TENNESSEE OVERSIGHT AGREEMENT
ANNUAL REPORT
MAY 13, 1993 - MAY 12, 1994

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EXECUTIVE SUMMARY

The Tennessee Department of Environment and Conservation's Division of DOE Oversight (the Division) was established to implement the Tennessee Oversight Agreement (TOA) and the Federal Facility Agreement (FFA). Since being established, the Division has added Natural Resource Damage Assessment (NRDA) and Federal Facility Compliance Act (FFCA) activities to its list of responsibilities. The purpose of the TOA is to assure the citizens of Tennessee that their health, safety and environment in and around the Oak Ridge Reservation (ORR) are being protected by the Department of Energy (DOE) through a program of independent monitoring and oversight by the State. The FFA is an agreement between the Tennessee Department of Environment and Conservation (TDEC), the Environmental Protection Agency (EPA) and the Department of Energy (DOE). The general purpose of the FFA is to ensure that the environmental impacts associated with the past activities on the ORR are thoroughly investigated and the appropriate remedial action is taken to protect public health and the environment. The NRDA is a program to allow for the recovery of the cost for environmental resources lost due to pollution. The FFCA is a federal requirement for the DOE to provide the State with a plan for the treatment of its mixed waste inventories. Mixed wastes are those wastes that are both hazardous and radioactive. The State is responsible for reviewing and approving DOE's plan.

This report discusses the activities of the Division in the areas of coordination with other State agencies with regard to environmental restoration, corrective action, and waste management activities on the Oak Ridge Reservation; and the Division's efforts to keep the public informed of those DOE activities that may impact their health and the environment. This report includes the status of the Division's efforts in implementing the TOA. Each Division Program Section provides information concerning the status of its activities. Examples of these activities are listed here by Program. The Administrative Section has been instrumental in achieving access to the ORR without prior notification to DOE and in obtaining documents and environmental, waste management, safety, and health information in a timely manner. The Environmental Restoration Program has provided in-depth document reviews and on-site coordination and monitoring of field activities required under the FFA. Most notable of the activities are the investigations and planned remediation of the Lower East Fork Poplar Creek and the Watts Bar Reservoir. The Waste Management Program has audited DOE's compliance with air, water, solid, hazardous, and mixed waste storage, treatment, and disposal regulations. Effort was focused on all three DOE Facilities on the ORR. Important among these were, at K-25, the Pond Waste Management Project and the TSCA Incinerator; at Y-12, the Bear Creek Burial Grounds and the landfills on Chestnut Ridge; at ORNL, the radioactive waste storage and disposal. Significant effort from the Radiological Monitoring and Compliance Program was centered on DOE's consideration of establishing the long term storage of Spent Nuclear Fuel and Highly Enriched Uranium on the ORR. The Environmental Monitoring and Compliance Program facilitated the planning and execution of the

Division's environmental monitoring efforts and has been active in developing a comprehensive groundwater sampling study to detect the migration of contaminated groundwater off the ORR.

The final portion of this report discusses the Division's findings and recommendations. Most significant of these issues is the Division's request to be an active participant in DOE's prioritization of its TOA commitments. Other issues discussed include long term storage of radioactive waste and the use of environmental restoration funds. A discussion of those findings and recommendations provided in last year's annual report and addressed by DOE are included in this report as well. All documents, logs, files, etc., supporting this report are available for review during routine business hours at the Division's office.

Several of the TOA commitments involve other State Agencies and the Oak Ridge Reservation Local Oversight Committee (LOC). The Tennessee Emergency Management Agency (TEMA) is responsible for the development of an Emergency Response Program in the event an on-site emergency involves the public off ORR. The Tennessee Department of Health's Division of Epidemiology is responsible for the analysis of historical releases from the Oak Ridge Reservation. The LOC's role includes increasing the public's awareness and understandings of the issues involving the DOE operations on the ORR and its environs. Annual reports of these three organizations are on file at the DOE Oversight Division office and are not discussed in this report.

ACRONYMS

ADS -	Activity Data Sheet	BNAE -	base/neutral/acid extractables
AEA -	Atomic Energy Act	BSF -	Bulk Shielding Facility
AES -	Automatic Estimating System	BSR -	Bulk Shielding Reactor
AERO -	Association for Excellence in Reactor Operations	BTX -	benzene, toluene and xylene
AIP -	Agreement in Principal	CA -	Corrective Activities
ALARA -	As Low As Reasonably Achievable	CA&C -	Corrective Action and Compliance
ARAP -	Aquatic Resource Alteration Permit	CCE -	Center for Continuing Education
ARAR -	Applicable or Relevant and Appropriate Requirement	CDC -	Centers for Disease Control
AMERD -	Assistant Manager for Energy Research & Development	CEC -	cation exchange capacity
AMERWM -	Assistant Manager for Environmental Restoration & Waste Management	CERCLA -	Comprehensive Environmental Response, Compensation and Liability Act
ANS -	American Nuclear Society	CFR -	Code of Federal Regulations
ANS -	Advanced Neutron Source	CH -	Contact-Handled
ATSDR -	Agency for Toxic Substances and Disease Registry	CMI -	Corrective Measures Implementation
BAT -	Best Available Technology	CMS -	Corrective Measures Study
BGS -	below ground surface	CPF -	Cancer Potency Factor
BHTV -	borehole televiewer	CR -	Community Relations
BMP -	Best Management Practices	CRDL -	contract-required detection limit
		CRRFI -	Clinch River RCRA Facility I Investigation

CSO -	Criticality Safety Officer	EIS -	Environmental Impact Statement
CSSS -	Contaminated Site Summary Sheets	EM -	electromagnetic
CWA -	Clean Water Act	EM/C -	Environmental Monitoring and Compliance Program
CYRTF -	Coal Yard Runoff Treatment Facility	EPA -	Environmental Protection Agency
DCG -	Derived Concentration Guide	ERWM -	Environmental Restoration and Waste Management
D&D -	Decontamination and Decommissioning	ES&H -	Environmental Safety & Health
Division -	TDEC DOE Oversight Division	EQAB -	Environmental Quality Advisory Board
DMR -	Discharge Monitoring Report	ER -	Environmental Restoration
DOE -	Department of Energy	ERP -	Environmental Restoration Program
DOE/HQ -	Department of Energy, Headquarters	ES&H -	environmental safety and health
DOE-O -	Department of Energy Oversight	ETF -	Engineered Test Facility
DP -	Defense Programs	EWB -	Emergency Waste Basin
DPM -	disintegrations per minute	FFA -	Federal Facilities Agreement
DSF -	Division of Superfund	FFCA -	Federal Facility Compliance Agreement
DQO -	Data Quality Objectives	FFCAAct -	Federal Facilities Compliance Act
EA -	Environmental Assessment	FML -	flexible membrane liner
EAC -	Environmental Advisory Committee	FOF -	Field Operations Facility
EALs -	Emergency Action Levels	FONSI -	Finding of No Significant Impact
ECE -	Environmental Consulting Engineers	FR -	Federal Register
EDT -	Explosives Detonation Trench	FS -	Feasibility Study
EFPC -	East Fork Poplar Creek	FSP -	Field Sampling Plan

FY -	Fiscal Year	ISV -	in situ vitrification
GC -	gas chromatograph	IWC -	Instream Waste Concentration
GM -	Geiger-Mueller	IWMF -	Interim Waste Management Facilities
HAZMAT -	Hazardous Materials	LAN -	Local Area Network
HAZWRAP -	Hazardous Waste Remedial Actions Program	LDR -	land disposal restriction
HCTF -	Hill Cut Test Facility	LEL -	lower explosive limit
HDPE -	high density polyethylene	LITR -	Low-Intensity Test Reactor
HELP -	Hydrologic Evaluation of Landfill Performance	LLW -	liquid low-level waste
HEPA -	high efficiency particulate air (filter)	LLW -	Low-Level Waste
HFIR -	High Flux Isotope Reactor	LOC -	Oak Ridge Reservation Local Oversight Committee
HPRR -	Health Physics Research Reactor	LSU -	large-scale unit
HRS -	Hazard Ranking System	LWTDS -	Liquid Waste Transfer and Distribution Station
HSP -	Health and Safety Plan	MCL -	Maximum Contaminant Level
HSWA -	Hazardous and Solid Waste Amendments	MCLG -	Maximum Contaminant Level Goal
IAG -	Interagency Agreement	MDA -	minimum detectable activity
ICAP -	inductively coupled argon plasma	MDL -	method detection limit
ICM -	Interim Corrective Measure	MMES -	Martin Marietta Energy Systems
IDLR -	Immediately Dangerous to Life & Health	M&O -	Management and Operating contractor
INEL -	Idaho National Engineering Laboratory	MOU -	Memorandum of Understanding
IRC -	Information Resource Center	MSL -	mean sea level
		MTF -	Memorandum to File

NAAQS -	National Ambient Air Quality Standard	ORGDP -	Oak Ridge Gaseous Diffusion Plant
NCP -	National Oil and Hazardous Substances Contingency Plan	ORNL -	Oak Ridge National Laboratory
NEPA -	National Environmental Policy Act	ORO -	Oak Ridge Operations
NESHAPS -	National Emission Standards for Hazardous Air Pollutants	ORR -	Oak Ridge Reservation
NFS -	Nuclear Fuel Services, Inc.	ORRR -	Oak Ridge Research Reactor
NHP -	New Hope Pond	OSHA -	Occupational Safety and Health Administration
NOI -	Notice of Intent	OSWER -	Office of Solid Waste and Emergency Response
NPDES -	National Pollutant Discharge Elimination System	OU -	Operable Unit
NPDWS -	National Primary Drinking Water Standards	OUSD -	Operable Unit Strategy Document
NPL -	National Priority List	PAH -	polyaromatic hydrocarbon
NRC -	Nuclear Regulatory Commission	PARCC -	precision, accuracy, representativeness, completeness and comparability
NRDA -	Natural Resource Damage Assessment	P&A -	Plugging and Abandonment
NRT -	National Response Team	PA/SI -	Preliminary Assessment/Site Inspection
NRWTP -	Non-Radiological Wastewater Treatment Plant	PEIS -	Programmatic Environmental Impact Statement
NTF -	North Tank Farm	PCB -	Polychlorinated Biphenyl
OD -	outside diameter	PMF -	probable maximum flood
O&M -	Operation and Maintenance	ppb/ppm -	Parts per Billion/Parts per Million
O/O -	Owner/Operator	PRAR -	Preliminary Risk Assessment Report
OPM -	Office of Personnel Management	PRP -	Potentially Responsible Party
ORAU -	Oak Ridge Associated Universities		

PSCS -	Preliminary Site Characterization Summary	RH -	Remote-Handled
PSU -	Pilot-Scale Unit	RI -	Remedial Investigation
PVC -	polyvinyl chloride	RI/FS -	Remedial Investigation/ Feasibility Study
PWA -	Process Waste Assessment	RM&O -	Radiological Monitoring and Oversight
PWTP -	Process Wastewater Treatment Plant	ROD -	Record of Decision
QA -	Quality Assurance	SAP -	Sampling and Analysis Plan
QAPP -	Quality Assurance Project Plan	SARA -	Superfund Amendments and Reauthorization Act
QA/QC -	Quality Assurance/Quality Control	SCSR -	Site Characterization Summary Report
RA -	Remedial Action	SCSSAB -	Steering Committee for the Site Specific Advisory Board
RAM -	Radioactive Materials	SDWA -	Safe Drinking Water Act
RAP -	Remedial Action Program	SEG -	Scientific Ecology Group, Inc.
RCRA -	Resource Conservation and Recovery Act	SI -	Site Inspection
RD -	Remedial Design	SIA -	structural integrity assessment
R&D -	Research and Development	SITE -	Superfund Innovative Technology Evaluation
RD&D -	Research, Development and Demonstration	SLB -	Shallow Land Burial
RDDT&E -	Research, Development, Demonstration, Testing and Evaluation	SOW -	Statement of Work
RD/RA -	Remedial Design/Remedial Action	SQL -	sample quantitation limit
RFA -	RCRA Facility Assessment	SR -	State Route
RfD -	Reference Dose	SRP -	Savannah River Plant
RFI -	RCRA Facility Investigation	SSAB -	Site Specific Advisory Board
		SSP -	Site Specific Plan

STF -	South Tank Farm	TRM -	total recoverable metals
STP -	Sewage Treatment Plant	TRU -	Transuranic
SVOC -	Semivolatile Organic Contaminants	TSCA -	Toxic Substances Control Act
SWMU -	Solid Waste Management Unit	TSD -	Treatment, Storage, and Disposal
SWSA -	Solid Waste Storage Area	TSF -	Tower Shielding Facility
TAG -	Technical Assistance Grant	TSR II -	Tower Shielding Reactor II
TAL -	Target Analyte List	TSS -	total suspended solids
TBC -	To Be Considered	SWMA -	Tennessee Solid Waste Management Act
TCA -	Tennessee Code Annotated	TVA -	Tennessee Valley Authority
TCE -	Trichloroethylene	TWRA -	Tennessee Wildlife Resources Agency
TCL -	Target Compound List	UCC -	Union Carbide Corporation
TCMP -	Toxicity Control and monitoring program	UEFPC -	Upper East Fork Poplar Creek
TDEC -	Tennessee Department of Environment and Conservation	UNC -	United Nuclear Corporation
TDHE -	Tennessee Department of Health and Environment	USCOE -	United States Corps of Engineers
TDS -	total dissolved solids	USGS -	U.S. Geological Survey
TEMA -	Tennessee Emergency Management Agency	USRADS -	Ultrasonic Ranging and Data System
TIC -	tentatively identified compound	UST -	Underground Storage Tank
TKN -	total Kjeldahl nitrogen	VOC -	Volatile Organic Compound
TOA -	Tennessee Oversight Agreement	WAG -	Waste Area Grouping
TOC -	total organic carbon	WETF -	West End Treatment Facility
TOX -	total organic halides	WM -	Waste Management
TRE -	Toxicity Reduction Evaluation	WOC -	White Oak Creek
		WOL -	White Oak Lake

WWTF - Waste Water
Treatment Facility

WQC - Water Quality
Criteria

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1. INTRODUCTION

The Tennessee Department of Environment and Conservation's Division of DOE Oversight (the Division) is located in Oak Ridge, Tennessee. The Division was established to implement the Tennessee Oversight Agreement (TOA) and the Federal Facility Agreement (FFA). Since being established, the Division has added Natural Resource Damage Assessment (NRDA) and Federal Facility Compliance Act (FFCA) activities to its list of responsibilities. The purpose of the TOA is to assure the citizens of Tennessee that their health, safety and environment in and around the Oak Ridge Reservation (ORR) are being protected by the Department of Energy (DOE) through a program of independent monitoring and oversight by the state. The FFA is an agreement between the Tennessee Department of Environment and Conservation (TDEC), the Environmental Protection Agency (EPA) and the Department of Energy (DOE). The general purpose of the FFA is to ensure that the environmental impacts associated with the past activities on the ORR are thoroughly investigated and the appropriate remedial action is taken to protect public health and the environment. The NRDA is a program to allow for the recovery of the cost for environmental resources lost due to pollution. The FFCA is a federal requirement for the DOE to provide the State with a plan for the treating of its mixed waste inventories. Mixed wastes are those wastes that are both hazardous and radioactive. The state is responsible for reviewing and approving DOE's plan.

The Division has established five program sections to implement the TOA. These programs reflect the organizational structure of the TDEC Bureau of Environment Divisions, as well as DOE's Environmental Safety and Health, Waste Management, and Environmental Restoration Programs. The sections are the Administrative, Environmental Restoration, Environmental, Monitoring and Compliance, Waste Management, and Radiological Monitoring and Oversight. In addition to the program sections, the Division has set up an "Advisory Group" to assist it in the coordination of the multimedia concerns on the Oak Ridge Reservation (ORR). The Advisory Group is made up of the Division Directors from the TDEC Divisions of Solid Waste Management, Air Pollution Control, Radiological Health, Water Pollution Control, Drinking Water Supply, Underground Storage Tanks, Superfund, Groundwater, Ecological Services, and Archeology; as well as the Department of Health's Division of Epidemiology and its Environmental Laboratories. An Organizational Chart for the Division is shown on Figure 1. Memoranda of Understanding establishing roles and responsibilities have been achieved with the environmental regulatory divisions of the advisory group divisions and will be established with the remaining divisions within the next year.

Figure 1

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION - DOE OVERSIGHT DIVISION
ORGANIZATIONAL CHART

The Division's responsibilities are outlined in the TOA. These include assuring DOE is in compliance with all environmental regulations; monitoring surface water and on-site discharges; biomonitoring; public drinking water supply monitoring; fish and wildlife monitoring; groundwater monitoring; air quality monitoring; and radiological surveillance. Monitoring efforts extend both on and off the ORR. An important aspect of the radiological monitoring is that it allows the State to inspect, review, and comment on DOE's activities in this area without regulatory authority. DOE is "self regulating" in radiological materials handling, treatment, and disposal. Additional oversight activities involve coordinating with the Tennessee Emergency Management Agency (TEMA) in emergency response and participating in community outreach activities. The TOA provides for numerous commitments throughout its duration. These commitments are listed in Table I. Included in the list is the lead organization responsible for the coordination of the commitment. In addition to the Division Programs, TEMA and the Department of Health's Division of Epidemiology are listed as lead agencies for part of the commitments. The Division of Epidemiology's role includes the analysis of historical releases of toxic and radioactive materials from the ORR in an attempt to reconstruct the contaminant dosage potentially received by off-site populations.

The TOA is funded through a grant from the DOE. Grant funds are also being used to establish contracts with other state and local agencies. The Division acts as a lead agency in each of these contracts. A contract has been established with the Tennessee Wildlife Resources Agency (TWRA) in which TWRA will perform independent monitoring of toxic materials in fish flesh and in sediments from Melton Hill and Watts Bar Reservoirs. A contract was enacted to establish the Oak Ridge Reservation Local Oversight Committee (LOC). This committee includes citizens and representatives of local governments from the city of Oak Ridge and the counties surrounding the ORR and the Watts Bar Reservoir. It is a forum to increase public awareness and understanding of the issues involving the DOE ORR operations and impacts on surrounding communities. A third contract with TEMA provides for the development of an Emergency Response Program. TEMA will coordinate the development of an off-site communication system to support the state and local government needs in the event of an actual ORR emergency response, as well as develop and conduct a public information program to inform the public of the off-site emergency response system.

This report will discuss the activities of the Division in the areas of coordination with other state agencies with regard to environmental restoration, corrective action, and waste management activities on the Oak Ridge Reservation. And the Division's efforts to keep the public informed of those DOE activities that may impact their health and the environment. The report will include the status of the entire Tennessee Oversight Agreement. Each Division's Program Section will provide information concerning the status of its activities. A general status of each TOA commitment assigned to that section is

included in the report. Reports from organizations outside of the Division that are responsible for TOA commitments will be provided as separate reports. The final portion of this report will deal with the Division's findings and recommendations. A discussion of those findings and recommendations provided in last years annual report and addressed by DOE are included in this report as well. All documents, logs, files, etc. supporting this report are available for review during routine business hours at the Division's office.

Table I

Tennessee Oversight Agreement Commitments and Lead Organization May 1994

Commitment	TOA Attachment	Lead Organization
Attachment A: Monitoring		
Monitoring Program	A.1	EM/C
Surface Water Monitoring	A.2	WM
On-site Discharges	A.2.1	WM
Public Drinking Water	A.2.2	EM/C
Fish & Wildlife Monitoring	A.3	EM/C
Groundwater Monitoring	A.4	EM/C
Program Review	A.4.1	EM/C
Program Development	A.4.2	EM/C
Air Quality Monitoring	A.5	WM
System Review	A.5.1	WM
Air Emissions Inventory	A.5.2	WM
Materials Balance Report	A.5.3	WM
Emissions Model	A.5.4	WM
Verification	A.5.5	WM
Radioactivity Surveillance	A.6	RM/O
System Review	A.6.1	RM/O
Sampling and Analysis	A.6.2	RM/O
Environmental Monitoring Program and Report	A.7	EM/C

Commitment	TOA Attachment	Lead Organization
DOE Actions	A.7.1	EM/C
Environmental Monitoring Plan	A.7.1.1	EM/C
Monitoring Data	A.7.1.2	EM/C
Data Base	A.7.1.3	EM/C
State Actions	A.7.2	EM/C
Environmental Monitoring Plan	A.7.2.1	EM/C
Annual Report	A.7.2.2	ADM
Attachment B: Action Items		
Auditing of ORR Facilities	B.1	EM/C
Transportation of Radiological Materials	B.2	TEMA
Operations Notification	B.3	RM/O
Waste Minimization Plan	B.4	WM
Source Reduction & Zero Discharges Study	B.5	WM
Waste & Residue Characterization	B.6	WM
Accelerated Decontamination & Decommissioning	B.7	WM
Specific Oversight Activities	B.8	See Attachment E
Security Clearance	B.9	ADM
Office for the State	B.10	ADM
Document Availability	B.11	ADM
Access for State Inspectors	B.12	ADM
Need-To-Know Policy	B.13	ADM
Site Access Requirements	B.14	ADM
DOE Orders	B.15	ADM
Environmental Monitoring Program	B.16	ADM

Commitment	TOA Attachment	Lead Organization
Hazard Assessment	B.17	TEMA
Information on Hazardous or Radioactive Release	B.18	TEMA
Emergency Notification & Information Management System	B.19	TEMA
Warning System	B.20	TEMA
Emergency Operations Center	B.21	TEMA
Attachment C: Tennessee Action Items		
Coordination & Public Awareness	C.1	ADM
Coordinator for Oak Ridge Environmental Oversight	C.1.1	ADM
Public Relations	C.1.2	ADM
Analysis of Toxic Release	C.1.3	EPI
Emergency Response	C.2	TEMA
Emergency Planning	C.2.1	TEMA
Training	C.2.2	TEMA
Organization	C.2.3	TEMA
Communications	C.2.4	TEMA
Facilities	C.2.5	TEMA
Emergency Response Staff	C.2.6	TEMA
Drills & Exercises	C.2.7	TEMA
Personnel Detection/Protection Equipment	C.2.8	TEMA
Maximum Credible Accident Document Review	C.2.9	TEMA
Radiological Oversight	C.3	RM/O
Areas of Review	C.3.1	RM/O
Federal Facility Agreement Support	C.4	ADM
Out-Of-State Travel	C.5	ADM

Commitment	TOA Attachment	Lead Organization
Attachment D: Grant Instrument Format		
Statement of Grant Objectives	D.1	ADM
Terms & Conditions	D.2	ADM
Financial Assistance Rules	D.2.1	ADM
Stevens Amendment	D.2.2	ADM
Attachment E: Specific Oversight Activities		
US DOE ER and WM Plan (Annually)	E.1	ADM
US DOE ORR Site Specific ER & WM Plan (Annually)	E.2	ADM
US DOE & ORR Applied, Research, Development, Demonstration, Testing & Evaluation Plan(s)	E.3	ADM
US DOE Activity Data Sheets for ORR Site Specific Plan and Prioritization	E.4	ADM
East Fork Poplar Creek ER Schedule & Updates	E.5	ER
Research, Development, Testing & Evaluation Activities for Y-12 Bear Creek Burial Ground Uranium Chip Environmental Restoration	E.6	ER
Research, Development, Testing & Evaluation Work Plan for ORR	E.7	ADM
ORR Waste Management Environmental Impact Statement Schedule	E.8	ADM
Research, Development Testing & Evaluation activities for Strontium 90 (⁹⁰ Sr) and Tritium (³ H) releases into environs	E.9	ER
Inventory & fate of radioactive & mixed waste shipments to and from ORR for reprocessing, treatment, storage and/or disposal	E.10	WM
ORR Mixed Waste Delisting Activities including schedule for treatment, storage, and/or disposal	E.11	WM

Commitment	TOA Attachment	Lead Organization
Y-12 Wastewater Effluent Toxicity CA Plans including production process Research, Development, Demonstration, Testing & Evaluation Activities	E.12	WM
ORR integration of RCRA/FFA groundwater monitoring requirements including Post Closure Permits, Solid Waste Management Units, Waste Area Groupings, and Operable Units	E.13	ER
ORR integration of NPDES/FFA area source pollution assessment & control requirements	E.14	ER/WM
Oak Ridge Gaseous Diffusion Plant Corrective Action for raw sewage bypass during rainfall events aka Sewage Collection Rehabilitation Plan	E.15	WM
ER and WM activities in the Oak Ridge area off the reservation, including but not limited to, Elza Gate and CSX Railroad	E.16	AS ASSIGNED
ORR response to TDC review comments regarding the Site Specific ER & WM Plan (Annually)	E.17	ADM

ADM = Administrative Program, DOE Oversight Division, TDEC

ER = Environmental Restoration Program, DOE Oversight Division, TDEC

EM/C = Environmental Monitoring and Compliance Program, DOE Oversight Division, TDEC

WM = Waste Management Program, DOE Oversight Division, TDEC

RM/O = Radiological Monitoring and Oversight Program, DOE Oversight Division, TDEC

EPI = Division of Epidemiology, Tennessee Department of Health

TEMA = Tennessee Emergency Management Agency

2. ADMINISTRATIVE SECTION

2.A DOE Oversight History

The first negotiation session was held December 1989, in Nashville and chaired for the State by Ben Smith of the Governors Planning Office and Robert Sleeman for DOE.

Other negotiators were:

Roger Jump	DOE
Jennifer Fowler	DOE
Wayne Scharber	State Bureau of Environment
Earl C. Leming	State Bureau of Environment
Michael Mobley	State Bureau of Environment
Roy Pruett	City of Oak Ridge
Sara H. Sell	Environmental Epidemiology
Joe Sanders	State Office of General Council

Negotiations on the Agreement continued until May 13, 1991 when the Tennessee Oversight Agreement (TOA) was signed by Governor and the Commissioner of Environment and Conservation.

2.B Administrative Section

The Administrative Section is divided into the Director's office and the Administrative support section. The Director's office consists of the Director, Assistant Director and Administrative Secretary.

The Administrative support section has an authorized position level of nine positions with six positions filled as of May, 1994. The remaining positions are to be filled during the fall of 1994. A functional organization chart is shown in Figure 2. Over the past year the Division has completed establishing all of the authorized positions (88) that were requested in the original grant proposal. An additional 9,600 square feet was added to the existing building. It includes space for forty staff, and a large conference room. The new space also includes a field lab, storage for field equipment, and housing for computers for the telephone system and a local area network (LAN).

2.C Tennessee Oversight Agreement Commitments

2.C.1 Annual Report; Attachment A.7.2.2

The Division published its first Environmental Monitoring Report on May 10, 1993. The report covered the period of May 1991 through May 1993. This year's Environmental Monitoring Report was released on September 1, 1994 and covered the period of May 10, 1993, to June 1, 1994. This year's report provides an assessment of DOE's environmental monitoring activities and results from the Division's environmental monitoring, surveillance and compliance analysis activities. This year's report also includes the Division's findings of the quality and effectiveness of the DOE

Figure 2

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION - DOE OVERSIGHT DIVISION
ADMINISTRATIVE SERVICES
ORGANIZATIONAL CHART

environmental monitoring, surveillance and compliance programs. Recommendations for improvement are provided as appropriate. DOE's environmental monitoring effort involves the calendar year January through December. The Division will modify its environmental monitoring reporting activities to correspond with this same time period. This will result in the Division publishing an environmental monitoring report for the period of July 1994 to December 1994. All future Division environmental monitoring reports will cover the calendar year January through December.

2.C.2 Specific Oversight Activities; Attachment B.8

This TOA commitment is considered by the state to be dynamic and the use of the TOA Attachment E is a means to assure that DOE and the Division establish and maintain "a regular program of DOE/TDEC contacts to address the resolution of certain environmental activities." As project activities are refined, consolidated, terminated, or completed they will be tracked in Attachment E as closed or reassigned. In a similar manner new activities that cannot be assigned to existing Division programs will be tracked and recommended as additions to Attachment E upon the next TOA renegotiation.

2.C.3 Security Clearances: Attachment B.9

DOE and the Office of Personnel Management (OPM) have made the best effort possible in processing State requests for security clearances. In the last year this division has reduced the number of requests for Q clearances due to the reduction in requirements on the ORR.

2.C.4 Office for the State; Attachment B.10

DOE provided funds within the grant to enable the State to lease adequate office space in the location that is convenient to the Federal Building and the three plant sites. During the last year office space has been doubled to accommodate the additional 52 employees that this division is authorized to hire. The address and telephone numbers are:

Tennessee Department of Environment and Conservation
DOE Oversight Division
761 Emory Valley Road
Oak Ridge TN 37830-7072
(615) 481-0995
Fax: (615) 482-1835

2.C.5 Document Availability; Attachment B.11

This attachment obligates DOE to provide to the state all documents that address safety, the environment and health compliance. Initial problems with the timely submission of documents by DOE to the Division have been alleviated. Procedures are now in place at Y-12 that provide requested documents in an

average of three working days. ORNL and K-25 personnel have verbally indicated that those sites will attempt to meet this time frame as well. This average time includes the review of documents for public release that have not been previously reviewed and reflects a strong commitment on the part of DOE and their contractors. DOE continues to allow state personnel with appropriate clearance to access un-reviewed documents on-site.

2.C.6 Access for State Inspectors; Attachment B.12

Access to the ORR is being granted without prior notification in those areas where the Division's staff have met necessary safety and security requirements. There remains a difficulty in identifying all necessary safety and security requirements for some facilities on the ORR without contacting those facilities directly. The Division continues to seek a central source for all site access requirements. Until this source is available the Division will continue to determine what access requirements are in place on a site-specific basis. The Martin Marietta Energy Systems (MMES) personnel designated as TOA Coordinators continue to be instrumental in achieving site access.

2.C.7 Need To Know Policy; Attachment B.13

DOE provided the Division with a copy of the its current NEED-TO-KNOW SECURITY INFORMATION POLICY on August 7, 1990. This policy is included as part of Division's Office Policy Manual.

2.C.8 Site Access Requirements; Attachment B.14

DOE through MMES Center for Continuing Education (CCE) has provided the Division with the required training courses that allow access to the ORR sites. Over the past year MMES has consolidated all training courses under CCE which has made scheduling training for over 70 employees much easier. One area that the Division and CCE are working on to make scheduling training easier and to prevent access to various areas from expiring at different times is to include all training in a one week period.

2.C.9 DOE Orders; Attachment B.15

DOE has provided the Division with access to all DOE Orders. The Division has established a library of those DOE Orders that are applicable to its activities in environmental restoration, waste management, and environmental monitoring.

2.C.10 Environmental Monitoring Program; Attachment B.16

The TOA obligates DOE to provide resources for environmental monitoring equipment, including, but not limited to installation, maintenance and calibration, necessary to support the Division's environmental monitoring oversight activities. Independent State Environmental Monitoring activities will involve replicating a portion of the environmental sampling that is ongoing at the ORR.

Existing DOE contractor monitoring equipment will be utilized wherever possible. Future sampling needs that require additional environmental monitoring equipment will be identified as they are needed and will be provided to DOE and the public.

2.C.11 Coordination and Public Awareness; Attachment C.1

This section of the TOA requires the State to report annually on its activities in the following areas: Coordination of Oak Ridge Environmental Oversight, (C.1.1); Public Relations (C.1.2); and Analysis of Toxic Releases (C.1.3). Except for the Analysis of Toxic Releases, the Division is incorporating these activities within the separate program sections in this report.

2.C.11.1 Coordinator for Oak Ridge Environmental Oversight; Attachment C.1.1

The Director of the Division has responsibility for coordinating oversight activities with other agencies, including but not limited to, Bureau of Environment Divisions, TDEC Bureaus, Department of Health, TEMA, TWRA, TVA, Department of the Interior, Corps of Engineers, and the USGS, with regard to Environmental Restoration, Corrective Action and Waste Management activities on the ORR. Memoranda of Understanding (MOUs) establishing roles and responsibilities have been developed with many of these organizations by the Division. Other agreements coordinating environmental oversight include the Tennessee Oversight Agreement, the Federal Facility Agreement, and the Watts Bar Interagency Working Group.

2.C.11.2 Public Relations; Attachment C.1.2

The State has a contract with the LOC. The LOC is incorporated as a non-profit organization and is currently composed of the following local officials:

- County Executive of Anderson
- County Executive of Roane
- County Executive of Meigs
- County Executive of Rhea
- Mayor of Oak Ridge
- Member of the Oak Ridge Environmental Quality Advisory Board (EQAB)
- Member of the Roane County Environmental Review Board

The LOC is located at 136 South Illinois Avenue, Suite 208. Telephone number is (615) 483-1333, Fax number is (615) 482-6572. Dr. Amy S. McCabe, was appointed Executive Director, September 1993 replacing Riley Sain who was the first director.

The issue that has occupied the greatest amount of the LOC Director's time during her first nine months, is DOE's proposed creation of a Site Specific Advisory Board (SSAB). The role of the LOC in relationship to this proposed board is unclear at this

time. The activities of the LOC are covered in their annual report which is available from this office or from the LOC office.

2.C.11.3 Analysis of Toxic Releases; Attachment C.1.3

A Health Studies Agreement and contract are in place with the Tennessee Department of Health's Division of Epidemiology to assess the human health risks to off-site populations potentially exposed to toxic and radioactive materials released from past and present DOE Operations on the ORR. This Agreement provides for annual status reports to be provided directly to DOE by the Division of Epidemiology. A copy of the report will be maintained in the Division's office for public review. Additional information concerning the study may be obtained by contacting this office or the Tennessee Department of Health's Division of Epidemiology at 1-800-435-9617.

2.C.12 Federal Facility Agreement Support; Attachment C.4

The TOA requires the State of Tennessee and the DOE to use their best efforts to carry out its obligations under the Federal Facility Agreement (FFA). The general purpose of the FFA is to insure that the environmental impacts associated with past activities at the ORR are thoroughly investigated and the appropriate remedial action is taken to protect the public health and environment. Funding for the FFA is included in the TOA grant provided by DOE. The Division's Environmental Restoration Program will provide a more detailed description of FFA activities in its section of this report.

2.C.13 Out-of-State Travel; Attachment C.5

DOE, through the grant, has provided funding necessary for personnel of this division to travel to meetings in order to meet the obligations of the agreement.

2.C.14 Statement of Grant Objectives: Attachment D.1

Funding has been provided to the State to support the objectives of the environmental oversight and monitoring of the ORR and environs. Funding has also been provided for those activities within the scope of the FFA.

2.C.15 Terms and Conditions; Attachment D.2

2.C.15.1 Financial Assistance Rules; Attachment D.2.1

All financial assistance rules have been provided to the State.

2.C.15.2 Stevens Amendment; Attachment D.2.2

All provisions of this act have been adhered to.

2.C.16 Tennessee Oversight Agreement; Attachment E Specific Administrative Oversight Activities E.1, E.2, E.3, E.4, E.7, E.8, and E.17

E.1 DOE agreed to provide its Environmental Restoration and Waste Management Plan to the state annually in draft form for comments. DOE Headquarters and Oak Ridge Operations no longer produce this document.

E.2 DOE agreed to provide the state with annual Oak Ridge Reservation site specific environmental restoration and waste management (ERWM) plans in draft form for comments. DOE Headquarters and Oak Ridge Operations no longer produce this document.

E.3 DOE agreed to focus resources on the applied research, development, demonstration, testing and evaluation (RDDT&E) of technology development for Environmental Restoration and Waste Management (ERWM). DOE agreed to provide annual plans of this activity. These plans were to be included in the Five (5) Year Plan. DOE Headquarters and Oak Ridge Operations no longer produce this document. RDDT&E activities continue to concentrate on work for others. Additional effort on site specific technology development for ERWM is needed to assure completion of environmental restoration activities and waste management needs on the ORR are met in a timely manner.

E.4 DOE Environmental Management Programs have provided Activity Data Sheets (ADS) for the ORR activities for the Fiscal Years (FY) 1994 and 1995. The Division continues to review and comment on these ADSs in an effort to assist DOE in its prioritization activities.

E.7 A regular program contact between DOE and the Division now exists for the Research, Development, Demonstration, Testing and Evaluation Work planning activities on the Oak Ridge Reservation. This commitment is no longer an annual event.

E.8 DOE provides the Division with a schedule of its Oak Ridge Reservation Waste Management Environmental Impact Statements (EIS). The Division reviews and provides comments for these and all DOE NEPA documents through the Governors State Planning Office which has statewide A-95 Clearing House responsibilities.

E.17 DOE agreed to respond to the State of Tennessee's review comments regarding the annual site-specific environmental restoration and waste management plan. DOE Headquarters and Oak Ridge Operations no longer produce this document.

3. ENVIRONMENTAL RESTORATION PROGRAM

3.A Introduction

The Environmental Restoration (ER) program of the Division is charged with the responsibility of administering those State activities involving the RCRA/CERCLA remedial action program for the Oak Ridge Reservation. To coordinate and facilitate these activities, a Federal Facilities Agreement (FFA) was signed in January 1992 in accordance with Section 120 of CERCLA and Sections 3008(h) and 6001 of RCRA between the DOE, the EPA-Region IV and the Tennessee Department of Environment and Conservation. Each Agency to the tri-party FFA is mandated by agreement to fulfill certain responsibilities.

Principal to the FFA is the responsibility of the State of Tennessee to provide coordination, review and approval of each activity phase of the RCRA/CERCLA process, i.e., Remedial Investigation, Feasibility Study, Records of Decision, Remedial Design, Remedial Action and follow-up evaluations to insure success, continued operation and maintenance following completion of the selected remedial actions. The ER program is responsible by assignment to provide comments to the DOE and to meet obligations as outlined in the schedules set forth within the FFA and to cooperate and coordinate in FFA Project Management, dispute resolution, and project prioritization and scheduling.

3.B Environmental Restoration Program Status

Since the signing of the FFA in January 1992 the Environmental Restoration Program has grown from one employee, the Program Manager, to its present size of 10 employees. The program as organized includes the Manager, Assistant Manager, three section coordinators (Y-12, X-10 and LOW LEVEL WASTE TANKS, K-25) and six technical staff members. Year-four staffing plans will increase the technical review staff by two individuals providing for more timely reviews, more in-depth reviews, and more on-site coordination and monitoring of field activities. Staff turnover within the ER program has been relatively high over the past two program years with the loss of four employees to either other employment or promotions within the Division.

Environmental restoration activities at the ORR are systematically divided by the DOE into four broad categories, i.e., Y-12, X-10, K-25, and Off-site activities. In order to effectively coordinate ER/FFA program activities the Division's ER program has organized its primary staff assignments in accordance with the DOE ER organizational alignment. By mimicking this structure the ER program personnel become competent and knowledgeable with respect to site specific remediation activities, a necessity when dealing with numerous projects running concurrently throughout the ORR. The Division's management recognizes that organizational structure is dynamic and must maintain the flexibility to adjust to changing responsibilities. Figure 3 provides the present ER program

Figure 3

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION - DOE OVERSIGHT DIVISION
ENVIRONMENTAL RESTORATION PROGRAM
ORGANIZATIONAL CHART

organization structure. The entire ER staff has been involved in training activities necessary to their duties and responsibilities on the ORR. Training for all personnel has included General Employee Training, OSHA 40 Hour training, OSHA 8 Hour Refresher Training, Radiation Worker Training and ORR Security Training. In addition certain staff members have attended specific training sessions on Natural Resource Damage Assessment Procedures, Applicable or Relevant and Appropriate Requirement (ARAR) identification, Risk Assessment Procedures and more recently specific training on conducting the Data Quality Objectives scoping process necessary to the ORR CERCLA program.

The ER program manager has been actively involved as Chairman of the Watts Bar Interagency Working Group. This working group is formed by interagency agreement between the State of Tennessee, TVA, USCOE, EPA, and DOE to review proposed permit activities within the Watts Bar Reservoir/Clinch River Area that have the potential of mobilizing contaminants through sediment disturbance activities.

The ER Program is also involved with the Natural Resources Damage Assessment (NRDA) for the Oak Ridge NPL site. A trustee council has been formed between the State of Tennessee, U.S. Department of the Interior, Tennessee Valley Authority and U.S. Department of Energy. The council members are in the process of preparing an interagency agreement to outline trustee responsibility. The formulation of a final agreement has been a much slower process than originally anticipated. The lack of a formal agreement has not prevented continuing cooperation and progress by the designated trustee council. The agreement is presently in the final draft form and should be finalized in the near future.

The NRDA trustee council has recently made formal resolution to the trustees to initiate an Oak Ridge reservation-wide, pre-assessment screening. This activity when initiated will formally began the NRDA process for the Oak Ridge Reservation.

3.C Federal Facility Agreement Status

ER program project activities to meet FFA obligations since May 1993 include the review and comment on 63 individual RCRA\CERCLA documents that represent 21 separate remediation units. Over 100 working group meetings have been held between DOE, DOE contractors, EPA and the ER program in support of the project reviews. In addition to the project-specific working meetings, numerous FFA administration meetings were attended by the ER manager and assistant manager. These meetings primarily focused on FFA modifications, Project prioritization and FFA Appendix E deliverable schedules. Remediation site visits/inspections in support of the FFA were conducted by all members of the ER section. As remedial actions on the ORR increase, site-specific field involvement has become a more important and time consuming element of the FFA involvement.

3.D Tennessee Oversight Agreement Actions Status

3.D.1 Fish and Wildlife Monitoring

Contract activities between the Tennessee Wildlife Resources Agency (TWRA) and the Division have continued as planned. The TWRA has conducted collection and sample preparation for fish tissue analysis at selected locations downstream of the ORR. Two years of fish tissue sample data have now been completed and submitted to the Division by the Tennessee Wildlife Resources Agency. Data packages have been submitted to the DOE and to their M&O contractor Martin Marietta Energy Systems, Inc. (MMES). The data was reviewed by MMES and is being incorporated, as appropriate, into the Clinch River/Watts Bar Reservoir Remedial Investigation report.

The most recent biological monitoring activity has been a mussel survey at selected stations in the Clinch River. This data, when compiled in the near future, will be reported by the TWRA to the Division. The data will be available to the DOE and the public for use in remedial investigations and as a baseline monitoring tool.

3.D.2 East Fork Poplar Creek (EFPC) Schedules and Updates

The EFPC remedial action project activities are continuing on schedule. The Remedial Investigation report and the Feasibility report have been submitted to the FFA parties for review and comment. The initial comments on the draft Feasibility Study were completed and submitted to DOE in June, 1994. Comment resolution was reached and concurrence with the Remedial Investigation Report was issued by the State in August, 1994. The Proposed Plan will be submitted to EPA and the State at the time of the DOE submittal of the Final Feasibility Study Report. The draft of the Record of Decision is scheduled to be submitted to EPA and the State for review in February 1995.

3.D.3 R&D, Testing and Evaluation for the Y-12 Bear Creek Burial Ground Uranium Chip Restoration

Current research and development activities concerning uranium turnings and particles (chips) and other metallic uranium contaminated chips are related to uranium waste minimization. Research and development into remediation of buried chips and uranium transport lysimetry experiments concerning migration in soil and groundwater are not high priorities by the DOE on the Oak Ridge Reservation. Even though plans were written in 1988 (Clapp et. al), lysimetry experiments were not funded. Remote handling and robotics technology and development for removal of buried drums is in the conceptual stage. Robotics and remote handling technology for removal of non-drum-containerized waste from burial grounds is not presently a priority for DOE research and development at the ORR. A mature handling technology may very well be lacking when mature treatment and long term disposal technologies become available.

This issue essentially remains unchanged from the first annual report. Technology aimed specifically at removal and treatment of buried, heterogenous waste on the Oak Ridge Reservation is for all practical purposes non-existent. However, the position of the Division remains that DOE is ultimately responsible for eliminating the present and future threats to the public health and environment from their past waste burial practices on the Oak Ridge Reservation. In this respect the State will continue to urge DOE to expediently move toward the development of adequate economical and safe methods to accomplish that goal.

3.D.4 R&D, Testing and Evaluation for Strontium 90 and Tritium Releases into environs

Cesium 137 and strontium 90 research needs, which have been identified but may not be funded, involve removal or fixation of these radioisotopes in soils and groundwater. Research into practical means of treatment for tritium in water has not been observed except as a coincidence to treatment of other radionuclides. Tritium is a prevalent contaminant which exits burial grounds more readily than particle reactive nuclides like cesium. Staff at ORR involved in fusion experiments however may be exploring methods of removing tritium from water as related to the fusion process. Tritium treatment for remediation technology development is not considered on the research and development priority list by DOE at ORR. Treatment of tritium in water is promising and most likely possible if pursued aggressively.

A demonstration of in-situ vitrification of a radioactively contaminated waste trench at Oak Ridge National Laboratories' WAG 7 is scheduled for FY 1995. This demonstration, if successful, can establish a methodology to immobilize in-situ radionuclides and therefore greatly impede the potential for future migration. This office and the EPA have both concurred with the demonstration project to be carried out on a designated CERCLA operable unit.

The DOE has recently proposed a treatability study to explore the feasibility of sludge removal technologies from the Gunit Tanks CERCLA operable unit at the Oak Ridge National Laboratory. The State of Tennessee and Region IV EPA have agreed to the initiation of the study. A specific proposal is being prepared by the DOE and shall be submitted to the FFA parties for review and approval in the near future.

3.D.5 ORR Integration of RCRA/CERCLA Groundwater Monitoring Requirements for Post Closure Permits, Solid Waste Management Units, Waste Area Groupings and Operable Units

RCRA groundwater monitoring, as required by the RCRA Post Closure Permits, remains a mandated obligation for DOE. In those cases where RCRA monitoring requirements and CERCLA Records of Decision coincide there will be a planned effort to coordinate the two monitoring activities. In certain cases where RCRA closures did not or will not fully address all of the potential CERCLA concerns an attempt at full RCRA/CERCLA coordination will occur. Under the present strategy this will be accomplished by wording the appropriate RCRA permit or Agreed Order in such fashion as to include RCRA monitoring, and in some cases, final closure requirements within the CERCLA Record of Decision. This same strategy will apply to Waste Area Groupings and Solid Waste Management Units where appropriate.

3.D.6 ORR Integration of NPDES/FFA Area Source Pollution Assessment and Control Requirements

The ORR is presently regulated under three separate National Pollution Discharge Elimination System (NPDES) permits. There is therefore a separate permit covering waste-water discharge limits at Y-12, X-10, and K-25 with each permit covering over 100 outfalls at each site. Because the ORR is listed on the National Priorities Listing (NPL) in accordance with CERCLA, the NPDES permits cover only active operational discharges. CERCLA activities are exempt by law from all administrative permitting requirements; however, the law requires compliance with requirements in substance. Integration and coordination efforts between the Division's Waste Management Program (water pollution staff) and ER Program staff insure that CERCLA activities meet all Applicable or Relevant and Appropriate Requirements (ARAR) as required by CERCLA. As a result of this coordination effort, specific emphasis has been placed on certain remediation units to employ CERCLA Removal Actions and/or Interim Actions in order to speed the elimination of active discharges that either do not meet NPDES standards or have a significant potential of exceeding those standards without control or treatment. Examples of this coordination include the SW-31 spring at K-25, the mercury reduction program at Y-12, and the WAG 5 Seeps C & D removal actions at ORNL.

3.D.7 Area off the Reservation, such as Elza Gate and CSX Railroad

Lead responsibilities for those ER/WM activities off the ORR are presently housed in the Division's Radiological Monitoring and Oversight Program. Descriptions of individual off-site activities will be found in Chapter 5 of this report.

4. WASTE MANAGEMENT PROGRAM

4.A Introduction

Since its inception in 1991, the Waste Management organization has grown from three to twenty employees with responsibilities in the areas of air, water, solid, hazardous, and mixed waste. The Waste Management Organization Chart is provided in Figure 4.

In addition to continued training efforts related to the new staff with emphasis added to oversight, plans are to achieve a goal of 50% field time in the next year. In 1993-94, the staff conducted site visits or audits related to the treatment, storage, and/or disposal of waste. Media covered included water, air, solid, hazardous, radioactive and mixed wastes. Sites of focus are:

K-25

- Pond Waste Management Project
- TSCA Incinerator
- Cooling Tower and Powerhouse D&D Project
- Black Oak Ridge Landfill

Y-12

- Bear Creek Burial Grounds and Walk-in Pits RCRA Closure
- West End Treatment Facility
- Off-site Wells in Union Valley
- East Chestnut Ridge Borrow Area
- Landfills on Chestnut Ridge

X-10

- Radioactive Waste Disposal
- WAG 5 Core Drilling
- Cesium Plot Waste Storage
- 3515 Settling Ponds

In October of 1993, the Division received for review and comment the Conceptual Site Treatment Plan (CSTP) under the Federal Facilities Compliance Act (FFCA). Comments were submitted to DOE in January, 1994. In May, the Mixed Waste Inventory Report (MWIR) was received and reviewed. In August, the Division received the draft version of the Draft Site Treatment Plan (DSTP) and expects to receive the DSTP for review and to send comments to DOE by December 1994.

4.B Tennessee Oversight Agreement Commitments

4.B.1 Water Pollution Control Section, Attachment A Sections A.2, A.2.1

The Water Pollution Control Section is responsible for most issues that involve surface waters with major emphasis on monitoring activities related to the National Pollutant Discharge Elimination System (NPDES) permits held by the three sites on the Oak Ridge Reservation (ORR). Many of the tasks the section

Figure 4

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION - DOE OVERSIGHT DIVISION
WASTE MANAGEMENT PROGRAM
ORGANIZATIONAL CHART

undertakes are conducted on a routine basis, such as review of the monthly Discharge Monitoring Reports (DMR), NPDES compliance inspections, and Monthly Operating Reports (MOR); whereas other activities are dealt with as the need arises. The range of "unscheduled" activities includes fish kill and spill response, wetland identification, aquatic resource alteration issues, stormwater evaluations, and other ongoing or new projects that require the sections' input.

Results

During the May 1993 to May 1994 time frame, the section was involved with the following activities:

1. Discharge Monitoring Report reviews were completed each month for all three sites on the ORR. The reports were reviewed for completeness and to ensure that all reported values were within excepted water quality criteria. All non-compliances were reviewed to determine if significant violations had occurred and that they were being properly addressed by the permittee. In addition, loading factors of constituents such as sulfate and mercury discharged by wastewater treatment facilities have been reviewed to determine potential instream effects on receiving stream ecosystems.
2. Additional time has been spent closely reviewing the "report only" data that centers primarily around storm drain outfalls. Storm drain categorization and identifications have been field verified by this section through extensive site walkovers at each of the three plant sites. As a result of these trips, some changes have been made at individual locations. Changes include; modification to parameters monitored, closure of outfalls, identification of new sources and general maintenance to prevent unwanted contamination from entering the storm water system.
3. NPDES compliance inspections were conducted at the three sites during late May, early June, 1994. Each inspection involved evaluation of flow monitoring, general wastewater treatment facility operations, sampling procedures, stormwater and pollution prevention programs, lab analyses and DMR preparation. Effluent and instream samples were collected from each site to assess compliance conditions. A total of thirteen wastewater treatment facilities were inspected and evaluated as well as a multitude of storm drain and other off-site discharges. Detailed compliance reports were written and submitted to DOE, EPA, and the Division of Water Pollution Control in Nashville. Minor deficiencies were noted at each site and discussed with DOE and MMES during close out meetings.
4. Separate toxicity test reports are included with DMRs for the months that the tests are conducted. These reports are checked for validity and to ensure that all NPDES permit conditions have been met. A few errors and inconsistencies were detected during the reviews. Incorrect dates, missing monitoring data, and invalid controls have been noted. These

deficiencies were pointed out to the individual plant sites and to the Environmental Sciences Division (ESD) at ORNL. Toxicity test failures have occurred at K-25 (STP) and ORNL (WOC ambient station and STP) since June, 1993.

5. WM/WPC personnel performed a laboratory audit, in conjunction with MMES QA/QC personnel, at the ESD toxicity lab in August, 1993. The Division's findings were summarized in a report and submitted to DOE/MMES for their review. The findings of the report were also discussed during a close out meeting held by the MMES audit team leader on the final day of the audit.
6. K-25 STP MORs were reviewed on a monthly basis for completeness and verification of information. Section personnel have worked closely with the plant operator to get this information reported accurately.
7. Radiological Monitoring data is also routinely included in the DMRs. This data was directed, by WM/WPC, to the radiological monitoring section for their review. To date, no significant findings have been observed in these data.
8. WM/WPC personnel participated in a DOE environmental audit at the K-25 site. Each of the wastewater treatment facilities was visited. Audit reviews included general operations, record keeping, and standard compliance issues. Stormwater management and erosion control practices were also discussed with various groups across the site.
9. Six outfalls at the K-25 site were sampled (by MMES in the presence of WM/WPC personnel) to verify the K-25 has met a NPDES compliance condition to reduce total chlorine residual (TCR) concentrations at these locations. The compliance condition was met.
10. Monitoring of the progress at the K-25 Coal Ash Pile site continued with regular site visits to measure the pH of waters flowing off the site into Poplar Creek. pH values have met water quality criteria at outfall 994, seven out of eight field visits.
11. Outfall 17 at Y-12 was sampled two times during the year and analyzed for ammonia. Elevated concentrations of ammonia in the contaminated groundwater flowing to the outfall caused a fish kill in Upper East Fork Poplar Creek. Outfall 17 will likely be placed under a compliance schedule in the new NPDES permit to correct the conditions.
12. There are eight ongoing wetland site projects on the ORR that the WPC section has been involved in. Each of the wetland sites has been walked over, at least once, by WPC personnel to determine the areal extent and characteristics of the wetland. Several meetings have been held with DOE contractors and subcontractors to discuss permit requirements, mitigation options, and project goals.
13. Approximately thirteen separate aquatic resource alteration permit (ARAP) issues have been handled by the WPC section. Section involvement includes site walkovers, project audits, technical assistance, and continual monitoring of "trouble" areas. A few projects have required a great deal of oversight to help keep the project in compliance with permit conditions and water quality control standards. For

- instance, at least twelve visits were made to the Y-12 SPAD landfill project.
14. Tributary 8 at the Bear Creek Burial Grounds (BCBG) was inspected four times during the year to evaluate the leachate collection system and twice in response to contaminated leachate that surfaced following large rain events. Samples of the leachate were collected and analyzed for VOA.
 15. In September 1993, WPC personnel responded to a reported hydraulic oil spill at Y-12. None of the three to five gallons spilled reached waters of the State.
 16. A release of heavy weight oil to UEFPC occurred in late December 1993, from a sump line in building 9494-7. Several site visits were made to follow the remediation progress. The clean up was completed in March 1994.
 17. ORNL reported three minor spills in September 1993. Two were waterline ruptures which resulted in chlorinated water reaching White Oak Creek (WOC) and its tributaries. The third was a minor release of fine cutting oil to WOC. No long term environmental impacts were noted.
 18. In March 1994, three leaks were discovered in an earthen dam of the 3515 pond at ORNL. In the past, the pond was used as a settling basin for process wastes which contained heavy metals, organics, and radionuclides. The leaks created an unpermitted discharge to waters of the State. Average radioactivity of the released water, for Beta, was reported at 500 Bq/l. The leaks were repaired by May 1994. A total of ten site visits were made by this section to monitor the corrective action progress made on this project.
 19. The K-25 sewage treatment plant's (STP) collection system is in need of extensive rehabilitation and restoration. In its present condition, the system suffers from inflow and infiltration (I&I), causing the STP to be hydraulically overloaded during rain events. Under such conditions, the biological treatment system is bypassed and relatively untreated waste is released to Poplar Creek. These bypass events have occurred a number of times at the STP since December 1993. WPC personnel are notified during the rain events and provide technical assistance when possible.
 20. WM/WPC personnel have reviewed engineering reports and plans for seven major projects located throughout the ORR. These included the West End Treatment Facility (WETF) head end modifications and Interim Mercury Treatment Facility projects at Y-12; the UV treatment unit for the STP, the CNF collection system and facility modification all at K-25, and the surge tanks for the process waste treatment facility (PWTF) at X-10. Each of these projects has also included site visits to assess project progress and general site conditions.

21. A large portion of the environmental monitoring that is done through this section involves the review of documents and reports submitted by DOE for compliance purposes. The section has reviewed the BMAP plans and final reports for each plant that has submitted them. Comments were drafted and discussed with DOE/MMES personnel for the 1992 BMAP proposal for K-25.

Other reviews that have required comment preparation include wastewater control and surveillance plans, best management practices plans - for approximately fifteen projects, storm water pollution prevention plans, proposed sampling plans and other miscellaneous reports that require review.

4.B.2 Air Pollution Control, Attachment A, Sections A.5, A.5.1-A.5.5

The majority of the activities performed by the Air Pollution Control (APC) section of the Waste Management Program deal with compliance activities regarding State air pollution control regulations.

During the calendar year 9/93-5/94, the APC section conducted two audits each at the K-25 site and the Oak Ridge National Laboratory (ORNL) (see Results). Due to security constraints, only one audit was completed at the Y-12 plant (see Results). Other activities conducted during the year included observing an asbestos removal project, reviewing permit requests and project proposals, and conducting monthly meetings between DOE and MMES operations staff from the Toxic Substances Control Act (TSCA) Incinerator.

Results

1. Two audits conducted between 7/93 and 7/94 at the K-25 site covered all permitted active sources (11), those sources whose permits are active but are in a standby mode (17), and those sources which have ceased operations completely and have cancelled the operating permits (20). This audit covered 48 source reviews.
2. At ORNL, two audits were conducted between 9/93 and 5/94. The audits covered all permitted sources in service (32), those sources which are exempt from permitting requirements (6), and those sources which are no longer in operation and have cancelled the permits (5). This audit reviewed 43 sources.
3. One audit of the Y-12 plant was conducted during the 1993-1994 time periods due to security constraints. The number of permitted sources reviewed was limited to nine (9).
4. Due to an increase in APC staff, an asbestos abatement oversight program is being established. During the 1993-1994 year, one (1) asbestos removal project was observed.
5. Permit requests and project proposals are reviewed as the Division receives them and appropriate comments are formulated.

6. Monthly meetings between TSCA operations personnel and members of the Division continue to take place throughout the year. This format has resulted in a more professional and cooperative working relationship between the two organizations as well as allowing the Division to remain current on TSCA operations.

4.B.3 Solid Waste Section, Attachment B, Sections B.4, B.5, B.6.3, B.6.4, B.6.5

Activities of this section are centered around RCRA concerns on the Oak Ridge Reservation which includes reviews and comments on RCRA permit applications; reviews, comments, and certifications of RCRA closures, and oversight of RCRA post-closure activities. Sites of major focus have been the K-25 Pond Waste, Y-12 landfills and burial grounds, the S-3 Ponds, Kerr Hollow Quarry, and WAGs 5, 6, and 13 at X-10. Quarterly and annual Groundwater Quality Assessment Reports have also been a priority for review and comment.

Major activities have included reviews and comments on waste minimization and source reduction/zero discharge plans along with the decontamination and decommissioning surveillance program and waste/residue characterization. Waste minimization plans for the ORR have been submitted by each of the sites and primary contractors. Review of these plans are on file (completed January 15, 1993). Of the seven (7) plans submitted, only the K-25 plan fulfilled the requirements of a waste minimization plan per the Tennessee Hazardous Waste Reduction Act of 1990. In response to comments made by the Tennessee Department of Environment and Conservation, revisions were made to the plans of the ORNL and Y-12 sites by DOE. The plans for each site were then completely revised in May 1994, in accordance with DOE Order 5400.1 and the Tennessee Hazardous Waste Act of 1990. The Division has received a copy of the plans for ORNL and K-25 and are awaiting those of Y-12. These plans are currently under review by the Division.

DOE has submitted a Source Reduction/Zero Discharge Pilot Study schedule (August 12, 1991). This schedule outlined DOE strategy for implementation of short term source reduction pilot studies through development of comprehensive Process Waste Assessment (PWA) plans for each ORR facility. Two of these pilot studies involving Photoprocessing Facilities and Enriched Uranium Production Operations were given to the State for review. DOE is currently in the process of evaluating waste streams and comprising a schedule of long term waste streams to be assessed. The Process Waste Assessments are a vital portion of the Pollution Prevention Program Plans for each site which is currently under review.

The Waste Tracking System which is designed for comprehensive tracking of wastes generated, treated, stored, and disposed on the ORR is in place and operational. It is worthy of mentioning that the staff of this section (WM) and the Division are appreciative of the cooperative efforts of DOE/MMES in achieving

this vital tool for efficient record keeping. All of the Division staff and possibly DOE/MMES do believe that this is a significant milestone in waste management within the ORR.

During the 93/94 calendar year Division personnel participated in the annual RCRA inspections at X-10, Y-12, and K-25. Other activities are included as follows.

1. Reviewed annual and quarterly Groundwater Quality Assessment Reports (GWQAR) for compliance and comments (1989-1994).
2. Meetings with ORR representatives for groundwater to resolve issues from GWQAR reviews (well construction and placement, analytical and statistical results).
3. Reviewed documents for information on specific sites (Kerr Hollow Quarry and S-3 Ponds) to determine if adequate hydrogeological data is available.
4. Reviewed Closure and Occurrence Reports for potential effects on groundwater quality and submitted comments.
5. Reviewed documents and/or reports focused on hydrogeological characteristics of treatment, storage, and disposal facilities on the ORR to determine monitoring effectiveness.
6. Site visits to WAGs at X-10 to check progress of cesium soil storage and corehole logging.
7. Monthly site visits to Landfills 5 and 7 to check progress of construction and view installation of drainage, holding tanks, liners, and vents. Accompanied Knoxville Field Office personnel in official inspections.
8. Procured maps and aerial photographs of ORR. Also procured flyover radiometric and magnetic maps from X-10.
9. Reviewed waste minimization related documents of ORR activities.
10. Field visits to K-25 and immediate vicinity to verify findings of an unreported landfill found on aerial photos.
11. The Pond Waste Management Project is currently on schedule and progressing towards compliant storage or disposal.
12. Implementation of the Waste Tracking System is progressing and the Waste Minimization Program is being monitored.

4.B.4 Engineering Support Section, Attachment B, Sections B.6(1), B.6(2), and B.7

4.B.4.1 Waste and Residue Characterization; Section B.6

Commitment B.6, Waste and Residue Characterization, have been subdivided into six Department of Energy (DOE) deliverables.

B.6(1) Waste Characterization Plan Update:

Doe is required to update and revise the current waste characterization plan. The objective of this commitment is to develop a plan to ensure proper identification and characterization of the following categories of waste generated on the Oak Ridge Reservation (ORR) and managed by the Energy Systems Waste Management Organization (ESWMO): low-level radioactive waste, transuranic waste, Resource Conservation and Recovery Act (RCRA) hazardous waste, Toxic Substances Control Act

(TSCA) waste, RCRA mixed waste, TSCA/radioactive waste, and RCRA/TSCA/radioactive and mixed waste. This waste characterization plan will aid in the proper management of these wastes in an environmentally safe manner.

The scope for this commitment has been worked out through a joint group of representatives from the Department of Energy (DOE) Waste Management; Martin Marietta Waste Management Organization; and the Division's Waste Management Program. The working group agreed to and approved the scope on June 6, 1994, and presented it to the TOA steering committee on June 7, 1994. Currently, the agreed scope is undergoing DOE and State review, and is expected to be ready for signatures soon.

The scope of Engineering Support Section's efforts involve monitoring and review of data and information related to various design, construction, and operations of TSDFs on a ORR. These responsibilities include DOE-Oak Ridge facilities which generate, handle, store, treat and/or dispose hazardous, mixed hazardous, and solely radioactive waste and materials.

The Engineering Support Section conducted various field trips to inspect and observe construction activities to assure proper construction methods and quality control, such as:

1. Made field trips to ORNL - Interim Waste Management Facility (IWMF) to inspect and follow the progress of construction activities for Tumulus Pad #4 and the corresponding drainage tunnel. These visits were to observe the adherence to specifications and quality of work with regard to grading, formwork, rebar, and finally, placement of concrete. Follow-up trips were made to verify proper curing, form removal, and final cleanup.
2. Conducted site visits to south side of SWSA 6 near the Demonstration Tumulus Pads to observe the unloading, loading, and storage of various types of silos, tumulus boxes, and concrete vaults. During these visits we were able to observe the unloading, movement, and placement of the 13'x9'x13' concrete silos being used for storing of cesium contaminated soil from WAG 13. After observing the placement of the subject silos, the Division made recommendations regarding a revised placement method for installing the vaults. The revised method of installation will ensure a better bearing surface between the bottom of the vaults and the excavated holes in which the silos are being placed.
3. Visited ORNL-Melton Valley and Bethel Valley-Low Level Liquid Waste Lines-replacement activities to observe the location of the various pipelines. As a follow-up, a review is ongoing of the mechanical drawings to ensure that all piping and valve pits for the active research labs have been upgraded or replaced to provide a safe double-walled containment.
4. Site visit to the proposed site for K-15115-F replacement lagoon.
5. Visited K-25 Drum Storage Yard to inspect and assure proper

- procedures are being implemented in the cleanup operations.
6. Conducted regular field trips to Y-12 West End Treatment Facility to ensure work on modifications/additions to existing facility is being performed according to previously reviewed design drawings and specifications.

In addition to various site visits, the Engineering Support Section has provided engineering reviews and evaluations of various design packages, permits, environmental assessments, feasibility studies, and other miscellaneous DOE policies and procedures, such as:

1. WETF Modifications to existing facility.
2. Reviewed and provided comments with regard to DOE's Progress Tracking System.
3. Ongoing review of Liquid Low-Level Radioactive Waste Tank Systems.
4. Reviewing Design Assessment of Melton Valley Liquid Low-Level Waste Collection and Transfer System Upgrade.
5. Low Level Process Wastewater Treatment System Surge Tank Project at ORNL.

Participated in meetings and discussions, reviewed various documents, and provided comments to items such as performance evaluations, radiological controls of solid waste, solid radiological waste disposal practices, waste acceptance criteria, various DOE Orders, etc. This effort included the following activities.

1. Provided technical input to the ER Program on groundwater topics or chemical/physical phenomena. Currently involved only on comments of Remedial Investigation Work Plan (RIWP) on X-10 groundwater.
2. Technical support on rad waste management, mixed wastes, treatment processes, air pollution issues, including review and comment on plans and designs; example: Class L-I and Class L-II SLLW Disposal Facilities; Oak Ridge Reservation Storage Facility (ORRSF); Mixed Waste Treatment Facility (MWTF); Soils Management.
3. Technology development site coordination (formerly ER technology development steering committee). Attend meetings of the group, technical sub-team meetings, document review, and review of proposed projects. Coordinate other technology development activities.
4. Groundwater support - review of GWQAR data, comments on groundwater classification, working with environmental monitoring staff to better understand Karst system and direct Karst investigations.
5. Review of performance assessment - an in-depth review of performance assessment methodology and technical details leading to the results.
6. Review of Waste Management Environmental Impact Statements to evaluate estimated risks and costs of treatment, storage, and disposal (TSD) of DOE's existing and projected waste loads.

B.6(2) Residue Characterization Plan:

DOE is to identify residues, determine whether the residues are adequately characterized, evaluate management of the residues, and to produce a plan for residue characterization.

Material may exist on the Oak Ridge Reservation that does not meet the RCRA hazardous waste definition. In addition, this material may be held for long periods of time in anticipation of program funding, market changes, recycling capacity and might not be captured by the existing materials tracking systems. Nonetheless, this material could pose a threat to human health and the environment if not properly managed.

The objective of this commitment is to implement a plan to identify and adequately characterize residues on the Oak Ridge Reservation, and to ensure proper management of residue from an environmental, safety, and human health standpoint.

Department of Energy (DOE) Martin Marietta Energy Systems and the Division's joint working group has worked to develop a definition of residue applicable to the ORR.

The working group agreed to the scope of the deliverable on June 6, 1994, and presented it to the TOA steering committee on June 7, 1994. Following its review DOE proposed comments to the scope. After reviewing DOE proposed version, DOE and State realized that this deliverable can not be completed without first completing the commitments for B.6(1) Waste Characterization and B.6(3) Hazardous Materials.

4.B.4.2 Accelerated Decontamination & Decommissioning; Section B.7

Commitment B.7, Accelerated Decontamination & Decommissioning, has been subdivided into five Department of Energy (DOE) deliverables.

- B.7(1) Decontamination and Decommissioning (D&D) Inventory
- B.7(2) Near-term D&D Schedules
- B.7(3) Long-term D&D Schedules
- B.7(4) Surveillance and Maintenance Report
- B.7(5) Accelerate D&D Activities

The objective of this DOE commitment is to assure accelerated disposition of surplus buildings and structures on the Oak Ridge Reservation (ORR), thereby reducing the need for surveillance and maintenance of these structures which represent significant drains on DOE funding resources.

The Department of Energy (DOE) Martin Marietta Energy Systems and the Division's working group has agreed to and approved the scope for this commitment on June 3, 1994, and presented it to the TOA steering committee on June 7, 1994. Currently, the agreed scope is undergoing DOE and State review, and is expected to be ready for signatures soon.

Following are the Engineering Support Section's additional D&D activities:

1. Participated in a K-25 accelerated D&D pilot project working group meetings (Powerhouse and Cooling Towers), including site visits and project schedules reviews.
2. Documents, plans and specifications reviewed include: Oak Ridge Reservation Decontamination and Decommissioning Program Facility Inventory Baseline; Stormwater Control Plans for D&D pilot projects; Project Environmental Management Requirements; Draft Protocol for Radiological Release of Facilities for Recycle/Disposal; Draft Facility Survey & Characterization Work Plan for the Powerhouse D&D project; Project Tracking System (PTS) monthly progress reports, Activity Data Sheets (ADS) reviews.
3. Facilitated TDEC Regulatory Division's compliance reviews and assisted DOE & pilot D&D projects working groups (Energy Systems, MK-Ferguson, Ensearch) in streamlining the regulatory process.
4. Participated in development of the Division's first Procedural Document for Surveillance & Maintenance Surveys of ORR Buildings & Facilities. Developed "Decontamination & Decommissioning" and "Hazardous & Mixed Waste Facilities" checklists for this Document.
5. Participated in 1994 International Decontamination & Decommissioning Symposium and consequently reviewed papers presented at this symposium.

5. RADIOLOGICAL MONITORING AND OVERSIGHT PROGRAM

5.A Program Organization

The Radiological Monitoring and Oversight Program (RM/O) is comprised of five sections. These sections are: Environmental Restoration Support, Site and Facility Evaluation, Radiological Materials Management, Soil and Air Monitoring, and Water Monitoring. An Organizational Chart for RM/O is shown in Figure 5.

The RM/O Program provides radiological technical assistance to all of the other program areas within the Division. This assistance provided by the sections varies in detail. This assistance is in addition to RM/O Program projects. The amount of assistance has also varied with the level of staffing within RM/O. For the majority of the reporting period RM/O was staffed to only 24% of authorized levels. An intensive recruitment, selection, and hiring effort begun at the end of April has culminated an addition of personnel which has brought RM/O to 85% staffing. The additional staffing will allow RM/O to initiate and/or begin to conduct preplanned programs that have been delayed due to inadequate manpower resources. Examples of these programs are: the reservation-wide building surveys, an independent air monitoring and sampling program, and the expansion of current surface and groundwater sampling activities to a routine sampling program. RM/O will also re-institute programs already started but downgraded, again due to manpower shortages. Examples of these programs are: routine oversight of MMES air sample collection, oversight of TWRA wildlife sampling activities, and routine oversight of reactor operations. A more complete listing of RM/O section programs and activities is contained in section 5.B below.

5.A.1 Interactions with other State agencies

The Division has a number of Memorandums of Understanding (MOUs) with other Tennessee state agencies. Among these are: Division of Air Pollution Control (APC), Division of Water Pollution Control (WPC), Division of Radiological Health (DRH), and the State Division of Superfund.

Many projects undertaken by RM/O require close cooperation with one or more other state agencies. Already noted is the relationship with TWRA over wildlife issues. In addition, RM/O provides the direct link between TEMA and the Division. Other relationships with state agencies will be noted in the sections that follow.

5.A.2 Public Participation

In an effort to ensure that the Division remains aware of public concerns, personnel from RM/O have attended numerous public meetings on a variety of subjects. These meetings included, but were not limited to: the Spent Nuclear Fuel Preliminary

Figure 5
 TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION - DOE OVERSIGHT DIVISION
 RADIOLOGICAL MONITORING AND OVERSIGHT PROGRAM
 ORGANIZATIONAL CHART

Environmental Impact Statement (SNF PEIS), Plutonium Vulnerability, Highly Enriched Uranium Storage Environmental Assessment (HEU EA), Y-12 Ambient Air Monitoring System Shutdown, and the Site Specific Advisory Board (SSAB) Stakeholders Meeting. The RM/O Program serves as the Division clearing house for DOE/AEC Human Experimentation information, helping several members of the public to obtain needed information.

Personnel from RM/O as well as other Division program areas participated in the annual ORNL Community Day. This program put State representatives in direct contact with members of the public where they were able to address issues and concerns on a personal level. Although not actually a primary function of this Division, RM/O personnel also worked with several members of the public on complaints concerning a wide range of issues on the ORR.

5.A.3 Off-site Activities

The Division does not normally address contamination or pollution problems occurring off the ORR. If however, a direct link exists between the off-site contamination and the ORR or DOE, then it becomes an area of interest for the Division. Personnel from RM/O have been involved with several off-site problems during the last year. The RM/O Program has primary responsibilities for off-site activities within the Division. Assistance is provided by discussion of off-site activities, by site, in the following sections.

5.A.3.1 Atomic City Auto Parts

RM/O has been involved in the Atomic City Auto Parts (ACAP) site cleanup since spring of 1993. RM/O has provided comments and suggestions to DOE, the TDEC Division of Superfund, and other state organizations throughout the project. Phase One of the cleanup was completed in the early spring of 1994. At this point in time the preparation of a DOE final report on this project was begun. This report has not been supplied to TDEC and may still be in DRAFT form.

Phase Two of the cleanup involves the sampling/characterization plan. This plan is scheduled to be provided to TDEC during the first week of September 1994. The plan will be referred to as the Phase Two Environmental Engineering Cost Assessment (EECA). The sampling teams should be in the field by early November 1994. DOE also plans to fence in the site as had previously been requested. The sampling plan has been expanded at the request of the TDEC Division of Superfund to include hydrocarbons and will include an analysis for a comprehensive list of metals.

5.A.3.2 CSX Railroad Site

The CSX Railroad site work has been completed. The sites were cleaned up to a level of 50 pCi/gm Cs-137. This Cesium level at approximately 3 to 4 feet underground is not thought to be a

threat. The final report on this project, if completed has not been supplied to the Division.

5.A.3.3 Remotec

The Remotec site on Union Valley Road is being negotiated by DOE and the TDEC Division of Superfund. A magnetometer survey has been completed and preliminary sampling has been done. The TDEC Division of Superfund is requesting more extensive characterization. DOE is considering this request. So far the characterization results are inconclusive.

5.A.3.4 Witherspoon

Coordination with TDEC Division of Superfund on August 22, 1994, indicated that the State has taken over the Witherspoon Recycling Center and will conduct drainage control measures. The State has characterized the surface layer.

Witherspoon Screen Arts remains in the control of the Witherspoon's.

5.A.3.5 Quadrex-Contaminated Oil

Received information from TDEC Division of Radiological Health (DRH) on 8/9/94 that the Quadrex recycling facility purchased a machine from DOE and the machine was contaminated. The RM/O Program has notified DOE and discussions relating to responsibility are in progress.

5.A.3.6 Solway Site-Roscoe Fields

The Solway Road site located on the property of Roscoe Fields was found to be contaminated in early 1994. Mr. Fields apparently had stored hazardous and radioactive waste purchased from DOE. When inspected by the TDEC Superfund Division, the waste in barrels was leaking. The TDEC Division of Superfund contractor provided containment and the Division facilitated transport of the contaminated material to K-25 for further characterization and compliant storage. TDEC Division of Superfund is characterizing the site for additional contamination.

5.B RM/O Activities

In this portion of the report a more complete listing of RM/O actions, programs, and activities is provided. The information is provided by section. It must be noted that although an action or activity may be shown under a specific RM/O section; the usual practice within RM/O is to have personnel from more than one section involved in the project. This provides two primary benefits. First, it provides for a multi-disciplinary view of the available information. Secondly, it ensures that knowledge of the project is spread within the program area. This allows more than one section or individual to respond to requests for information if the primary contact cannot. It also strengthens the

institutional memory of the program area. This is important as it is often as important to know why things were done a certain way as it is to know that it was done.

5.B.1 RM/O Environmental Restoration Section

The Radiological Monitoring and Oversight Environmental Restoration (RM/O-ER) section did not become functional until April 1994. At that time a section supervisor was selected and assigned. The section did not achieve majority staffing until mid-July 1994. The RM/O-ER section, due to it's short time in existence, has not yet fully developed it's scope of operation.

Preliminary objectives and prospects have, however been established. The main objective of the section is to provide added attention to the remediation sites which exhibit radioactive contamination and to provide the ER program with knowledge and advise on the review of CERCLA documents. To date, the section has been working on a review of Appendix C of the Federal Facilities Agreement. The purpose of the review is to list and prioritize the sites based on radiological contaminants and contaminant migration. In addition, the section has taken part in a mussel survey of the Clinch River and the Plutonium Vulnerability Assessment. The section also reviewed information on Lower East Fork Poplar Creek and the spring/seep survey associated with Chestnut Ridge. The section has also been involved in the investigation of several possible contamination incidents. Future projects will be based on ER program area needs, RM/O priorities, and research findings.

5.B.2 RM/O Site and Facility Evaluation Section

5.B.2.1 RM/O-SAFE Section Activities

As noted earlier, the Radiological Monitoring and Oversight Site and Facility Evaluation (RM/O-SAFE) section provides general support to the Division. This support is mainly in the area of Health Physics and safety and health. A brief discussion of these areas of support is provided in the following paragraphs.

1. Health Physics Support

RM/O-SAFE staff participates in health physics support for other sections when the need arises. This support may involve supplying technical information or accompanying sampling teams from other program areas into the field. Members of the RM/O-SAFE section along with members of other RM/O sections are participating in the instruction of Health Physics principals to the Division personnel. Additionally, RM/O-SAFE is charged with the overall responsibility for procurement and maintenance of the Division radiological monitoring and survey instruments. Recent efforts in this area include the future acquisition of more sensitive field survey instruments of the same type as those used by MMES and an instrumentation system that will be capable of analyzing specific radionuclides in the field.

2. DOE-O Staff Dosimetry Program

A staff member of RM/O-SAFE is assigned to collect radiation dosimeters at the end of each quarter and return them to Y-12 for reading. This assignment includes tracking personnel on the list and recording their exposures. The section will conduct a program to periodically inform employees of their exposure record and explain the results to them. It is also necessary for the person assigned to this duty to inform Y-12 of changes in employment among the Division staff.

3. DOE-O Staff Bioassay Program

A staff member of RM/O-SAFE is assigned to coordinate the Division's radionuclide Bioassay Program which involves the same type of record keeping required by the dosimetry program. The program also involves sample collection and delivery to the collection facility on the reservation.

4. Division Vehicle Survey

RM/O-SAFE developed the scheduling and procedures for the weekly Division vehicle survey. The survey forms have been revised on occasion but the procedures have remained very close to constant. This program not only allows the Division to monitor State vehicles for radioactive contamination but also provides a time frame and basis for tracing contamination on the vehicles should such a situation occur.

5.B.2.2 RM/O-SAFE Internal Projects

In addition to the general support activities listed above, RM/O-SAFE has been involved with a number of projects. A discussion of those projects is presented below. The most intensive of these projects is the ongoing Facility Survey Program. The goal of this program is to survey every building on the ORR. These surveys cover a wide spectrum of issues from radiological and chemical contamination to structural soundness.

1. Facility Survey Program

First regular survey 8/10/94, follow-up visit 8/19/94. This program has been in the developmental stages since late spring of 1993. In August of 1993, staff participated in a preliminary survey with the Director of the TDEC Division of Radiological Health (DRH). In January of 1994, staff conducted a pilot survey of building 7025 at ORNL. This building served as a pilot project for the official program. The pilot project provided valuable insight into how the program should be run and added to the experience gained on the August 1993 surveys. On July 20, 1994, the RM/O-SAFE section presented program scopes, goals, and procedures to a group of approximately 60 members of DOE, MMES, and TEMA officials. The first regularly scheduled survey took place on August 10, 1994. The section plans to survey 20 facilities by January 1995.

2. D&D Projects

RM/O-SAFE has spent considerable time on ORR D&D projects. The lead program area for this activity is WM. Some of the facilities inspected under this program were: K-25 Powerhouse, K-25 Cooling Towers, ORNL Tritium Target Facility, Y-12 Alpha 4 Building, and ORNL Building 3515. RM/O-SAFE involvement has been limited since July 1994, due to a shift of focus to the Facility Survey Program. The Facility Survey Program deals with facilities before they are admitted to the D&D program.

3. Environmental TLD Program

RM/O-SAFE contacted MMES regarding the implementation of an Environmental TLD Program. MMES indicated that providing 50 personnel TLD's and reading them would not present any special problems. Environmental TLD's, however would require additional cost and would not be possible this year. The Personnel TLD's would not have the sensitivity of an Environmental TLD. In the interim, this would be a positive first step toward developing a more sensitive program. Possible future options include purchasing an in-house system to read the TLD's or purchasing TLD's and contracting out reading.

The Environmental TLD program is now expected to distribute 100 TLD's that are to be read on a quarterly basis (the recommendation is to have 2 units at each site for quality control). The RM/O-SAFE section has requested input from DRH and will select monitoring sites based on overall knowledge of the reservation and the proximity of these facilities to populated areas. Information on programs currently operational at Sandia National Laboratory and Paducah has been requested by the SAFE section. This information will also be used in the program development. The program is expected to be in place and operational before December 1994.

4. Spent Nuclear Fuel Transport

Assisted RM/O-RMM on the review of Spent Nuclear Fuel Environmental Impact Statement (EIS). The SAFE section has gathered literature on spent fuel transportation and attended hazardous materials/spent nuclear fuels transportation seminars. Reviewed the section of the EIS pertaining to spent fuels transportation from the various sites now under consideration and subsequently provided comments on this document.

5. Highly Enriched Uranium Environmental Assessment (HEU)

RM/O-SAFE has contributed to the HEU Environmental Assessment by attending Environmental Assessment workshops, public meetings, and reviewing the HEU Environmental Assessment documentation. The particular focus during this review involved emergency management and transportation.

6. ORISE Radiological Materials Assessment

RM/O-SAFE has visited all ORISE facilities to conduct an assessment of their radioactive materials. Information has been requested from the operators of the facilities but has not been received by the Division. This information must be received before the assessment can be completed.

7. Radioactive Scrap Metal

The RM/O-SAFE section has been involved with the developments in the radioactive scrap metal field since the summer of 1993. The most current information on the subject is on file. Staff attended two seminars on the subject. The Materials Management section of RM/O has also been following developments in this field.

8. Human Experimentation Files

Due to the "openness" policy embraced by DOE, many old files that were previously classified have been released to the public through "Public Reading Rooms". These files pertain to many subject areas, but the main subject area involves past experimentation on humans involving radionuclides. The RM/O-SAFE section has been tracking the progress of these information releases and selectively reviewing these documents. The documents released as of August 1994, number around 1,000. The SAFE section has assisted members of the public and employees in locating the medical files of family members who may have worked at DOE/AEC facilities or may have been treated at medical facilities in the time frame. The section has also acquired files for in-house use and developed an employee reading area as part of the Division's library.

9. Radioactive Hot Spots on Highway 95

An RM/O-SAFE section representative assisted in investigating Cs-137 spots on Highway 95. The origin has not been discovered but information on an old process line in the area has been requested from MMES. Also involved in this investigation were members of RM/O-RMM, ER, and SAM.

10. Audits

RM/O-SAFE periodically participates in audits on the reservation including MMES Corporate Audits. These audits allow staff to gain knowledge and skills which will be used in facility surveys. Participation in these audits also allow staff to broaden understanding of the operations at the reservation.

5.B.2.3 TEMA Coordination

As mentioned earlier, a major area of involvement for RM/O-SAFE is as the main point of contact within the Division for coordination with TEMA. The RM/O-SAFE section has one member who

has the primary responsibility of interfacing with TEMA. This individual is responsible for coordinating calls which reach staff by the TEMA beeper, assuring that the calls are referred to the proper program area, and following up on the results. This individual's responsibility also involves training coordination and primary contact with TEMA staff members.

Also part of TEMA coordination are: emergency response, emergency planning for Oak Ridge and its environs, incident tracking, and transportation of materials tracking. The last is a responsibility also shared with RM/O-RMM.

5.B.3 RM/O Radioactive Materials Management Section

The Radiological Monitoring and Oversight Radioactive Materials Management (RM/O-RMM) section has been involved in a wide range of activities. The depth and scope of this section's project involvement is dependent on:

- directives from upper management
- health and safety concerns
- educational needs
- potential impact to the citizens of Tennessee
- requests from other Division programs, DOE, or its contractors

The RMM section goals include a knowledge of activities involving ORR research reactors and the Advanced Neutron Source reactor project. This section follows issues such as refueling schedules, spills, safety, transportation, cleanup, and waste removal. Operational issues regarding waste storage and characterization and new technologies are also of interest to this RM/O program section. The RMM personnel attend public meetings, review and comment on environmental documents, and stay abreast of issues regarding radiological materials such as spent nuclear storage on the ORR, and enriched uranium and plutonium storage at the Y-12 plant.

Due to the wide scope of the RMM section we must rely on teamwork and cooperation with other Division sections as well as with the TDEC-DRH. The RMM section has recently worked with the DRH regarding soil washing issues and DOE contractor requests. Also, this section works in cooperation with the DRH in providing information that aids to insure proper contractor licensing and permitting.

5.B.3.1 RM/O-RMM Activities

Activities the section has participated in the past year include participation in the following:

1. K-25 Functional Appraisal
2. Plutonium Vulnerability Study
3. Review and comment on the EA concerning construction and

- operation of retrievable transuranic and mixed transuranic waste storage facilities at the ORNL
4. Waste Management program support - comments on the DOE conceptual site treatment plan for mixed wastes on the ORR
 5. Comments on the Draft Proposal of HEU interim storage at the Y-12 plant
 6. Comments on the DOE Spent Fuel Vulnerability Assessment - "Plan of Action to Resolve Spent Nuclear Fuel Vulnerabilities - Phase I and II"
 7. Attendance at the Nuclear and Hazardous Waste Management International Topical Meeting in Atlanta, GA, 8/15/94
 8. Oversight of UF_6 shipments from K-25 to Paducah, KY - site visits, view loading procedures
 9. Track incident at the Radiochemical Engineering and Development Complex
 10. Inspection of railroad trestle at K-25 for UF_6 shipments
 11. Monitor shipment of irradiated fuel from General Atomics (GA) to ORNL - issue resolved, fuel was not sent
 12. Attended four SNF PEIS public meetings
 13. Review and comment - in-house on the SNF PEIS Implementation Plan
 14. Review and comment - to the Governor's office on the SNF Programmatic Environmental Impact Statement
 15. Oversight of High Flux Isotope Reactor (HFIR) issues - review EA on re-racking of spent fuel assemblies - follow iridium spill incident, present during cask transfer
 16. Advanced Neutron Source quarterly meeting
 17. Molten Salt Reactor Experiment contamination resolution and decommissioning
 18. Review and comment to DOE on "Assumptions and Methodology Document for the Spent Nuclear Fuel Management Cost Evaluation"
 19. Attended public meetings on plutonium
 20. Monitor Atomic City Auto Parts cleanup with SAFE section
 21. Monitored the TWRA Game Check Station during the annual fall deer hunt
 22. Conducted a meeting on the retrieval of Europium (Eu) from SWSA 6
 23. Monitor remote excavation demonstration at the Hill Cut Test Facility at SWSA 6
 24. Provide engineering assistance to other sections of the Division
 25. Track TSCA issues with the Waste Management Program
 26. Oversight of White Oak Dam annual inspection, emergency drills

5.B.4 RM/O Soil and Air Monitoring Section

The Radiological Monitoring and Oversight Soil and Air Monitoring (RM/O-SAM) section is another part of the RM/O sections that was adversely impacted by manpower shortages and personnel turnover. Although the section started the reporting period with approximately 35% of authorized staffing, by the mid-point of the

period, the section was totally unmanned. As with the RM/O-ER section, RM/O-SAM was not restaffed until mid-July 1994.

In the interim period the only person working RM/O-SAM activities was the former section supervisor who was acting as temporary manager of the RM/O Program. Although some activities such as development of proposals for an independent air sampling program, acquisition of third party (EPA) support, participation in audits, and document review were able to be supported and maintained, all manpower intensive activities such as routine sample collection and oversight and review of sampling data had to be curtailed. With the addition of personnel to the RM/O-SAM section it is expected that planned as well as curtailed activities can now be conducted. A list of those activities is provided in the following sections.

5.B.4.1 RM/O-SAM Activities

1. Ambient Air Monitoring/Sampling

- Sampling Oversight
- Review Sampling Data
- Independent Air Sampling System Design and Acquisition
- Review Monitoring/Sampling Methods, Techniques, and Operations
- Recommend Changes
- Acquire Third Party (EPA) Support for Independent Air Sampling System (ERAMS)
- Monitor Fugitive Air Emission Issues and Regulatory Development

2. Air Sampling Design

- Review Sampling/Monitoring Sites for; Site Selection Criteria and Site Applicability
- Review Equipment Design and Applicability
- Review/Oversight Equipment Calibration
- Review/Oversight Analytical Methods and Parameters
- Review/Oversight/Participate in Audits and Inspections

3. Air Systems Modeling

- Review Model Applicability
- Obtain and Familiarize with Air Models such as: CAP88, CAP88PC, COMPLY, RASCAL, ISC, etc.
- Review Catastrophic Release Scenarios
- Review/Oversight Meteorological Data, Systems, and Operations
- Review Topographic Data

4. Stack Sampling for National Emission Standards for Hazardous Air Pollution (NESHAP)

- Sampling Oversight
- Review Sampling Data

- Review Monitoring/Sampling Methods, Technologies, and Operations
 - Oversight Annual EPA Audit
 - Review Recommended Changes
5. Soil Sampling
- Sampling Oversight
 - Independent Sample Collection
 - Review Sampling Data
 - Review Sampling Sites for; Site Selection Criteria and Site Applicability
 - Recommend Changes
6. Ambient Radiation Monitoring
- Oversight Monitoring Data Collection
 - Review Monitoring Data
 - Independent Ambient Radiation Monitoring System Design and Acquisition
 - Review/Oversight Equipment Calibration
7. Wildlife and Vegetation Sampling
- Oversight/Participates in TWRA's Wildlife Sampling Program
 - Oversight Vegetation Sampling
 - Conduct Independent Vegetation Sampling
 - Review Sampling Data
 - Review Sampling Methods, Technologies, and Operations
8. Milk Sampling
- Oversight Sampling
 - Review Sampling Data
9. Provide Health Physics support to the Division as needed.

5.B.5 RM/O Water Section

Radiological Monitoring and Oversight Water Section (RM/O-Water) has been charged with the radiological support of the surface and groundwater monitoring components of the Division and the implementation of the radiological water monitoring requirements of the TOA (attachment A.6 and C.3). That is: review current monitoring systems and recommend improvements where appropriate; participate with DOE in sampling and analysis as necessary to detect and characterize off-site contamination and evaluate the performance of on-site control measures; and, develop a radiological monitoring program that will compliment and verify DOE monitoring systems. In this role, the Division Programs and the Division of Radiological Health have cooperated in addressing the specific radiological water monitoring responsibilities of that document.

5.B.5.1 RM/O-Water Activities

1. Groundwater Monitoring Programs (Radiological)

With Limited resources and the significance of the possible migration of radiological contaminants off-site via groundwater, RM/O-Water in collaboration with the other Division programs has attempted to focus its activities on: developing an understanding of the hydrogeology of the ORR; assessment of the effectiveness of DOE monitoring programs; the development of information relative to areas most vulnerable to radiological contaminant migration; appropriate locations for RM/O water monitoring activities; and the review of DOE's exit pathway and off-site groundwater monitoring programs.

That the hydrogeology of the ORR is extremely complex has been recognized and documented in DOE/MMES publications^{10,13}. Characterization of groundwater flow and quality are complicated by anisotropy, heterogeneity, fracture flow, karstic features, and preferred hydrological pathways that have developed as a result of man's activities (e.g., large scale cut and fill, underground utilities). These conditions make the identification of groundwater exit pathways, the proper placement of monitoring wells, and determinations of adequate sampling frequencies difficult. The conditions also render traditional monitoring techniques inadequate to define groundwater flow systems in many areas of the ORR and monitoring methods developed for similar hydrogeological settings (e.g., karstic terrains) more appropriate. MMES has initiated activities directed toward the development of more effective monitoring techniques and the Division staff continue to express their recommendations concerning same.

2. Exit Pathways

Given the uncertainty associated with aspects of the hydrology of the ORR, Division groundwater personnel have coordinated their efforts in an ongoing review of DOE exit pathway and off-site groundwater monitoring systems. In association with these activities, RM/O-Water has attempted to identify exit pathway wells exhibiting elevated levels of radiological contaminants with the intent to co-sample these wells in order to validate DOE data and characterize radiological constituents. As a result of the review, various exit pathway wells were identified as appropriate locations for co-sampling activities including GW-169 and GW-206 both part of Y-12's exit pathway monitoring program.

GW-169 is an unconsolidated groundwater well located in Union Valley approximately 1500 meters east of the Y-12 facility. Approximately 46 feet deep, GW-169 is part of a three well cluster used for exit pathway monitoring in the Maynardville Limestone. GW-169 exceeded screening levels for gross alpha (15 pCi/L) sporadically from 1991 through 1993 and the screening level for gross beta (50 pCi/L) during the fourth quarter of 1993^{4,5,6}. In 1993, gross alpha averaged 32 pCi/L and gross beta

averaged 33.15 pCi/L. Of the associated wells in the three well cluster, GW-170 and GW-232, GW-170 was noted to have elevated levels of VOCs.

RM/O-Water and the Environmental Monitoring and Compliance Program (EM/C) co-sampled these wells with DOE/MMES in the first quarter of 1994. It should be noted that DOE subsequently announced VOCs in GW-170 were associated with a contaminant plume identified as migrating from the Y-12 facility. While the results of this initial sampling event did not reveal significant levels of radiological constituents, water levels in well GW-169 during this period were extremely high and it is hypothesized that in the regolith any radiological components (if present) may have been diluted beyond detection by the above average rainfall. RM/O-W hopes to be able to sample GW-169 during a dry period to test the rainfall correlation thesis, as well as determine whether radiological components are natural, artificial, or the result of anomalous data.

GW-206 is a shallow (approximately 17 feet deep) exit pathway monitoring well emplaced within the water table interval above the Rome Formation. It is located north of the Y-12 facility near Scarboro Road. Data review revealed GW-206 exceeded gross alpha screening levels during the fourth quarter of 1991, second and fourth quarters of 1992, and first and fourth quarters of 1993. Gross beta exceeded screening levels during the second and fourth quarters of 1992, and first and fourth quarters of 1993^{4,5,6}. Gross alpha averaged 34 pCi/L and gross beta averaged 100 pCi/L in 1993. During the second quarter of 1994, RM/O-Water co-sampled GW-206. Results are pending analysis. Analysis will include gross alpha, gross beta, gamma scan, strontium-90, technetium-99, and other radionuclide analysis as appropriate. RM/O-Water will continue to sample GW-206 until an understanding is obtained for the previous gross alpha and gross beta data.

3. Review of DOE/MMES Off-Site Groundwater Monitoring Programs

Review of DOE/MMES off-site groundwater monitoring programs began with the assumption that the presence of specific radioisotopes (particularly the fission products) above levels which could be attributed to natural background or global fallout would be indicative of contaminate migration and its genesis.

Unfortunately, initial investigations revealed backgrounds for these constituents have not been determined. MMES has since indicated they have begun the process of developing appropriate backgrounds for radiological parameters and RM/O-Water will follow their progress and assist if possible.

Prior to 1989, available data concerning the investigation of possible contamination of off-site drinking water wells appears to be limited to short term studies conducted in the 1980s. In 1989, Oak Ridge National Laboratory implemented an off-site residential drinking water quality monitoring program in conjunction with the DOE Environmental Protection Division "to document water quality from groundwater sources near the ORR and

to monitor the potential impact of DOE Oak Ridge Operations Office (DOE-ORO) operations on the quality of these groundwater sources"⁸ Initially, 21 wells/springs were sampled semiannually for parameters which included gross alpha, gross beta, total radioactive strontium, technetium, tritium, and radionuclides observed in a gamma scan. Two US Geological Survey wells (GW-206 previously discussed and GW-167) have since been dropped from the program and included in Y-12's perimeter monitoring system.

Problematic in the review and assessment of the off-site groundwater monitoring program are: an agreement between ORNL/MMES and property owners participating in the program prohibiting the public disclosure of specific information relative to derived data; the lack of established background levels for natural and man-made radionuclides (as previously mentioned); the uncertainty associated with data related error; and the inability to extensively investigate the appropriateness of sampling locations and to validate data (co-sample). In light of the above definitive conclusions are premature. Concerns and recommendations have been expressed to DOE/MMES in meetings and Division comments on DOE's Environmental Monitoring Plan.

In association with the above, RM/O has procured water and sediment samples for radiological analysis from springs (natural convergence points for groundwater in karstic terrains) in Sugar Grove Valley (north of K-25), Scarboro Creek (east of Y-12), and Bacon Springs (a public drinking water source north of ORR). Analytes are determined on a site specific basis and include gross alpha, gross beta, and radionuclides observed in a gamma scan. Strontium, technetium, tritium, total uranium, and other radionuclide analysis are performed as appropriate. The results derived from these activities have not been indicative of radiological contaminant migration.

4. Surface Water Monitoring (Radiological)

TDEC's Division of Radiological Health (DRH) monitors radiological parameters in surface water at nine locations surrounding the ORR. Data associated with the above efforts has been provided to RM/O-Water and is under review. Limited supplemental surface water sampling for radiological constituents by RM/O-Water has been initiated with expanded activities projected as additional staff are procured and appropriate locations for sampling events identified. Along with the above data, RM/O-W reviews results of analysis from samples split by DRH and DOE/MMES on a monthly basis at White Oak Dam. Historically, information derived from these samples has not been shared nor compared and it is the intent of RM/O to facilitate its exchange.

Additional RM/O activities in regard to surface water include: the review of the radiological components of the NPDES Monthly Discharge Reports (While no MCLs exist in this context, data are compared with appropriate standards); participation in NPDES compliance inspections of the three DOE-OR facilities; the

investigation of leaks in the 3513 impoundment at ORNL (previously addressed in the Waste Management section); and, the investigation of NPDES outfalls exhibiting radiological contamination in order to identify the genesis of radiological releases on the ORR and associated precautions (e.g., alarms, monitoring);. RM/O is also attempting to acquire EPA's Environmental Radiation Ambient Monitoring System (ERAMS) surface water program.

5. Drinking Water Monitoring (Radiological)

RM/O considers drinking water the most significant pathway for radiological contaminants to impact the public health. In the last year, RM/O has focused its activities on the review of DOE/MMES' Off-Site Residential Drinking Water monitoring Program (previously addressed) and will continue its evaluation in the forthcoming months. Also, RM/O has initiated the assessment of potential impacts of radiological contaminants on area public water systems may implement EPA's ERAMS Drinking Water Program if adopted by the Division. While samples are to be taken for radiological analysis with both efforts, specific locals and analytes will have to be determined based on potential public impact, hydrologic/geologic considerations, and the cooperation of parties involved.

5.B.5.2 Associated Activities

1. Reviewed pertinent information related to geologic, hydrologic, and radiological programs and provided comments/recommendations as appropriate.
 - DOE Environmental Monitoring Plans (EMP)
 - DOE Environmental Monitoring Reports (EMR)
 - Groundwater Quality Assurance Reports (GWQAR)
 - Quarterly Environmental Monitoring Data Reports
 - Aerial Surveys (Radiological, Geophysical)
 - Historical photographs and maps
 - Environmental Impact Statements
 - NOAA Precipitation Data
 - Relevant Laws, DOE Orders, Guidelines
2. Develop information relative to Division generated reports
 - Environmental Monitoring Plan
 - Environmental Monitoring Report
3. Provided radiological support for EM/C ambient water and sediment monitoring
4. Initiated investigation into the contents of Blair Road Landfill located on Black Oak Ridge north of the K-25 facility. This landfill was omitted from Appendix C of the Federal Facilities Agreement and was identified as a consequence of the review of the Off-site Residential

Drinking Water Program. The Division's Environmental Restoration Program is pursuing its characterization

5. RM/O is assisting other programs at within the Division in identifying springs in order to locate groundwater feeds into the Clinch.
6. Initiated the assessment of the hydrogeologic suitability of the ORR for spent fuel disposal/storage. RM/O is preparing comments on DOE's Draft Environmental Impact Statement (EIS).
7. Initiated a Division investigation into the consequences of deep well injection at ORNL.
8. Assisted in the assessment of the suitability of various proposed sites for Nuclear Regulatory Commission Class L-2 landfills.
9. Investigated elevated alpha readings at the well head of GW-157 located near the Chestnut Ridge Sediment Disposal Basin at Y-12. The alpha was reported by Y-12 to be naturally occurring (radon gas). The explanation was reasonable to Division geologists.
10. Explored caves on Black Oak Ridge in order to better understand potential pathways for contaminant migration in karstic terrains and in association with the Blair Road Landfill investigation.
11. Conducted an ongoing investigation to determine the concentrations of fission products in groundwater as a result of global fallout, as well as background levels on the ORR and environs for natural radiological constituents.
12. Investigated possibility that high dissolved/total suspended solids add such a degree of uncertainty for gross alpha analysis that the results may be discounted.
13. Coordinated Division participation in the DOE Environment, Safety, and Health (ES&H) Appraisals of the K-25 facility and participated in the Y-12 DOE ES&H Appraisal

5.C TOA Deliverables

5.C.1 Radioactivity Surveillance, TOA A.6

5.C.1.1 System Review, TOA A.6.1

The RM/O program area continues its efforts in obtaining reference documents. These include DOE Orders and notices, Code of Federal Regulations (CFR), State of Tennessee regulation and instruction, Environmental Protection Agency documentation (additional to regulation contained in the CFRs), and Nuclear Regulatory Commission (NRC) instructions and notices (again,

outside of CFRs). These materials are essential references for RM/O's continuing review process. The various surveillance systems on the ORR and its environs are continually scrutinized for compliance with both the letter and the spirit of the applicable regulations. RM/O has provided numerous comments and recommendations on ORR surveillance systems and evaluations. These evaluations cover not only observation of in the field activities but also the various plans on which the activities are based and the interpretation and implementation of those plans. RM/O has also been involved in the drafting and updating of the Division internal policies for environmental safety and health.

5.C.2 Transportation of Radioactive Materials, TOA B.2

DOE is required by the TOA to notify TEMA and the Division prior to transporting radioactive materials. Notification of shipments to and from external sources has improved dramatically during the reporting period. The Division has almost always been notified in advance of these shipments. Exceptions to this mostly center around shipments of Special Nuclear Materials and shipments conducted by the Department of Defense. Notification of these shipments are subject to national security concerns.

5.C.3 Operations Notification, TOA B.3

Section B.3 states that DOE shall provide the state with a listing of current activities involving radiation to the appropriate level of detail for an effective radiological oversight program. Although there has been improvement in this area, there still remains areas for which information has not been provided. This is a continuing effort and will remain so as long as operations are conducted on the ORR. As the D&D program and Facility Survey Program progress it is expected that more of this vital information will be provided.

5.C.4 Radiological Oversight, TOA C.3

RM/O continues to acquire the equipment needed to allow RM/O to perform independent monitoring of radiation at the ORR and its environs. This applies not only to field survey instruments but also to ambient real time radiation monitors, a TLD based environmental monitoring program, air sampling equipment, and soil and water sampling equipment. As stated earlier, the increase in personnel within RM/O will allow the establishment of routine monitoring programs. These programs will help detect incidents and identify trends.

5.C.4.1 Trends of Review

RM/O reviews on a continuing basis the radiological programs of DOE and its contractors. These reviews cover a wide spectrum of programs and have produced a significant number of comments and recommendations as indicated in the sections of this report that address RM/O section activities.

6. ENVIRONMENTAL MONITORING AND COMPLIANCE PROGRAM

6.A Environmental Monitoring and Compliance Program Organization

The Environmental Monitoring and Compliance (EM/C) Program, formerly the Corrective Action and Compliance Section, is comprised of the following sections: Air Quality Monitoring, Environmental Monitoring, Groundwater, NEPA/Audits, and Water Supply/Safe Dams. An organizational chart of the Environmental Monitoring and Compliance Program is shown in Figure 6. The Program is involved in many aspects of monitoring, ensuring compliance⁴ and oversight of activities as called for in the Tennessee Oversight Agreement. EM/C is developing sampling plans, schedules, and operating procedures for present and future fiscal years. Expanding roles include coordination of NEPA document review for the Division, coordination of observation of environmental, safety and health audits on the ORR, research and investigation into ecological indicators and environmental equity issues. A new assignment is tracking of TOA commitment scoping efforts. Additionally, EM/C is working to expand a biological fish and wildlife program efforts, incorporating integration of other State and Federal Agency projects that deal with or support ORR environmental monitoring, and are reviewing options for developing a project tracking system that will capture environmental monitoring actions for reporting in a complete, precise, and timely manner.

6.B TOA Deliverables

The EM/C Program is responsible for commitments in the TOA concerning Air Quality Monitoring, Environmental Monitoring Program and Report, Groundwater Monitoring, Public Drinking Water, and Auditing of the ORR Facilities. Program objectives are to monitor all media (air, water, soil), to document and monitor emissions (hazardous, toxic, chemical, radiological) from known sources, potential new sources, or random suspect locations on a general or site by site basis and to coordinate the division's role as observer of environmental audits that are assuring compliance with environmental laws and regulations. Additionally, the EM/C Program is tasked with review and comment on the DOE ORR Environmental Monitoring Report as well as the generation and coordination of the Division's Environmental Monitoring Plan and Annual Environmental Monitoring Report.

The Division's monitoring effort is extremely conservative in comparison with ongoing compliance, ambient, and additional monitoring on the Oak Ridge Reservation (ORR) by DOE, DOE contractor programs, and other state and federal agencies. These programs provide a wealth of valuable information which must be reviewed and critically evaluated in order to focus the Division's sampling efforts. The Division's environmental monitoring is essential in order to provide quality control, to

Figure 6

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION - DOE OVERSIGHT DIVISION
ENVIRONMENTAL MONITORING AND COMPLIANCE PROGRAM
ORGANIZATIONAL CHART

ensure compliance, and to assure protection of public health and the environment. Monitoring efforts include surface water quality, potable water quality, biological/fish/wildlife evaluation, groundwater quality, and air quality on and around the Oak Ridge Reservation.

6.B.1 Monitoring Program; Attachment A.1

The EM/C section coordinated an annual review of the plan developed for the Oak Ridge Reservation (ORR) DOE environmental monitoring program. This plan was provided to the Division on December 14, 1993. Comments were addressed to DOE on March 18, 1994. The Division is presently awaiting a response from DOE regarding those comments.

6.B.2 Air Quality Monitoring Program; Attachment A.5

During the past year DOE has not reported any violations of the National Ambient Air Quality Standards for the Criteria Pollutants or any violations of the radiological NESHAPS standards. The data which has been reviewed from the ambient air monitoring systems on the Oak Ridge Reservation verify that any of the criteria pollutants which were monitored were well within the limits specified for the criteria pollutants in ambient air.

During the past year EM/C air quality personnel have been involved in reviewing data generated by the various ambient air systems on the ORR as well as reviewing the actual systems. These reviews are considered to be continuous. The air quality personnel have been involved with public and professional/technical meetings concerning the proposal to discontinue the majority of the ambient air monitoring system operated by Y-12. Division personnel have performed a technical review of data and information concerning this proposal and have responded accordingly. EM/C air quality personnel have also participated in air permit inspections at all three plant sites in order to better understand and aid in evaluating ambient air quality and how it may be affected by DOE activities.

EM/C air quality personnel have corresponded with EPA and TDEC/APC (Air Pollution Control) personnel concerning important technical issues. The EM/C air quality personnel also have been involved in training through the Air Pollution Training Institute (APTI) which is sponsored by EPA. Some of the courses were taken at Flemming Training Center through satellite down link of the APTI telecourses. Other APTI courses that were taken included self instructional courses. As the EM/C air quality personnel gain more experience and knowledge concerning air quality issues the quality of data review and system audits will increase.

6.B.3 Public Drinking Water; Attachment A.2

During the past year DOE did not report any releases that would impact public drinking water systems (PWS). There has been one location where raw water samples have been taken with plans for expanded review and sampling as needed. That location is on the Clinch river at the Anderson County Water Treatment Plant Intake as part of the Ambient Surface Water Monitoring Program. To date four samples have been taken all of which have met surface water

source criteria under the Safe Drinking Water Act. Eventually sample(s) of downstream PWS intakes will be taken. This data will also then be used in the Ambient Surface Water Monitoring Program as well as the Groundwater Monitoring Program. After further analysis, finished water at each of the PWS may be monitored.

During the past year the Memorandum of Understanding (MOU) with TDEC Division of Water Supply (DWS) has been signed. This effort required discussion, information exchange, and meetings between the two divisions. The signing of this MOU allows the Division to play an expanded role with each PWS directly or indirectly impacted by the ORR. The Division will be more involved with the sanitary inspections as well as water sampling of each PWS. The Safe Drinking Water personnel have gathered information and participated in various training exercises. The information gathered largely consisted of the Sanitary Survey, current sampling requirements, current sample data and current sampling exemptions on each of the PWS that could possibly be adversely affected by DOE activities on the ORR. This information is still being gathered with the goal of comparison to contaminants known to be found in the source water. The training of the Safe Drinking Water personnel consisted of various field trips with the TDEC Knoxville Field Office, various in house training, and course work at the Flemming Center. The safe drinking water personnel also participated in the review of the DOE Annual Report and the draft of the DOE Environmental Monitoring Plan.

6.B.4 Groundwater Monitoring; Attachment A.4

6.B.4.1 Program Review; Attachment A.4.1

" The State will review DOE's current on-site and off-site groundwater monitoring programs and will recommend improvements, if needed. The State will continually review DOE-generated data." Sampling of wells off the reservation east of Y-12 down Union Valley verified a carbon tetrachloride plume well beyond DOE's border. The rock formation for this plume is the Maynardville Limestone which by nature exhibits large dissolution cavities. Sinkholes and underground drainage is characteristic of Maynardville Limestone and adjoining Knox Group of formations. Together these formations are known as the Knox Aquifer and characteristically are a karstic aquifer. Karst considerations are significant due to flow paths being miles long and travel times for contaminants being short, on the order of days rather than years. Monitoring in karstic regimes requires specialized methods which to some extent are becoming a part of DOE programs and a considerable part of The Divisions programs.. As stated in TOA A.1 Monitoring Program, "A joint assessment of the current monitoring program shall be conducted to determine future needs for a comprehensive and integrated monitoring program." It is apparent from the cooperation of DOE and the Division that we are moving toward a comprehensive monitoring program by incorporating karst investigations and integrating the Division's findings and data with that of DOE's.

By way of meetings with each site, compliance is ensured throughout by communication of TDEC division's requirements.

Memorandums of understanding (MOU) have been established for the Division of Underground Storage Tanks and have been initiated for the Division of Water Supply. The MOUs facilitate the Division's mission and implementation of the TOA. Particular success for Underground Storage Tanks (UST) can be attributed to the interface oversight has accomplished between the Division of UST and DOE. UST and CERCLA integration is being attained in cases where overlapping contamination exist. This integration should alleviate problems that occur with overlapping regulatory drivers.

Difficulty in reviewing DOE generated data can be attributed to the quantity and varied reporting formats. Each site collects and communicates their data through various hard copy reports. To review the data electronically a request for the Oak Ridge Reservation Hydrology and Geology Study (ORRHAGS) data base was made but not fulfilled (5-17-94). This data base represents the most consolidated source for groundwater data that could be identified at this time. As a result of this inconvenience a request for the Y-12 data base has been requested and received. In an attempt to utilize the recently (April 1994) acquired SUN® workstation the data was asked for in a compatible format. No use of the data has been made to date due to lack of training for the system. At present this office is installing a local area network which is also incompatible with the SUN® workstation system. Until resolution of these problems occur the data will be reviewed through hard copy reports. The consolidated data base of monitoring information as described in TOA A.7.1.3 will be forthcoming to the SUN® workstation also known as the Oak Ridge Environmental Information System (OREIS).

Included in the Division's groundwater program is a subsection on Underground Storage Tanks (USTs). There are approximately 100 petroleum regulated USTs on the Oak Ridge Reservation (ORR). Of these tanks, 53 are at ORNL, 22 at Y-12, 17 at K-25 and the remaining at other ORR locations. The majority of USTs at the Y-12 and K-25 sites have been removed as part of the Energy Systems Best Management Practice. Much of the tank inventory is being phased out at ORNL.

There are 20 leaking underground storage tank (LUST) sites on the ORR. Six sites are at ORNL, 12 at the Y-12 plant, and two at K-25. Each of these sites are at some phase of the Assessment and Corrective Action process, governed by the State of Tennessee Division of UST regulations. As part of these processes, groundwater monitoring is conducted to delineate the extent of contamination and determine the effectiveness of implemented corrective actions. The Division participates in this monitoring to provide oversight and to closely review the analytical results submitted from each monitoring event in relation to the UST program and ongoing RCRA/CERCLA actions at these sites.

6.B.4.2 Program Development; Attachment A.4.2

This is a DOE action that can be influenced by the State's recommendations as specified in TOA A.4.1. A comprehensive groundwater program is evolving. Several meetings discussing

issues such as the off-site monitoring program are contributing to DOE's continued development as described in the TOA. Technical information exchange meeting involving both the State and DOE supply ideas that foster a comprehensive program. There will be areas to improve upon but at present fundamentals are being defined as a foundation for future programmatic changes. TDEC opens projects, as needed, to support the goal of comprehensive groundwater evaluation.

6.B.5 Environmental Monitoring Program & Report;
Attachment A.7

6.B.5.1 DOE Actions; Attachment A.7.1

6.B.5.1.1 Environmental Monitoring Implementation Plan;
Attachment A.7.1.1

In December 1993, a draft DOE environmental monitoring plan was provided to the Division. Review comments from the Division were submitted to DOE in March of 1994. It is proposed that the DOE environmental monitoring plan become a controlled document that will be updated as changes are incorporated. This is considered a favorable move by the Division in that changes intended within the plan will be reviewed in draft form, before inclusion, by the Division. Additionally, the plan will reflect current monitoring activities making it a more useful tool to DOE and the Division. After meeting extensively with DOE and MMES counterparts, TOA Attachment A.7.1.1 was delivered to DOE on June 30, 1994 in what the Division considered an acceptable format. The Division is currently waiting on final comments from DOE regarding A.7.1.1.

6.B.5.1.2 Monitoring Data; Attachment A.7.1.2

DOE is presently working towards a comprehensive data base to assist with this TOA item. Until completed, the Division and DOE/Contractors agree to provide reports, data, and sample analysis upon request and within time frames set out in the draft attachment. Received reports are thoroughly reviewed and, if necessary, formal comments are provided to the responsible party(s). TOA attachment A.7.1.2 was delivered to DOE on June 30, 1994 in a format acceptable to the Division, MMES, and DOE counterparts. At present, final editions of attachment A.7.1.2 have not been signed.

6.B.5.1.3 Data Base; Attachment A.7.1.3

The consolidated data base of monitoring information (TOA A.7.1.3.) and (FFA XXVIII.C) is under development in the Oak Ridge Environmental Information System (OREIS). Interim methods are being sought to retrieve data while the consolidated data base is under development. An OREIS Workstation has been installed at the Division facility. This station is not networked and will periodically receive updated data tapes. Personnel from this office have received introductory training on the OREIS including SAS Assist, View Manager, Browser, and Macro Manager. The Division will use this system to perform data analysis and integrate it with our own data to include in all TOA deliverables. Currently there is limited data on the system and

traditional methods of data gathering are being utilized.

6.B.5.2 State Actions; Attachment A.7.2

6.B.5.2.1 Environmental Monitoring Plan

The Division's environmental monitoring will operate under a plan specified in the Tennessee Oversight Agreement (TOA) Attachment A.7.2.1 "The State will prepare a plan for the State's environmental monitoring and analysis of chemical and radiological materials that may be present in the air, water, and soil on the Oak Ridge Reservation and environs." This TOA attachment includes provision for DOE review and consultation, for DOE opportunity to split samples, and for monitoring and analysis under applicable state and federal standards.

Through combined resources, staff developed an environmental monitoring plan. The plan includes sections on surface water monitoring, fish and wildlife monitoring, groundwater monitoring, air quality monitoring, radioactivity surveillance, and laboratory procedures. The main objectives of the Division's environmental monitoring program are to provide quality control and verification, to ensure compliance, to assure protection of public health and the environment, and to locate and target data gaps existing within the DOE monitoring program.

6.B.5.2.2 Annual Report

Attachment A.7.2.2 of the TOA specifies that the State will provide annual reports to DOE and the public on the results of the State's monitoring and analysis activities. These reports will also describe the quality and effectiveness of the DOE environmental monitoring and surveillance programs as derived through reviews of DOE technical reports and split sampling by the Division.

The Division's "Environmental Monitoring Annual Report" represents an overview of the Division's developing environmental monitoring program. It is anticipated that future reports will contain more data, continue in growth and will more completely address the programs described in the Environmental Monitoring Plan.

6.B.6 Auditing of ORR Facilities; Attachment B.1

Division staff members conduct, participate in, or observe selected environmental audits/appraisals on a regular basis. During the last reporting period, these included: EPA's NPDES Compliance evaluations at K-25, Y-12, and X-10; TDEC RCRA site-wide TSD Inspections; TDEC Solid Waste Division Compliance Inspections; DOE's ESH & QA management and functional appraisals; Plutonium Vulnerability Assessment; and the Division Facility/Building Surveys, MMES Corporate audit at ORNL, Air Pollution Control active source audits, Above Grade Storage Facility, Pond Waste Management Project drum yard, and Tumulus pad inspections, among others.

The role of the EM/C section recently has been to establish a mechanism whereby this office is notified of and given an opportunity to observe all environmentally related audits/appraisals conducted on the ORR. Furthermore, this section is responsible for obtaining copies of audit reports, detailing findings and corrective action plans, for review and follow-up. To this end, negotiations have been ongoing between EM/C staff and DOE to find a mutually agreeable, value added means of oversight by the division of environmental audits.

Division staff will also continue to conduct independent audits of the ORR facilities.

6.C EM/C Program Coordination

The EM/C program works with a number of internal and external programs and organizations. Because of EM/C assigned roles EM/C work with sister agencies for Clean Water Act, Clean Air Act, Radiological Programs, National Environmental Policy Act, Safe Drinking Water Act, Safe Dams Act, Underground Storage Tank laws, portions of the RCRA and CERCLA laws, and others. Because EM/C sections are either primary service provider (Tennessee Oversight Agreement, or Memorandum of Understanding, etc) for some programs or supplemental support for other Division programs, or provide special projects in support of other TDEC program efforts, EM/C does coordinate with most Division efforts. The Division has many applicable Division programs housed within a multi-program Oak Ridge office, so this is an asset. The Division still lacks adequate computer linkage and access to hardware and software, but the Division has made progress. EM/C coordinates with internal programs in many ways, large and small group meetings, written messages, telephone, and a number of quality circles. The EM/C has chaired most of the quality circles to date as several relate to environmental monitoring. EM/C has worked with The Tennessee Agriculture Department with some preliminary planning with regard to possible milk sampling. EM/C has worked with peers within this Division, the Nashville based TDEC sister Divisions, with EPA, with the Flemming Training Center, with selected professional associations, and with community organizations and the area commercial business operations as requested. In addition, the expanding EM/C role as audit coordinator, NEPA coordinator, Environmental Index research with mechanism and parameter definition included in the objective, and the EM/C expanded role to support Division wide TOA tracking work, EM/C can see many internal and external needs for not only additional communication and coordination, but ways to improve the quality of those ways the Division and/or EM/C captures program information, and implements the Division Objectives.

6.D EM/C Public Participation

Within the EM/C program staff members have participated in a number of efforts that both seek to inform the public as well as to obtain citizen and stakeholder input into programs and actions. EM/C has worked with local government and citizen interface groups such as the LOC, The Steering Committee of the

Site Specific Advisory Board (SCSSAB), and with The City of Oak Ridge Environmental Quality Advisory Board (EQAB). Staff members from EM/C have attended and participated in meetings of the above groups, and we have offered both responses to questions, referral to other appropriate agencies, and have also provided proactive assistance. EM/C staff members have worked with The City of Oak Ridge EQAB on issues with regard to Oak Ridge Housing with asbestos, and encouraged EQAB to look at long term land use issues as this relates to the ORR, which is about two thirds of the land space inside the city limits. EM/C have attended local cable TV station initial training for possible use by our EM/C programs, and have assisted with some media contacts. EM/C staff have attended public DOE media events, such as the release of Environmental Reports, and have assisted city officials on both a proactive basis and a reactive basis. EM/C staff has attended and participated in LOC meetings based in counties around Oak Ridge, primarily downstream from Oak Ridge. The EM/C group has responded to some citizen requests or questions, or made referral as needed. The EM/C public interface effort has utilized many hours of about four of our staff members.

In addition to the above, EM/C staff has attended selected public hearings, project status and public meetings by DOE, and have interfaced with sister agencies on some of the sensitive public issues. Files are open to the public and EM/C coordinate several aspects of the NEPA laws, which is a form of public interface coordinated through the clearinghouse in Nashville. EM/C staff serves as the coordinator to assemble the Division's environmental monitoring information for an annual Environmental Monitoring Report. EM/C staff members have done some proactive work with local media, but most of this news release type information is done through the LOC, or our Division Director responds directly to media questions.

7. ISSUES, FINDINGS AND RECOMMENDATIONS

7.A Introduction

Significant issues, findings, and recommendations developed by the Division for this report are summarized in the sections below. Sections 7.B through 7.W were reported in the Division's 1993 Annual Report. DOE made an effort to address each of these issues during this reporting period. DOE's effort and the Division's response to this effort are summarized in their specific sections. Issues, findings, and recommendations that have developed in the past year are included as a continuation of Chapter 7 of this annual report. There is a productive dialog between DOE and the Division that results in more effective communication and coordination between the Tennessee Department of Environment and Conservation, other state agencies, the DOE Field Office, Site Offices, DOE Prime Contractors, and the community. The issues raised here are efforts to improve this communication.

7.B Site Access

During the last year DOE and MMES have worked to eliminate site access problems by addressing ORR wide training requirements.

7.B.1 Training

DOE and MMES in response to last years annual report have consolidated all training under the Center for Continuing Education (CCE). By doing this all courses taught at the three sites now have the same material in all common courses. This insures that our staff has the proper training needed to access all areas on the ORR that they need to access in order to perform their job.

7.B.2 Security

In last years report DOE had streamlined the badging process by allowing Division staff to walk badge request forms through the approval process reducing the time by several weeks. During the last year this process has again been improved upon by allowing the DOE Security Office to sign off for the sites thereby saving even more time.

7.C Project Costs

The Division is pleased to see expanded DOE Environmental Restoration and Waste Management Program efforts to achieve cost effective projects. During the January 26-27 ORO "Stand Down Action Plan", a project performance study dated November 30, 1993 was presented. One chart showed DOE EM-ER project costs exceed similar costs for other government programs. These reports seem to justify some continued state reviews on the topic, yet DOE is recognizing the need and acting on the need.

The topic of project costs is both very important to the successful implementation for any project and of environmental significance because available funding must have the best and most effective environmental impact that is possible. The

Division does not assume a role of formal financial audits, but does consider the issue of cost to be a part of the oversight effort, section by section. There are projects within the operation of the Oak Ridge Reservation that could be compared to similar traditional Municipal Public Works projects. In addition, a comparison of the costs of common elements of non-traditional projects on the ORR to large private sector or public sector projects(excluding, of course, radiological concerns and health/safety responsibilities that may exceed those levels for public or private sector projects) can yield useful information regarding the manner in which DOE disperses funds.

Accordingly, the Division will continue to review some ORR project budgets for a comparison with some selected public or private sector projects. This is a team effort within the Division's program since the project specific expertise is located within the several sections. Individuals within the division have attended Activity Data Sheet (ADS) training sessions. ADS's are used to request allocation of funds from congress and are the key to understanding DOE's budget planning process. Several individuals within the division have been following projects through the expression of interest (EOI) and request for proposal (RFP) stages through the award of contract. Additionally, there is an ongoing effort to collect project cost estimates from across the state to serve as a basis for comparison.

7.D Patentable Information

The issue of patentable information resulted as a concern with the public's access to information that was potentially marketable. Contractual agreements between DOE and their Prime Contractors place certain information, especially marketable technology, such as the type that would be generated at the Oak Ridge National Laboratory, under the contractors sole ownership. The contractor advises the Division that to make this information public prior to the time it is patented would be an infraction of the patent laws. The Division has agreed that any information identified by DOE or its contractors as patentable or proprietary will be protected according to State Policy. All other non-classified information continues to be considered public information and provide to the public on an immediate basis.

7.E Stream Flow and Rain Fall Gaging Activities

In the 1993 Annual Report, the Division identified this issue of concern from the Waste Management standpoint. Through positive interaction between DOE and the Division's Waste Management staff resolution of this issue has been achieved.

7.F Declassification of Classified Information

The Division has had good success in establishing a "need to know" and have been able to review classified documents at all three facilities on the ORR and the Federal Building. The Division understands and will comply with all laws, regulations, and DOE Orders pertaining to the protection of classified information. The Division continues to support DOE's effort to

declassify as much environmental, safety, and health information as possible in an effort to make it available to the public. This effort is critical for the public to be able to make informed decisions on environmental restoration and waste management practice that impact their and future generations public and environmental health.

7.G FFA Schedules and Prioritization

The DOE has recently established and initiated a new reservation wide remedial action project's prioritization methodology. The new methodology, known as the "Environmental Restoration Risk-Based Prioritization System" heavily weights the human health and environmental risk from the individual projects. The 1995 FY is the first year to fully utilize the new system, however it appears to accomplish the goals set out in this section of the past annual report.

7.H Data Validation

The data validation issues discussed in this section of the first annual report have been resolved to the satisfaction of the Division at this time.

7.I Data Availability

Critical steps have been taken by the DOE Field Office and its Contractors to assure that data, including both documents and general information, are readily available to the Division and hence the public. While data and information continue to be cleared through contractor procedures including validation, classification, patent/technical review, and in some cases legal and management review prior to release to the Division, DOE and MMES continue to make progress in accepting the Division as an equal partner in this effort. This has resulted in written procedures at Y-12 that provide requested documents being available on an average of three working days. ORNL and K-25 personnel have verbally indicated that those sites will attempt to meet this time frame as well.

The Division continues to review data and information on-site prior to requesting its review for public release. Information is now being released at the lowest level of management possible to assure timely public access to the information. The availability of information is critical to the Division's ability to perform its responsibilities to the citizens of Tennessee and insure that their health, safety and environment around the ORR are being adequately protected by DOE environmental restoration and waste management activities.

7.J Technology Development

In the 1993 Annual Report, the Division identified this issue of concern from the Waste Management standpoint. Through positive interaction between DOE and the Division's Waste Management staff resolution of this issue has been achieved.

7.K Land Use/Institutional Control Issues

There are land use impacts within the CERCLA process and land use issues and impacts outside the regulatory CERCLA process. Our Division staff members have expressed an approach that future land use is determined by the level of remedial action attainable with existing technology and resources. The Division has also previously expressed the expectation that any long term DOE intended use of land use/ institutional controls must also be supported by a DOE commitment to progressively move toward a less restrictive land use over time through future site remediation. Whatever the eventual regulatory decision on land use, the impacted communities (Oak Ridge and surrounding cities and counties) must recognize this issue up front because the local communities will have to live with the consequences of these CERCLA actions not just for decades, but for centuries.

7.L CERCLA Accelerate Clean-up Strategy

Some improvements to the acceleration of the CERCLA activities on the ORR have been accomplished over the past 33 months since the last Annual Report. However, see new section 7.X.4 for discussion of related comments.

7.M Natural Resources Damage Assessment (NRDA). Process

Natural Resources Damage Assessment activity for the Oak Ridge Reservation is an ongoing process and will continue along with the CERCLA process. A Trustee council has now been formed between the DOE, the Division, the Tennessee Valley Authority, and the Department of Interior. Progress toward completion of assessment activities will be reported in future annual reports.

7.N Toxic Substance Control Act Incinerator Burn Plan

In the 1993 Annual Report, the Division identified this issue of concern from the Waste Management standpoint. Through positive interaction between DOE and the Division's Waste Management staff resolution of this issue has been achieved.

7.O Toxic Substance Control Act Incinerator Ash Disposal Plan

In the 1993 Annual Report, the Division identified this issue of concern from the Waste Management standpoint. Through positive interaction between DOE and the Division's Waste Management staff resolution of this issue has been achieved.

7.P Federal Facilities Compliance Act

Discussions related to the Federal Facilities Compliance Act have and will continue through 1995, with efforts on both DOE and the Division's part directed towards the ultimate treatment and disposal of mixed waste.

7.Q Low Level Radioactive Waste Disposal

This item addressed weaknesses in DOE's treatment and storage of radioactive waste. The main issues were development of improved methods of storage/disposal and adequate funding for that development. This item was CLOSED in the 21 April 1994 TDEC/DOE/MMES Focus Group Meeting. Closure of the item was based

on demonstrated advances in storage methods, volume reduction and recycling.

7.R Variable Dose Irradiation Facility

The Division's concerns about this facility fall under two issues. These issues are site security and removal of the sources. DOE has taken interim steps to improve the security of the site. These include:

- Twice a day checks by watch force patrols
- Metal straps securing C0-60 sources brazed in place
- Visual seal added on exterior doors
- Hasp and padlock added on inside of overhead door
- Grates bolted over vents on top of building
- Material within six feet of fence removed
- Interior door pinned
- Exterior door pins welded in place
- Three-strand outrigger barbed wire installed on fence
- Fence at main entrance to Freels Bend repaired so that vehicles can not drive around it
- Additional posting signs
- Chain installed across the road entering the VDRIF area
- Security survey conducted by Oak Ridge Police Department

Although safeguards and security issues have improved with these interim steps, the State still recommends the removal of the sources to ORNL. Sources of funding for removal of the sources are still under investigation. This item remains OPEN.

7.S Policy of No Radiation Added

This item addressed DOE's policy that no radiation be added to it's off-site shipments of waste for disposal. The Division perceives that this policy is not cost effective and that it results in an additional burden being placed on the waste storage and disposal systems. DOE-HQ formed a working group with EPA and NRC to develop radioactivity concentration limits for waste release criteria. To date a consensus has not been reached although discussions remain on-going. DOE-HQ has approved procedures for the release of sealed/unopened containers of waste and for bulk material with no radioactivity added. There has been no final resolution of this item so it remains OPEN.

7.T Waste Management and Radiological Performance Assessment

In general oversight activities have shown that current waste management operations are being conducted in an essentially compliant manner. However, significant problems related to historical storage and disposal practices continue to be of concern. These include:

- a. Below grade storage of high activity low level waste in "wells" continues to be a significant concern with relation to timely detection of potential releases. Additionally it would appear that the longer a waste canister is stored below grade the more problematic its uneventful retrieval becomes.

- b. The Division continues to maintain the position that an approved performance assessment, associated with waste acceptance criteria and analytical characterization capabilities should be developed prior to operation of any new radioactive disposal or storage facilities.

7.U Ambient Surveillance Monitoring

DOE has established an extensive environmental monitoring program within the boundaries of the Oak Ridge Reservation which consists of effluent monitoring and environmental surveillance. The Division has reviewed and commented on the 1994-1995 Environmental Monitoring Plan (EMP) for the ORR. The DOE contractor's on-site sampling activities are extensive. The Division will continue to review contractor off-site monitoring and seek appropriate opportunity to supplement monitoring and/or improve contractor monitoring. Given the complexities of the atmospheric and hydrology regimes of the ORR and its environs, it is understandable that it is difficult to monitor for the migration of contaminants off the reservation. The Division places a high priority on protecting the citizens of Tennessee. The Division will continue to review DOE's ambient monitoring plans, sampling and analytical data to assure that the public's health, safety and environment are adequately protected by DOE. The Division will also conduct independent ambient monitoring and, when needed, split samples with MMES to verify DOE efforts.

7.V Availability of Environmental Monitoring Data

The availability of Environmental Monitoring Data within a reasonable time period remains as a concern for the Division's program sections. In some areas, data availability has greatly improved with improved communication between the Division, DOE, and its contractors. There still remains varying procedures when dealing with each site to acquire access to similar data. Additionally, the annual report that is generated and released to the public as a document presenting a summary of environmental data that would "characterize site environmental management performance, confirm compliance with environmental standards and requirements, and highlight significant programs and efforts" (p. II-2, DOE Order 5400.1) are taking about two years before release to the public, and available quarterly reports seem to be distributed when that data is six months old, or older. The Division understands that actions are being taken to lessen this generation time. Even though Division staff can go on-site to view selected environmental monitoring data, this does not allow the Division to maximize an early benefit of DOE and Contractor stated findings, summary charts, overviews, conclusions, evaluations, and comments. In addition, the general public may not have access to environmental monitoring data until a point in time when the information has lost much of the potential for useful review, actions, relevant question, or course corrections/alterations that might have been appropriate within some prompt manner. The Division has continued its efforts to make environmental monitoring data available to the public on a "real time" basis. TOA Attachment A.7.1.2 is in its final developmental stage. At that time it is anticipated that the

concept of data availability will be agreed upon by the Division, DOE, and it's contractors.

7.W UST/Other than Petroleum

This issue is closed. The Division has determined that these hazardous tanks have been inventoried and the Division will continue to track them.

7.X Environmental Restoration Program 1994 Issues, Findings and Recommendations

7.X.1 Introduction

The Federal Facilities Agreement was signed in January 1992. The short period of time (33 months) since that action has seen much movement toward it's implementation through coordination of the three involved agencies. A systematic approach has evolved through the establishment of an ORR-wide "Operable Unit" strategy that is anticipated to methodically lead over the next 30 years to the investigation and remediation of this extremely large (38,000 acres) and problematically diverse NPL site. In addition to the adoption of the current operable unit strategy, the three parties have successfully developed schedules for primary activity milestones as listed within Appendix E of the FFA for the 1992 through 1994 fiscal years and proposed schedules for FY 95 and FY 96. With few exceptions, all planned deliverable and review/comment milestones have been met in accordance with the originally established schedules. In those situations where it became obvious that, for various reasons, original schedules could not be met, the three parties have effectively, without initiating formal "dispute resolution", agreed to alternate dates and have modified Appendix E of the FFA accordingly. Throughout these processes the Division has been an active part of the decision making process, attesting to the success and importance of the Tennessee Oversight Agreement and the Federal Facilities Agreement in ensuring that the interests and concerns of the Tennessee public are being duly represented within the ORR RCRA/CERCLA process.

The FFA-guided CERCLA process at the ORR has made great strides toward interagency coordination and overall project objectives in the past 33 months. Many issues discussed in the first annual report have been resolved to the satisfaction of the FFA parties. These issues included; concerns for document consistency, data validation issues, and site access issues. As is to be expected in any oversight program certain other issues have now been recognized and must be resolved in the year to come.

The following is a discussion of present issues of concern.

7.X.2 FFA Program Funding Concerns

As the DOE Environmental Restoration program for the Oak Ridge Reservation expands its areas of financial obligation the FFA related portion of the budget, i.e., RCRA/CERCLA remedial activities, continue to experience more and more competition for funding. ER dollars are being utilized to fund landlord activities, sites surveillance and maintenance activities,

numerous program management activities, reservation wide D&D activities, broad ranging environmental monitoring activities, along with some activities that could be defined as active program environmental compliance. Certainly the DOE has the prerogative and responsibility to allocate its budgeted dollars to cover all of the necessary reservation wide activities. However, care must be taken to insure that those dollars designated by Congress to accomplish remedial clean-up actions on Federally funded NPL sites are clearly dedicated to that use and are expended in the most prudent and efficient manner possible to achieve that goal.

The Division's concern lies in the difficulty of accurately projecting available funds specifically earmarked for RCRA/CERCLA remedial activities and being able to depend on the stability of those funds over the term necessary to initiate and complete remedial actions. Competition with many of the before mentioned activities (competition within the DOE contracting environment is tremendous) can divert funding at almost any point. Prioritization of FFA task and therefore available funds become an unnecessarily complex endeavor when prioritization must include a ranking of activities not clearly related to the FFA process and in some cases only loosely related to remedial activities.

The Division has suggested that the DOE clearly define the funds earmarked for compliance with the CERCLA/FFA mandates separately from other environmental restoration funds. These funds would be those requested and dedicated to the task of the FFA mandates such as RCRA/CERCLA/LLW activities to include the Remedial Investigation/Feasibility Study/Remedial Action process.

It is recognized that this is not the same as DOE programmatic environmental restoration funding which covers the broad range of funded activities other than FFA driven activities, some of which were mentioned above. However, this breakdown will allow the FFA parties to effectively and efficiently schedule activities based on CERCLA priority in accordance with the FFA without having to negotiate with the DOE on all reservation wide projects presently being funded under the environmental restoration allocation. Under this format, when and if, the FFA parties see short falls in the FFA-specific budget to accomplish priority RCRA/CERCLA objectives the parties will direct the DOE to make the appropriate budget request necessary to adequately fund the target objectives. In this case the DOE would have the choice to either make additional budget request or rearrange funds within their existing programmatic ER budget.

7.X.3 Land Use Designation and the CERCLA Process

The first annual report from the Division listed at Section 7.K land use/institutional control as an issue of concern. Much national and local discussion has occurred on this issue over the past year with very little definitive accomplishments toward a consensus of when and how land use related institutional controls are to be applied in the CERCLA process at DOE facilities.

One school of thought is that pre-designated land use, even pre-designated future land use, should drive the scope of the CERCLA risk assessment process. A second opinion exist whereby a range of site risk should be determined and then allow risk management decisions, and therefore the extent of remedial actions, to determine suitable future land uses.

Under the first scenario a predetermined land use will dictate risk pathways and receptors, thereby, potentially reducing remedial action objectives (clean up levels) to those accommodating the chosen land use. In the second case future land use is determined by the level of remedial action attainable with existing technology and resources. The State of Tennessee prefers the second approach, thereby, leaving options open to achieve as clean a site as possible using reasonable resources and available technical capabilities. Risk management decisions and subsequent clean-up activities will then determine future land use suitability.

7.X.4 Expediting Removal Actions Under the CERCLA Program

Over the past two years DOE facilities Nationwide have been striving to invent ways to achieve faster and more efficient clean up of their CERCLA sites. The Oak Ridge reservation is no exception to this effort. In anticipation of achieving reasonably rapid remedial actions the Oak Ridge Reservation FFA parties agreed to the selection of certain candidate projects as time critical or non-time critical removal actions under CERCLA. The intent was to recognize individual problem areas that exhibited a real need for action and whereby the actions were straight forward (and therefore deemed simple to execute) and would be consistent with a future, final action. The scope of the actions should be such that the DOE and its contractors could without the obligations of the normal RI/FS process and yet remaining under the guidance of CERCLA and the National Contingency Plan (NCP), achieve rapid and cost effective remedies. In order to accommodate this new and improved way to achieve remedial actions the EPA and State of Tennessee, as parties to the FFA, would on a case-by-case basis release DOE from much of the oversight, document preparation and review given these agencies under the normal CERCLA RI/FS process. It was believed by DOE and their M&O contractor that this relief would greatly expedite their ability to reduce time and expense.

To date it is questionable if this process has effectively achieved its expectations. It appears as though there are constraints inherent to the DOE system that prevents or impedes rapid and cost effective actions. These impediments are independent of the obligations of CERCLA.

Employing multiple contractors and/or project teams to accomplish task that are reasonably straight forward adds time and cost. Non-DOE projects, either with other government agencies or the private sector, would normally utilize one contractor to accomplish an entire removal action project. It should not be unreasonable to expect the DOE to operate in a fashion similar to other agencies and/or private facilities.

Further, the DOE must find ways to reduce the need for internal DOE and contractor project documentation, review and oversight that is outside of the CERCLA/NCP/FFA requirements. Many of these internal DOE and contractor requirements are preventing DOE from meeting the intent of expedited removal actions as agreed to by the FFA parties.

There is also a tendency for the DOE and/or its contracting system to drive even the simplest engineering projects to a level of design far beyond that required to accomplish the task at hand. Creating complex engineering designs to accomplish simple task has the potential to lengthen the duration of the project and increase project cost. Utilizing proven off-the-shelf technologies versus new technology design and development is recommended when available.

Foremost, the DOE should have a much tighter control over project management, direction and scope. The DOE should take the ultimate lead in assuring that projects are focused and involve only those individuals or contractors necessary to complete the project in a timely and cost effective manner. The more entities involved the more costly and time consuming the activity becomes. Positive project results are not necessarily directly related to the number of contractors or contractor teams involved, in fact the opposite is true as diminishing returns dictate.

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