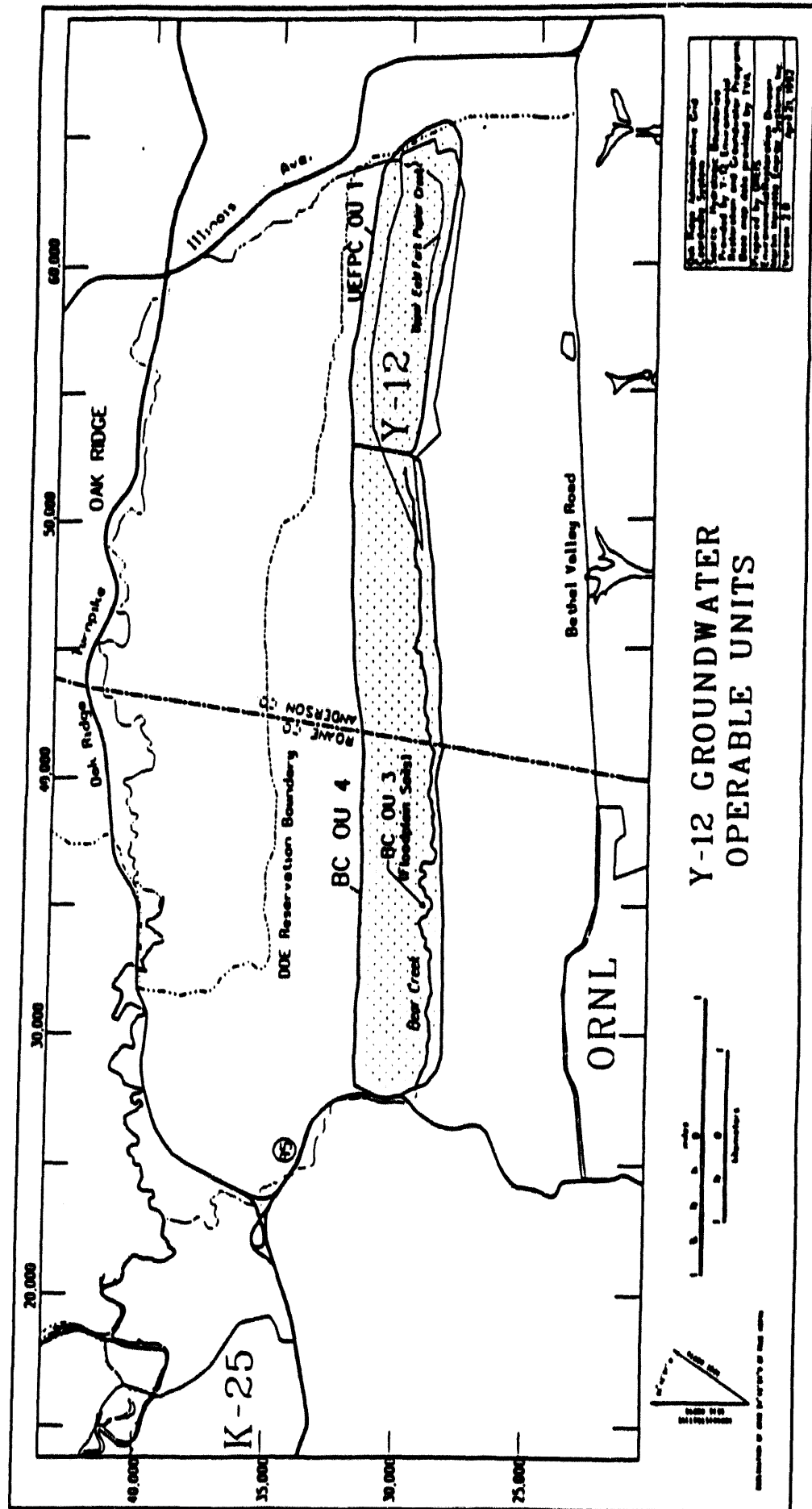


[illegible]

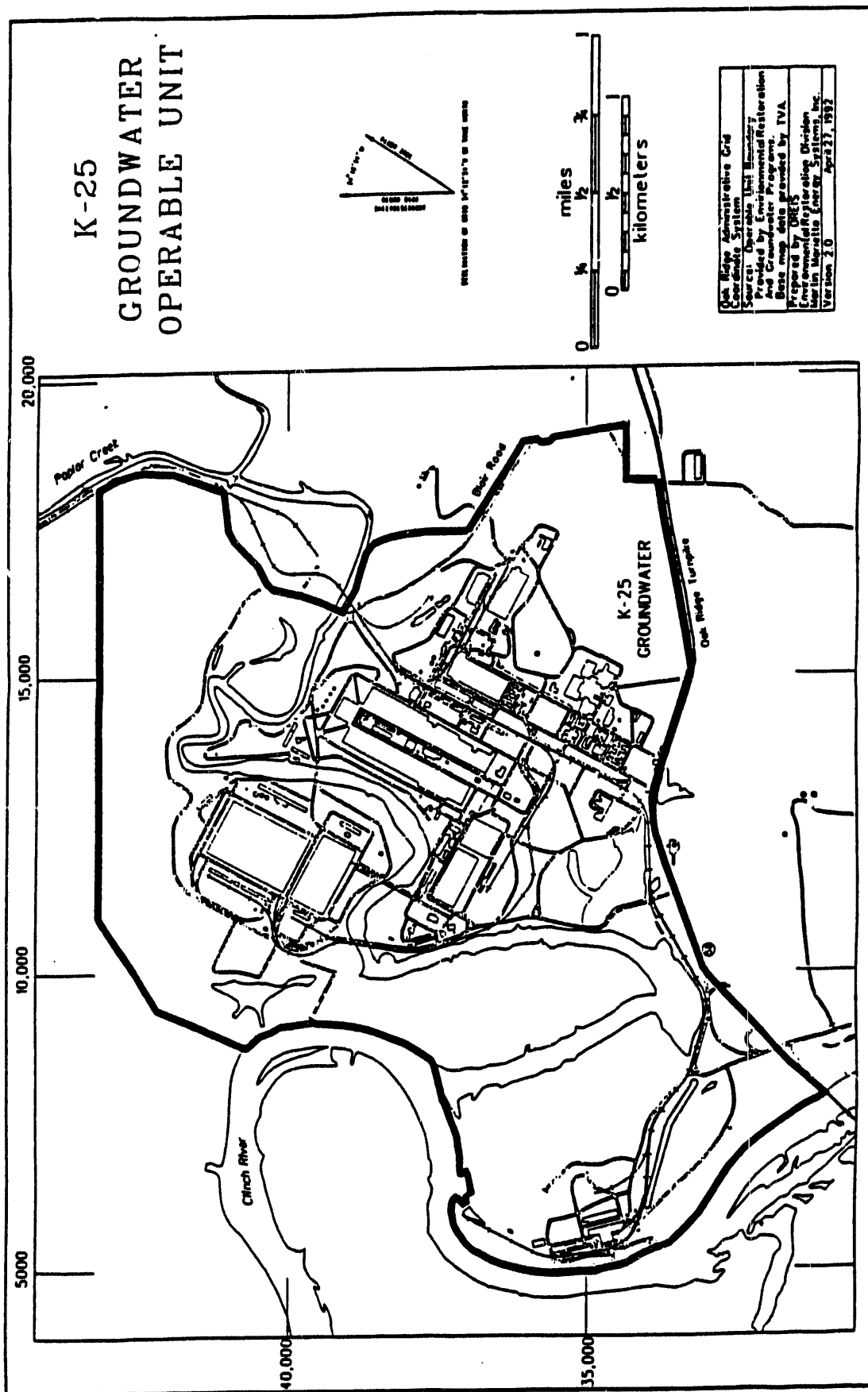
C-9



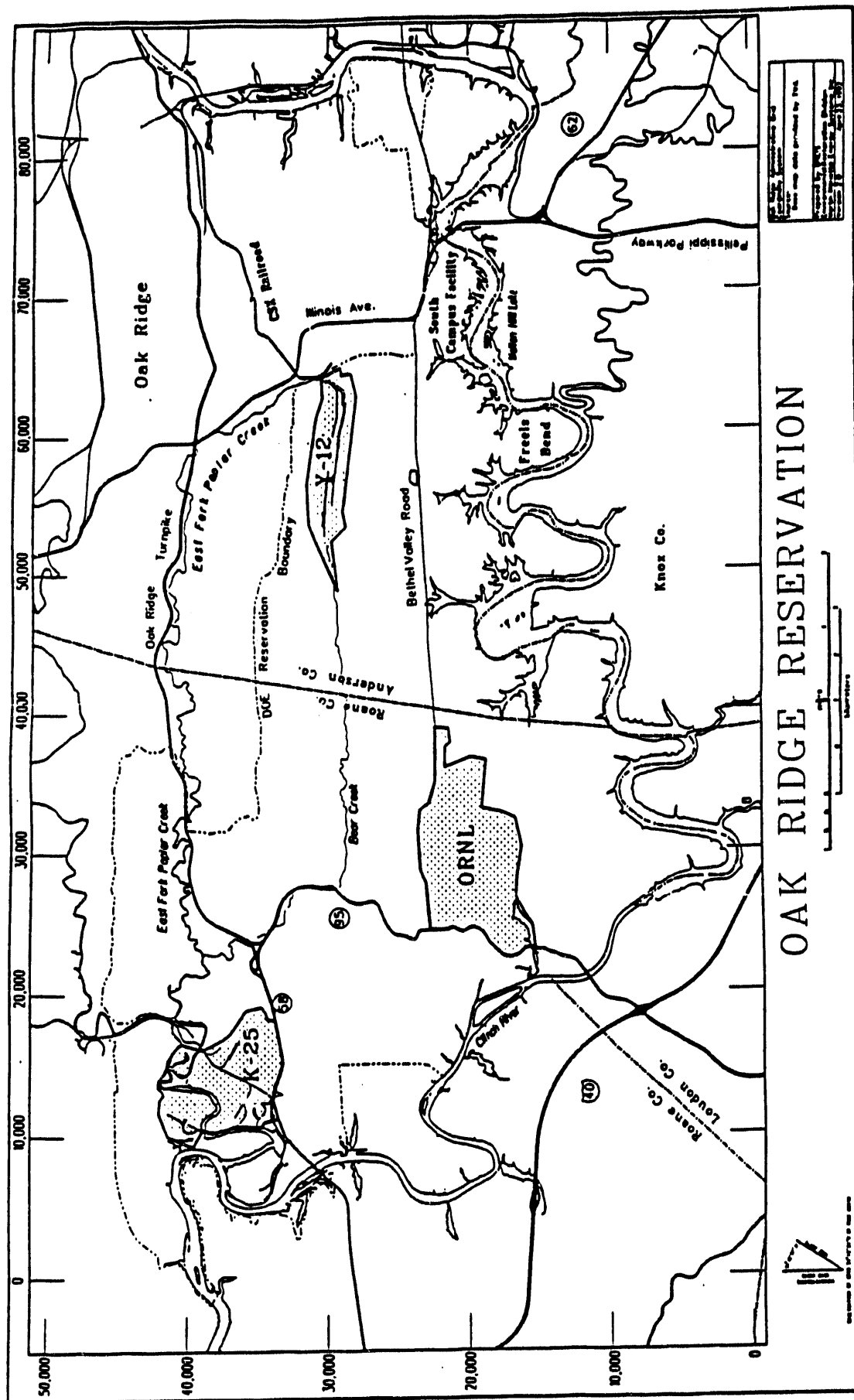
Map showing Freels Bend area and South Campus Facility operable units.



Map showing Y-12 Groundwater Operable Units



Map showing K-25 groundwater operable unit.



Map of Oak Ridge Reservation.

APPENDIX D
PUBLIC COMMENTS AND RESPONSES

Responses to Comments on the Oak Ridge Reservation Site-Specific Plan

Specific Comments

Question 1. "What plans does DOE have for dealing with the X-10 waste ponds that are inhabited by the infamous radioactive frogs?"

Response 1. The X-10 waste ponds are referred to as "WAG 1 Settlement Basins" in Sect. 5.2.3.1.1 on pages 5-23 and 5-24 of the Site Specific Plan (SSP). Long-term plans have been developed to close the ponds under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Interim Corrective Measures (ICMs) are in the planning process and may include draining, filling, and capping the ponds.

Question 2. "There is no description of Technology Development in the Plan as is provided in the DOE 5-year plan. ORO should describe the Technology Development activities planned for the ORR."

Response 2. Technology Development activities are the subject of Chapter 7.0 of the SSP. Perhaps the brief remarks on pages 1-18 and 1-19 should specifically reference the information in Table 1.6 and Chapter 7.0.

Question 3. "An ADS list is not provided for reference, even though the higher tier DOE 5-year plan has a reference ADS list."

Response 3. A listing of ADSs will be provided in future revisions of the plan which will be similar to that provided in Appendix F of the Five-Year Plan.

Question 4. "Sect. 4.2 pages 4-8 to 4-11. The discussion of the LLLW CAT system would make a lot more sense if it included a description of what the CAT system is. It apparently includes tanks and pipelines. Approximately how long is the pipeline? How large are the tanks? What fractions of the system are underground vs above-ground?"

Response 4. The CAT system is a collection of pipes and tanks that collect liquid low-level waste at the point of generation (in an intermediate tank where it is neutralized) and then transfer it to a central evaporator system where the waste is segregated, evaporated, and treated. The radioactive waste is then transferred into storage tanks ranging in size from 1,000 to

50,000 gallons. The doubly contained transfer pipes (i.e., a pipe within a pipe) will range in size from 2 to 6 inches in diameter. The double containment will enhance environmental and safety protection. These projects will include approximately 15,000 lin ft of pipe. Virtually all of the low-level waste collection and transfer system (existing and new) is underground.

Question 5. "Sect. 5.3.3.1.1, page 5-35. Not only is this task, the restabilization and relocation of the drummed waste stored at the K-25 site, poorly described, but it is our understanding that the total cost of this project is \$65 to \$115 million over the next two years. However, it appears that only \$7.6 million is budgeted for this activity in FY 1992; where will the additional money come from?"

Response 5. The description of the work presented in Sect. 5.3.3.1.1 of the plan was outdated and incorrect. The revised summary presented in Attachment 1 should be used to replace it.

Question 6. "Chapter 9. This chapter fails to explain how OR site-specific activities will be evaluated or otherwise affected by the Programmatic EIS being prepared by DOE for nationwide Environmental Restoration (ER) and Waste Management (WM) programs, nor does it indicate whether plans exist for development of an ORR site-wide EIS, which appears to be called for under the new DOE NEPA order. It is also quite clear that it does not describe the full scope of NEPA compliance efforts that are required for the actions described elsewhere in the plan (and often documented elsewhere in the plan), including the NEPA documentation that will be integrated with various CERCLA documents discussed elsewhere."

Response 6. Please refer to Attachment 2 for supplemental information about plans for Environmental Impact Statements (EISs) at the Oak Ridge Reservation (ORR). Chapter 9 of the SSP will be revised to include this information.

Question 7. "Page 2-3. DOE Notice 5400.4 was replaced by DOE Order 5400.4, issued October 6, 1989."

Response 7. Noted.

Question 8. "Page 2-5. DOE Order 5480.14 was replaced by DOE Order 5400.4, issued October 6, 1989."

Response 8. Noted.

Question 9. "EQAB would recommend that outdoor storage of wastes in non-weather-proof

containers be avoided. (See pages 6-6, page 6-11, re: "Above ground storage pads")."

Response 9. It is not intended that low-level radioactive wastes be stored in non-weatherproof containers in the outdoors. When low-level radioactive waste is stored outdoors, the waste will be placed in weather resistant containers.

Above-grade storage pads will be constructed to store low-level radioactive wastes from the Y-12 Plant. These wastes will be placed in Department of Transportation approved containers prior to being delivered to the external storage site on the above-grade storage pads. Metal and/or weatherproof fabric enclosures will be constructed over each of the above-grade storage pads to provide additional weather protection for the containers.

Question 10. "General - A glossary would be helpful for those terms that are not common to the general public."

Response 10. We will consider this for next year's plan.

Question 11. "Page 2-1, fifth paragraph - Reference is made to Tennessee's Hazardous Waste Reduction Act of 1990, which requires 25% reduction of waste generation by 1995. What is DOE's prognosis for attaining this goal?"

Response 11. The ORR sites have adopted the 25% goal to reduce the aggregate level of hazardous waste. Facility waste reduction plans have been produced and are on file at the sites. These plans outline each facility's active waste minimization programs. As waste minimization continues to gain attention and funding, support program projects will mature. The prognosis is, therefore, that the ORR sites will meet the state's reduction goal of 25% by 1995.

Question 12. "Page 2-6 through 2-8 - Numerous Federal and State agreements and State orders are summarized. It would be helpful to show the status of the activities in tabular form."

Response 12. We will consider this addition for next year's plan.

Question 13. "Page 5-2, Sect. 5.2.3.1.2 and Page 5-29, Sect. 5.2.3.3.2 - Reference is made to interim corrective measures which indicate future actions will be required. Would it not be preferable, from an environmental and cost perspective, to use

permanent corrective actions? In addition, in site vitrification (ISV), see Sect. 5.2.3.1.2, technology would seem to be permanent."

Response 13. Sect. 5.2.3.1:1 on page 5-24 of the SSP indicates that the purpose of the ICM is to contain, remove, or treat the contamination to reduce the potential risk to humans and/or the environment until such time as final remediation can be implemented. With no constraints, it is preferable to initially implement final site remediation. However, this is often not possible because of various considerations, including fiscal constraints, remediation sequencing and priorities, interaction between sites, lack of suitable technology, and other issues.

While the ISV process does yield a permanent result in the form of the fused material, the contaminants are still present. The ISV technology provides a stable waste form that could remain in place or be excavated for further disposal as required by the final site remediation plan. In some cases, ISV as a pretreatment process may also expedite removal and/or reduce the risk of handling the material during the final remediation.

Question 14. "Page 5-3, Sect. 5.3.3.2.1 - Why are funds not available to remediate underground petroleum storage tanks to avoid being in noncompliance? Funding should not be an issue."

Response 14. The text in this section of the SSP is incorrect. The activity for remediating the K-1414 tank is funded, and field activities are scheduled to begin in FY 1992.

Question 15. "Page 6-6, Sect. 6.1.1.5 Page 6-11, first paragraph and page 6-14, second paragraph. Will the above-grade storage pads be covered or enclosed for protection from the weather, and if not, why?"

Response 15. Metal and/or weatherproof fabric enclosures will be constructed over each of the above-grade storage pads.

Question 16. "Page 6-7, second paragraph - What is meant by " ...transferred to landlord...?" Has biomonitoring ceased?"

Response 16. The reference to Landlord means that the work is funded by the general funding program for the Y-12 Plant and not by the Waste Management Program. Biomonitoring of Bear Creek and East Fork Poplar Creek, as required, will continue.

Question 17. "Page 6-7, Sect. 6.1.2.1 - Explain why only " ...waste minimization activities have

been carried out as funding and resources have permitted...?" with the apparent waste minimization success thus far, it would seem funding would be a priority to reduce capital expenditures for treatment, storage, and disposal activities and having less environmental impact. The second paragraph on page 6-26 further alludes to reduced risks, long-term costs and liabilities with waste reduction. In conclusion, waste minimization funding levels for Y-12, ORNL, and K-25 should be increased."

Response 17. The funding referenced in this item is for waste minimization program planning and consideration by the Y-12 Waste Minimization Implementation Manager. Funding for implementing waste minimization projects is from a different source.

There has been a renewed commitment to achieving waste minimization at Y-12. This is evident in the attention and higher priority and participation in related activities throughout the facility. For example, requests for additional personnel to support the Implementation Manager's staff are approved and the recruitment process is under way to fill the positions. In addition, waste minimization and pollution prevention are priority considerations in planning for new, or modification of existing, processes.

We recognize that our waste minimization program goals can only be achieved by a successful blending of new technologies with administrative and cultural changes throughout the plant. Our expectations are high, and we believe that we are on the right track.

Question 18. "Page 6-18, second paragraph - What is function of the Environmental Support Facility?"

Response 18. The Environmental Support Facility is a multipurpose building that will provide environmentally protected and controlled facilities for tanker equipment maintenance and transfer of tanker contents. The building will also include office facilities for professional, technical, and support staff of the Plant Waste Management Division.

Question 19. "Page 6-21, first paragraph - Why will there only be "minimal funds" in FY 1992 for waste minimization? See comment 10 above."

Response 19. Although not fully funded at requested levels, waste minimization/reduction continues to be a vital part of the Oak Ridge National Laboratory's program. Significant progress has been made in recycling paper, cardboard, and aluminum cans,

thereby diverting these recoverable materials from disposal in the sanitary landfill. Additional actions to identify and implement waste reduction measures are being pursued.

Question 20. "Page 6-38, second paragraph and page 6-40, second paragraph - Why is it necessary to wait until the FFA is signed until known leaking systems are removed from service? It would seem more responsible to proceed now to preclude further environmental damage."

Response 20. The Federal Facility Agreement's (FFA) definition of leaking includes inleakage (i.e., groundwater leaking into the low-level waste system) as well as outleakage. The tanks that were not to be taken out of service until the FFA was signed were operated under negative pressure (i.e., a vacuum) which prevented the contents from leaking to the environment. These tanks were not judged to present an environmental risk.

The FFA was signed in November by DOE, the state of Tennessee, and the U.S. Environmental Protection Agency, and became effective January 1, 1992. At this time, ALL leaking tanks have been taken out of service.

Question 21. "Page 6-40, first paragraph - Why isn't FY 1992 funding being provided for WCCF? In the third paragraph on page 6-37, it basically says WCCF is needed to for: meeting ALARA requirements; waste characterization and certification; and, for proper waste handling."

Response 21. In the overall prioritization of DOE projects, the WCCF was low enough so as not to receive FY 1991 funding. Martin Marietta Energy Systems, Inc., is providing justification of the WCCF to DOE in FY 1992 in hopes of a new project start.

Question 22. "Page 6-55, first paragraph - From the discussion, it appears the LLW facilities will not be ready when needed. How will the LLW be managed? New LLRW facilities ought to have higher priority if we are to avoid future waste management crises."

Response 22. Low Level Waste will continue to be stored on site until the Line Item disposal projects are funded and implemented. Initial funding is currently scheduled for FY 1995.

Question 23. "Page 12-1, fifth paragraph - Oak Ridge Environmental Quality Assurance Board should be the Oak Ridge Environmental Quality Advisory Board."

Response 23. **Noted.**

Question 24. **"Page 6-48, second paragraph - Efforts should be made to obtain needed funding for waste minimization activities (see comments 10 and 12, above)."**

Response 24. **Funding for waste minimization activities has been pursued and obtained for the activities described in the SSP. Funding has been provided, and these important activities are being done.**

Waste Minimization activities are currently being performed as part of "Continuity of Operations" at each of the three Oak Ridge facilities. In the FY 1994 five year planning submission, waste minimization planning is broken out as a discrete program element. Implementation will continue to be accomplished through the site programs.

Question 25. **"Page 6-9, Sect. 6.1.3, Page 6-27, Sect. 6.2.3, and Page 6-69, Sect. 6.3.3. - Has any consideration been made to reuse treated wastewater rather than discharging it? It seems if the wastewater is acceptable for discharge, it would be acceptable for reuse in the many operations at the complexes."**

Response 25. **Yes, alternative uses for treated wastewater are considered and implemented where practicable. For example, a considerable portion of the Plating Rinsewater Treatment Facility (PRTF) effluent is used as dilution water and/or rinse water in the Central Pollution Control Facility (CPCF). While this water is eventually discharged as CPCF effluent, it does reduce the total PRTF effluent to the creek. Reuse of the PRTF effluent results in a considerable reduction in the use of potable water in the CPCF operation that would otherwise be necessary.**

In general, the effluents of the CPCF and the West End Treatment Facility (WETF) have a level of total dissolved solids (TDS) that is too high for most water uses in the Y-12 Plant. Additionally, the waste treatment facilities, especially the WETF, are located too far away from the facilities in the plant which might have a use for the recycled effluent water. The cost of TDS removal and piping the water back to the user facilities makes effluent reuse impractical at this time.

The Waste Coolant Processing Facility (WCPF) mentioned in Sect. 6.1.3 does not have an effluent that is suitable for reuse. The only treatment provided by the WCPF is biological destruction of the organic coolants in the wastewaters processed there. The effluent from this facility requires further processing at the CPCF or the WETF, as appropriate, for

heavy metal removal. The WCPF effluent water is, then, suitable for reuse only as an effluent from either the CPCF or the WETF, discussed above.

Question 26.

"Page 5-6 through 5-14 - Upper East Fork Poplar Creek, East Fork Poplar Creek, Bear Creek Burial Ground, activities are being delayed or postponed. Additional efforts need to be made to get these activities on track to meet the original schedule. In general, there appear to be delays in the implementation of projects. DOE should provide explanation for significant delays."

Response 26.

DOE developed and implemented a system to prioritize all sites nationwide that are awaiting funding for assessment and remediation under this program. This prioritization system evaluated maximum and zero funding scenarios as well as multiple intermediate cases. Prioritization of the sites included assessment of health and ecological risk, impacts on communities, future cost impacts, regulatory concerns, and other issues. The results of the national prioritization system is the "validated target level" (VTL) addressed on pages 5-6 through 5-14. Project delays discussed on those pages are those that result from the reduction in monies to be received from an unconstrained funding level to those levels that resulted from the prioritization. The initial unconstrained funding level was the first step in allocating finite resources to the ER projects nationwide. We have not received full program planning funding and are, therefore, unable to proceed at the associated pace.

Question 27.

"Why is there a reduction in funding from previous 5 year projections? For example, in waste management,

	<u>1991</u>	<u>1992</u>
1991 5 Year plan	137M	456M
1992 5 Year plan	148M	236M"

Response 27.

In the document referred to as the "1991 5 Year plan," the funding level shown for FY 1992 is that level needed to satisfy known requirements. The "1992 5 Year plan" presents approved (by DOE Headquarters) funding for FY 1992 rather than what was requested or anticipated to be needed. In determining the best way to distribute available monies in its national programs, DOE must often allocate less funding for some site-specific programs than is desired in order to maximize its efforts and progress on its most pressing problems.

Attachment 1

5.3.3.1 Management of the K-1047-B and -C Ponds waste at the Oak Ridge K-25 Site.

5.3.3.1.1 **Description:** It is planned to correct regulatory noncompliances associated with the handling of solidified and untreated sludge resulting from the closure activities of the K-1047-B and -C ponds at the Oak Ridge K-25 Site. The sludge is stored in approximately 77,000 mild steel drums in the K-1417 drum storage yards, K-25 Building storage vaults, and in tanks at the K-1419 sludge treatment facility (STF). The drums and tanks contain listed P006 waste and radioactive constituents, making them a mixed hazardous waste for which no disposal options are currently available.

The plan for the remediation effort is to dewater the raw sludge and repackage it into new containers, decant the water from the drums of stabilized sludge and repair the deteriorated drums or overpack them as necessary, and then move all the drums into existing or new storage facilities. This plan of action protects human health and the environment, complies with applicable or relevant and appropriate requirements, and addresses RCRA regulatory requirements.

More detailed information on this activity can be found in the documents entitled, "Plan for the Management of K-1047-B and -C Ponds Waste at the Oak Ridge K-25 Site," K/PW-6, Martin Marietta Energy Systems, Inc., August 16, 1991.

5.3.3.1.2 **Resources:** Standard industrial equipment and processes are generally expected to be sufficient.

5.3.3.1.3. **Schedule:** The current plan calls for the improved storage phase of the dewatered sludge and decanted drums of stabilized sludge to be completed in February 1993.

5.3.3.1.4. **Funding:**

Table 5.3-5 ER Remediation (Sludge Fixation)
Fiscal Year Funding Summary, K-25
(\$000)

	<u>FY 91 (ACT)</u>	<u>FY 92¹</u>
CD	0	1,561
EW	<u>6,345</u>	<u>43,233</u>
TOTAL	<u>6,345</u>	<u>44,794</u>

¹ Reflects carryover plus new funding

Attachment 2

The following major Environmental Impact Statements (EIS) are in preparation by the Department of Energy (DOE).

- Nuclear Weapons Complex Reconfiguration Programmatic EIS (PEIS).

Description of Proposed Action. The PEIS will analyze the environmental consequences of alternative long-term reconfiguration strategies for the nuclear weapons complex and weigh these against the consequences of maintaining the existing configuration.

Status. Decision to prepare PEIS announced on January 12, 1990; Notice of Intent was issued February 11, 1991 (56 FR 5590).

- Environmental Restoration (ER) and Waste Management (WM) Programmatic EIS (PEIS).

Description of Proposed Action. The proposed action is to develop and implement an integrated ER and WM program to provide a broad, systematic approach to addressing cleanup activities, waste management practices, and their cumulative effects. It will address major DOE-wide policy issues such as regional vs. decentralized treatment, storage, and disposal; long-term land-usability; cleanup priorities; alternative technology development approaches.

Status. In preparation by DOE HQ; decision to prepare PEIS announced on January 12, 1990; Notice of Intent was issued October 22, 1990 (55 FR 42633); scoping meetings being held at 23 locations nationwide; scoping period ended February 19, 1991.

- Environmental Restoration and Waste Management EIS for the Oak Ridge Reservation (ORR)

Description of Proposed Action. The proposed action focuses on ER & WM activities and assesses the environmental impacts of alternative approaches to implementing an integrated ER and WM program on the ORR. Decontamination and Decommissioning (D&D) actions are also part of this EIS. The EIS will address individual and cumulative impacts of sizing, constructing, and operating treatment, storage, and disposal facilities, plus cumulative impacts of cleanup actions and D&D actions at DOE sites.

Status. Notice of Intent is being reviewed by HQ and is scheduled to be published in early 1992.

Attachment 2 (continued)

- **Waste Management Waste Disposal EIS**

Description of Proposed Action. The proposed action is to evaluate alternatives for disposal of solid Low Level Waste on the Oak Ridge Reservation. The preferred alternatives being developed are the siting and construction of Class L-I and L-II disposal facilities. The Class L-I facility will provide for disposal in lined trenches consistent with Tennessee state solid waste disposal requirements. The Class L-II facility will utilize Tumulus disposal technology.

Status. The draft EIS is in preparation.

- **Remedial Action Project for East Fork Poplar Creek, Oak Ridge, Tennessee**

Description of Proposed Action. The proposed action is to evaluate alternative remedial actions for the East Fork Poplar Creek to develop a cleanup program pursuant to the objectives of the Comprehensive Environmental Response, Compensation, and Liability Act and the Resource Conservation and Recovery Act.

Status. Notice of Intent published on November 18, 1988 (53 FR 46648); scoping meeting held on December 6, 1988; scoping period ended on December 18, 1988; draft EIS in preparation.

- **Sitewide EIS for ORR**

Description of Proposed Action. The proposed action is to assess environmental impacts of ongoing operations on the ORR. It will assess individual and cumulative impacts of ongoing and proposed site activities at each DOE site and the ORR. With regard to impacts from ER and WM activities, the sitewide EIS will address the cumulative impacts of all reasonably foreseeable cleanup actions at a site and of sizing, siting, constructing, and operating treatment, storage, and disposal facilities to support both cleanup actions and continuing operations. However, the sitewide EIS would include cumulative impacts of the ER and WM and the D&D activities by reference to the ER and WM EIS for the ORR.

Status. It is in the planning phase.

- **Project-level Integrated NEPA/CERCLA Documents: Categorical Exclusions; Integrated Engineering Evaluation/Cost Analysis/Environmental Assessments; Remedial Investigation/Feasibility Study/Environmental Assessments; and Remedial Investigation/Feasibility Study/Environmental Impact Statements.**

Description of Proposed Action. The proposed action will be the assessment of impacts of individual cleanup actions, normally by operable unit. A project-level NEPA document would refer to the sitewide EIS (which will include cumulative impacts for ER and WM activities by tiering from the *ER and WM EIS for the*

ORR) for cumulative impacts; however, when the integrated document precedes a sitewide EIS, potential cumulative impacts of the proposed action would be assessed in relation to sitewide cumulative impacts.

Status. An attempt is made to integrate the processes for each action at ORR. Sometimes the documentation is combined and sometimes it is kept separate, but all processes for reaching decisions are integrated processes. Cumulative impacts will be addressed in these documents. An example of such an integrated document is the *Draft WAG 6 Closure Feasibility Study/Corrective Measures Study/Environmental Assessment (FS/CMS/EA)*.

**DATE
FILMED**

12 / 10 / 93

END

