



# **Tennessee Oversight Agreement Status Report to the Public Fiscal Year 2012**

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**Tennessee Department of  
Environment and Conservation**

Division of Remediation

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Cover Picture, GPS collar affixed to chemically immobilized whitetail deer for tracking movements and potential spread  
of contamination to areas off the Oak Ridge Reservation (TDEC Photo).

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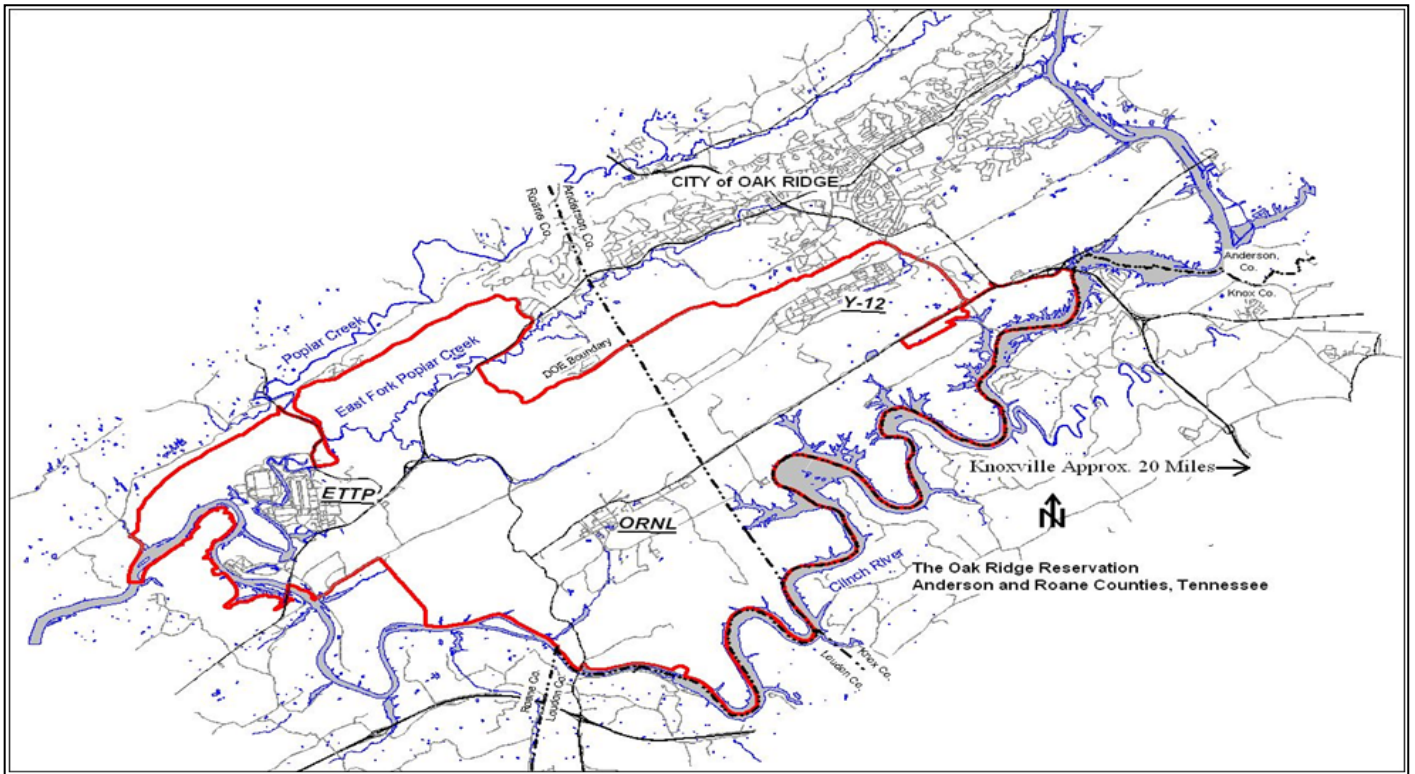
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## Acronyms

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CY	Calendar Year
D&D	decontamination and decommissioning
DOE	U.S. Department of Energy
DOE-O	DOE Oversight Office
EA	Environmental Assessment
EMWMF	Environmental Management Waste Management Facility
EPA	U.S. Environmental Protection Agency
ETTP	East Tennessee Technology Park
EU-9	Exposure Unit #9
FFA	Federal Facilities Agreement
FFCA	Federal Facility Compliance Act
FY	Fiscal Year
ITRC	Interstate Technology and Regulatory Council
LEFPC	Lower East Fork Poplar Creek
LLW	Low Level Waste
LWBR	Lower Watts Bar Reservoir
m <sup>3</sup>	cubic meters
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goals
mrem	millirem
MSRE	Molten Salt Reactor Experiment
NEPA	National Environmental Policy Act
NGA	National Governor's Association
NPDES	National Pollution Discharge Elimination System
NPDWR	National Primary Drinking Water Standards
NRDA	Natural Resource Damage Act
NSDWR	National Secondary Drinking Water Standards
ORNL	Oak Ridge National Laboratory
ORR	Oak Ridge Reservation
OSY	Old Salvage Yard
pCi/g	picocuries per gram
pCi/L	picocuries per liter
pCi/m <sup>3</sup>	picocuries per cubic meter
ppm	parts per million
PRG	Preliminary Remediation Goal
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
RPM	Radiation Portal Monitor
RMO	Radiation Monitoring Oversight
STP	Site Treatment Plan
SSAB	Site Specific Advisory Board
SWSA-3	Solid Waste Storage Area #3
TARS	Time and Activity Reporting Sheet
TDEC	Tennessee Department of Environment and Conservation
TOA	Tennessee Oversight Agreement
TRU	Transuranic
TSCA	Toxic Substances Control Act of 1976
TWQC	Tennessee Water Quality Criteria
UEFPC	Upper East Fork Poplar Creek
WEMA	West End Mercury Area
WIPP	Waste Isolation Pilot Plant

## Summary and Purpose



Major features of the Oak Ridge Reservation area (TDEC map)

### **The United States Department of Energy (DOE) Oak Ridge Reservation (ORR)**

The ORR is located almost entirely within the corporate boundaries of the City of Oak Ridge, Tennessee, and straddles the line between Anderson and Roane counties. To the north and east lie residential areas of the City of Oak Ridge and the Clinch River bounds the ORR on the south and west. Counties adjacent to the Reservation include Knox and Loudon. Meigs and Rhea counties are downstream of Roane County on the Tennessee River. The nearest cities are Oak Ridge, Oliver Springs, Kingston, Lenoir City, Harriman, Farragut, and Clinton. Knoxville is the nearest major metropolitan area and lies approximately 20 miles to the east.

The state of Tennessee, through the Tennessee Department of Environment and Conservation's (TDEC) Division of Remediation, DOE Oversight Office, monitors the area to ensure that there is no threat to public health and the environment from DOE's activities on the ORR. In addition, division staff oversee DOE's cleanup of contamination resulting from decades of nuclear weapons production and other site missions.

## **Overall Conclusions**

The year 2012 monitoring results showed no unacceptable risk to the public. DOE has made efforts to improve the overall health of the public and the environment. There are still significant sources of contaminants that could be released as a result of engineering and/or administrative control failure. Additionally, sources of gamma radiation exposure that still exist must be effectively isolated from the public. The probability of offsite groundwater contamination is also a concern that must be addressed. It is necessary and prudent for the state and DOE to continue monitoring efforts in order to detect and evaluate, as early as possible, potential releases and radiation that could affect the public. The state considers these factors in helping to manage cleanup with DOE and the U.S. Environmental Protection Agency (EPA).

## **Regulatory Programs**

### **Tennessee Oversight Agreement (TOA)**

In 1991 the State of Tennessee and DOE signed the TOA, and TDEC created the office to carry out its responsibilities under the agreement. The TOA provides a framework and funding for the state to oversee DOE's impact on the community in four ways: (1) a regulatory program to support state participation in the Federal Facility Agreement (FFA); (2) a non-regulatory program of independent environmental monitoring and oversight; (3) an emergency response program; and (4) an outreach program to increase public awareness and involvement. Figure 1 shows the organizational structure of the Department of Energy Oversight Office.

### **Federal Facility Agreement (FFA)**

The state, DOE, and the EPA ratified the FFA in 1992. It provides a legal framework allowing this office to enforce DOE cleanup of contamination from past ORR activities. The FFA outlines procedures for investigation of problems, scheduling of activities and implementation and monitoring of appropriate responses. Actions taken under the FFA conform to Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), the Resource Conservation and Recovery Act of 1976 (RCRA), and other federal and state laws.

The National Environmental Policy Act of 1969 (NEPA) applies to proposed federal actions that could significantly affect the human environment, requiring federal agencies to consider environmental impacts and provide for public review and comment. DOE is required to incorporate NEPA values into CERCLA actions on the ORR.

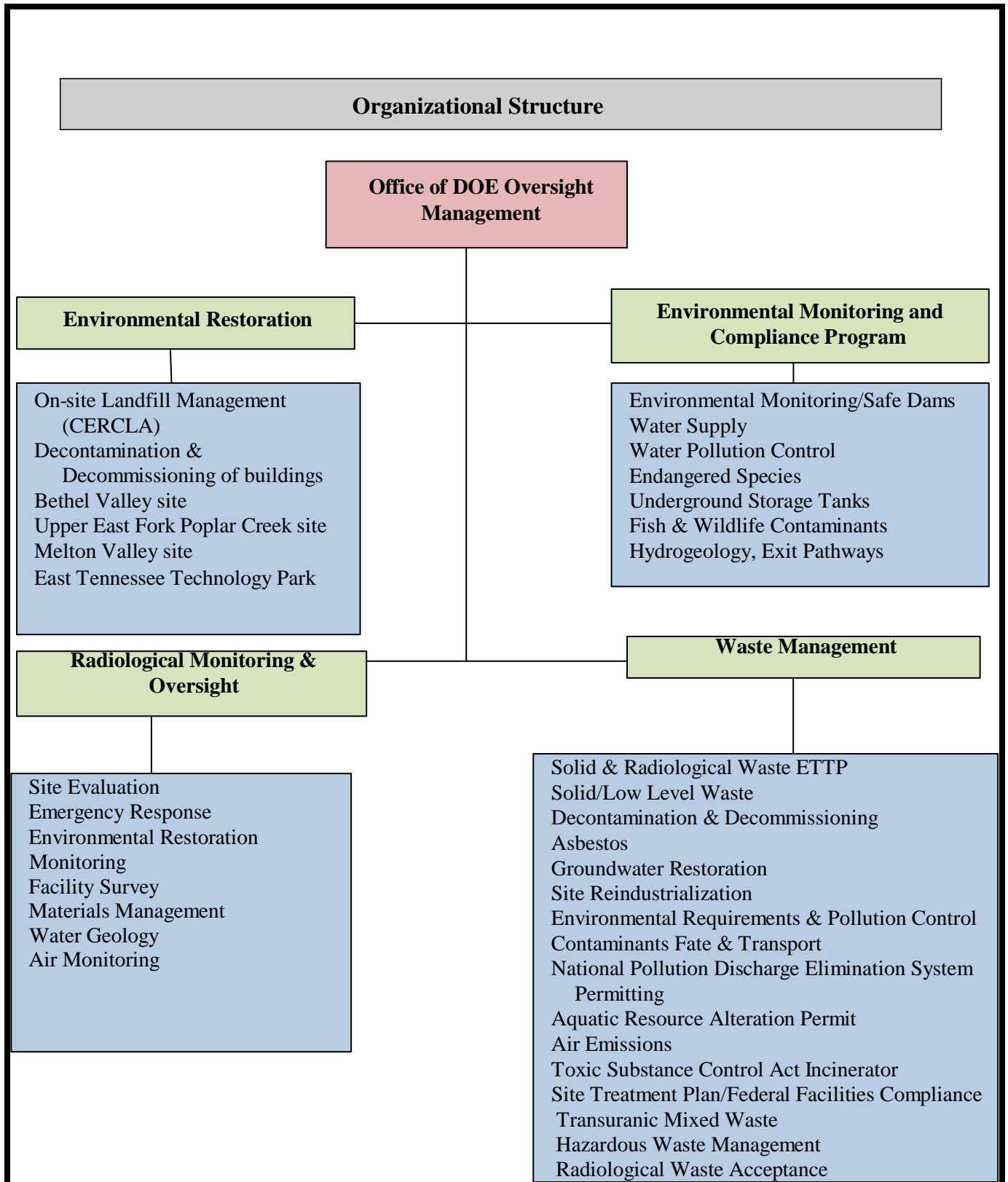


Figure 1: Organizational Structure of the DOE-O Office

## **Key Products and Services**

The Tennessee Oversight Agreement provides for comprehensive and integrated monitoring and surveillance for all media (i.e., air, surface water, soil, sediments, groundwater, drinking water, food crops, fish and wildlife and biological systems) and better public understanding of issues involving the Oak Ridge Reservation. The emissions of any pollutants (hazardous, toxic, chemical, radiological) from DOE operations on the Oak Ridge Reservation and surrounding environment are monitored and evaluated. This agreement allows the state to oversee radiological materials that are otherwise exempted from external regulation by the Atomic Energy Act.

DOE-O ensures that clean-up activities scheduled at DOE-ORR are implemented as scheduled. Enforcement is used as needed including assessment of stipulated penalties. The state participates in, and initiates when necessary, resolution of disputes as provided in the FFA and works with the parties involved to resolve disputes as expediently and efficiently as possible. The office also serves as the state natural resource trustee representative for the DOE-Oak Ridge National Priority List site, investigating natural resource injuries and determining monetary damages in accordance with the Natural Resource Damage Assessment Act.

The Federal Facilities Compliance Act (FFCA) Site Treatment Plan mandates that the department promptly review each deliverable submitted by USDOE for the characterization and treatment of legacy mixed waste. Reviews result in approval, conditional approval, or disapproval of waste characterization packages and treatment schedules. Disapproval comments are provided to DOE for correction of deficiencies

## **Workload Management**

DOE-O regularly reviews program workload, including progress in completion of annual work plan activities. Staff resources are distributed based on overall office workload. DOE-O management meets routinely to discuss workloads and staffing patterns. Staffing resources are utilized across program boundaries when necessary to achieve a goal or complete a work project. When staffing pattern modifications are needed from one program to another, changes are typically made by shifting vacant positions from one program area to another unless there are employees interested in transitioning from one program to another. DOE-O requests for filling vacancies are reviewed and prioritized according to office need.

## **Internal Controls**

DOE-O develops an annual budget based on its work plan each year. The budget for the work plan is determined with funding levels provided by DOE in TOA grants. The work plan includes the costs for personnel along with administrative costs such as equipment, rent, utilities, communications, travel, etc. Staff are required to complete *Time and Activity Reports (TARS)* daily. At the end of each pay period (twice monthly), the individual TARS are entered into the state's computer system (Edison). DOE-O uses this information and reviews of monthly



expenditure reports from the Division of Fiscal Services to make informed decisions about expending revenue. This includes decisions about hiring, travel and training. The goal each year is to insure that DOE-O expenses do not exceed revenue.

DOE-O expenses are evaluated by office managers. All travel must be in support of the TOA. Out-service training and travel requests are reviewed, prioritized and limited to critical need. All travel expenses are reimbursed in accordance with the Tennessee Department of Finance and Administration's *Comprehensive Travel Regulations*. All purchases are subject to an established review/approval process and in accordance with procedures established by the Tennessee Department of General Services' *Purchasing Program Initiatives*. Hiring practices and staff salaries are in accordance with Department of Human Resources' *Rules of the Tennessee Department of Personnel*, Chapter 1120-4. Routine maintenance is conducted on vehicles and technical equipment to minimize repair/replacement costs. Staff are required to use vehicles from the office's motor pool to minimize reimbursement for use of personal vehicles. A current inventory of all equipment is maintained. Technical monitoring equipment is maintained under lock when not in use. DOE-O's *Health, Safety and Security Plan* and accident reporting procedures reduce accidents and corresponding costs. FFCA Site Treatment Plan work is reimbursed through an established standard operating procedure. The laboratory budget is tracked, charted and made available to field staff on a monthly basis.

## **Challenges & Issues**

1. Consistent annual funding required for the continuous and effective cleanup of the DOE Oak Ridge Reservation
  - a. DOE's inability to provide necessary funding for continuous and effective environmental restoration at DOE-ORR has required TDEC and EPA to accept an extended cleanup schedule. Continuous physical onsite remedial action is required by CERCLA; and
  - b. DOE-O needs assistance from local, state and federal representatives to ensure that DOE conducts an effective cleanup of the Oak Ridge Reservation.
  - c. DOE-ORR and DOE-Headquarters must request the funds necessary to perform the environmental investigations and cleanup activities on the Oak Ridge Reservation from Congress as stipulated in the FFA; and
2. Consistent compliant implementation of the tri-party Federal Facility Agreement for the Oak Ridge Reservation
  - a. DOE needs to complete the activities as scheduled in the FFA; some missed milestones are due to unforeseen circumstances but some are due to lack of funding;
  - b. DOE should continue to negotiate future environmental activities with the state and EPA as required by the FFA;
  - c. DOE must cease unilaterally changing project schedules and improve the EPA/TDEC/DOE partnership through mutual decisions rather than DOE unilateral decisions; and
3. Maintaining emergency response capabilities to react to onsite and offsite releases when emergencies occur on the Oak Ridge Reservation. DOE-O assists TEMA by participating

in emergency response exercises and responses to site emergencies to prevent/minimize radiological, chemical or physical hazards from these releases.

**Annual Budget & Program Staffing FY 12**

**1. DOE Oversight Annual Funding**

<b>Funding Source</b>	<b>Funding Amount (\$)</b>
State General Funds	0
DOE M&O Grant	1,976,000
DOE FFA Grant	2,731,200
Environmental Protection Fees	0
STP Review, Cost Recovery*	41,300
<b>Total Budget</b>	<b>4,748,500</b>

\*Billed to SWM and reimbursed by DOE, typically

**2. Program Staffing**

<b>Program Area</b>	<b>Positions (filled)</b>
Administration	7 (5)
Environmental Monitoring	8 (8)
Environmental Restoration	6 (6)
Radiological Monitoring*	13 (12)
Waste Management	10 (9)
<b>Total*</b>	<b>44 (40)</b>

\*Includes one NRDA Staff Person (EPM2)

**Tennessee Oversight Agreement Activities**

**1. State Monitoring on the Oak Ridge Reservation (ORR) and Environs**

**a. Biological Sampling**

<b>Stations/oversight</b>	<b>Number</b>	<b>Met Criteria</b>
Benthic Macroinvertebrates <sup>a</sup>	19	6
Periphyton (Diatoms) <sup>b</sup>	5	NA
Aquatic Vegetation <sup>a</sup>	6	5
Geese Roundups, Rad <sup>c</sup>	1	1
T&E Surveys <sup>a</sup>	6	6
Deer GPS Tracking <sup>a</sup>	22	22
Deer Hunts <sup>d</sup>	3	2
Turkey Hunts <sup>d</sup>	2	2
<b>Total</b>	<b>64</b>	<b>44</b>

a - Met ecological protection (non-impaired) or human food source criteria

b - The Periphyton Samples were not analyzed (NA) in 2011.

c - One or more captured geese failed the administrative release limit of 5 pCi/g.

d - One or more harvested animals failed the administrative release criteria of 20 pCi/g bone tissue and/or 5 pCi/g for the whole body count.

The Benthic Macroinvertebrates program sampled 19 locations in four aquatic systems (East Fork Poplar Creek, Bear Creek, Mitchell Branch, and White Oak Creek). The benthic stream survey is used to analyze and develop scores to generate a biological index value for comparison of stream site to a reference. The results indicate that the benthic integrity in all four systems is less than optimal compared to the reference conditions.



Gerry Middleton rinses aquatic insect larvae from the screening bucket while John Wojtowicz holds the collection jar during benthic macroinvertebrates sampling in White Oak Creek

The Periphyton (Diatom and non-Diatom algae) program collected 25 samples in 2011 at five locations along Bear Creek and its northern tributaries 3, 4 and 5. The periphyton stream survey is used to analyze and develop scores to generate a biological index value for comparison of impacted stream sites to a reference. The samples are scheduled for analysis in 2012.

The Aquatic Vegetation program monitors aquatic vegetation from springs, wetlands, and streams on the ORR. Vegetation sampled includes watercress, cattails, and algae. The vegetation is analyzed for radiological contaminants. In 2011, 5 of 6 samples met sampling criteria for radionuclides. ORNL First Creek (with known contamination) failed to meet criteria. While the likelihood of human consumption is remote, there is a definite potential for contaminated vegetation to be consumed by wildlife and for the contaminants to bioaccumulate in them, creating both ecological and potential human health risks.

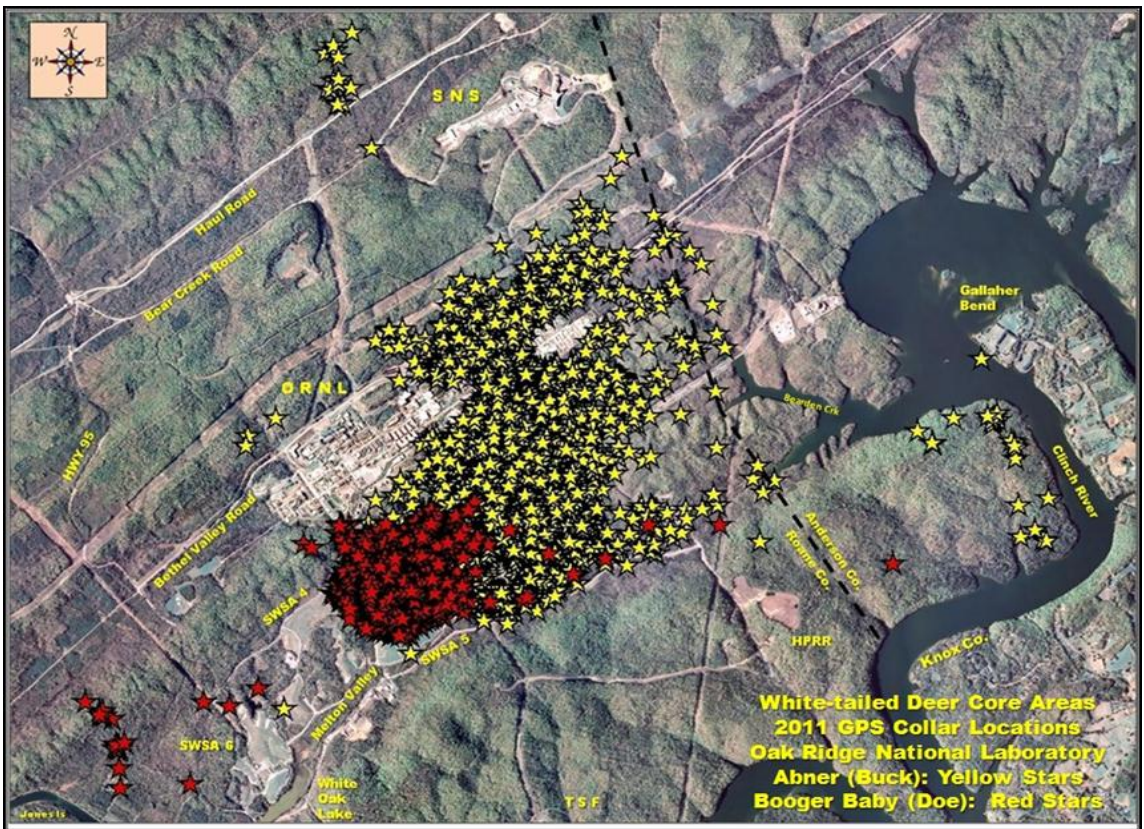


Monitored Aquatic Vegetation

The Annual Goose Roundup program collected and scanned 39 geese to determine if they are contaminated by radionuclides. None of the geese had levels of contamination above the administrative release limit of 5 pCi/g.

The Threatened and Endangered Species Monitoring program surveyed two trails (one proposed 50-foot-wide power line right-of-way, one land clearing project for the new industrial park) and reviewed two independent ORR avian pilot studies for songbirds and bats. The program helps protect the natural habitat of threatened, endangered, and rare species to enable their long-term survival and provides effective stewardship of natural resources on the ORR.

The GPS Tracking of White Tailed Deer program involves collaring a deer with a GPS tracking device to track their movements and determine their home ranges. The program also collects samples from road kill and hunt kill deer samples, and sample deer browse to test for heavy metals. Three deer were collared in 2011 and 28 samples from 22 road kill/hunt kill deer were analyzed. The results from the five onsite deer were compared to the results from the 18 offsite deer. The onsite deer samples were elevated with some metals. However, our statistical sample size for the onsite deer results could not determine if there is a significant impact.



Abner (buck; yellow stars) + Booger Baby (doe; red stars) GPS Fixes  
Recorded Between March 25, 2011 and January 15, 2012.

The office monitored results from the fall deer hunts. Three weekend deer hunts were conducted in 2011, 321 deer were harvested and only three deer were retained due to internal radiological contamination. All three deer were retained during the first of the three fall hunts.

The office monitored results from the turkey hunts. Two weekend turkey hunts were conducted in 2011, 57 turkeys were harvested and none were retained due to internal radiological contamination.

**b. Drinking Water Sampling**

Stations	Number	Met Criteria
ORR Potable <sup>a</sup>	13	13
RadNet, utility drinking water	5	5
Residential Well GW <sup>b</sup>	12	5
<b>Total</b>	<b>30</b>	<b>23</b>

a - Rules for Public Water Systems - TDEC 1200-05-01

b - Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology. Maximum Contaminant Level Goals (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety. National Primary Drinking Water Regulations (NPDWRs or primary standards) are legally enforceable standards that apply to public water systems. National Secondary Drinking Water Regulations (NSDWRs or secondary standards) are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. Health Advisory: A Health Advisory is given by government or health authorities to the public to communicate the potential hazards of a contaminant and describes non-regulatory concentrations at which no adverse health effects would be anticipated. (2011 Edition of the Drinking Water Standards and Health Advisories – EPA 820-R-11-002)

The ORR potable water program conducts monthly and non-routine inspections of the potable water distribution system. Thirteen samples were collected and all samples were compliant with TDEC Rules for Division of Water Supply, Public Water Systems (1200-05-01).



In the Oak Ridge area, EPA’s RadNet Drinking Water program provides radiochemical analysis of finished drinking water collected quarterly from five local water systems by division air and water staff. These are sampled to determine if contamination for the Oak Ridge Reservation is in the water supplied by public water utilities. Results for the five local water treatment facilities in the program have all been well below applicable drinking water standards for the multiple radionuclides analyzed in this project.

A total of 22 samples were collected from 12 residential wells. Eleven samples from seven residential wells had exceeded the drinking water criteria. Radium and gross alpha exceeded its EPA MCL in one of three samples from RWA-118. Fluoride exceeded its EPA MCL in one of four samples from RWA-117. Aluminum (RWA-114 and RWA-118), fluoride (RWA-117), iron (RWA-110, RWA-111, RWA-112, RWA-114 and RWA-118), manganese (RWA-110, RWA-114, RWA-118) and pH (RWA-110, RWA-116, RWA-117, and RWA-118) exceeded the National Secondary Drinking Water Standard, and sodium (RWA-112 and RWA-117) exceeded the EPA Health Advisory.

**c. Surface Water**

<b>Stations</b>	<b>Number</b>	<b>Met Criteria<sup>a</sup></b>
Ambient Surface Water	11	9
Physical Parameters	7	6
Benthic Macroinvertebrates, chemicals	19	14
Rain Event	6	3
EMWMF	5	5
Sediment Grab <sup>b</sup>	14	14
Sediment Trap <sup>b</sup>	2	2
<b>Total</b>	<b>64</b>	<b>53</b>

a - Tennessee Water Quality Criteria (TWQC) - TDEC 1200-04-03.

b - DOE Recreation Preliminary Remediation Goals (PRG)

The Ambient Surface Water Monitoring program sampled 11 sites twice in 2011 for alpha, beta, gamma, ammonia, chemical oxygen demand, dissolved oxygen, dissolved residues, NO<sub>3</sub> & NO<sub>2</sub> nitrogen, suspended residue, total hardness, total Kjeldahl nitrogen, total phosphate, arsenic, cadmium, copper, iron, lead, manganese, mercury, chromium, and zinc. Mercury at Poplar Creek Mile 1.0 and Dissolved Oxygen at Clinch River Mile 78.7 did not meet the TWQC.

The Physical Parameter monitoring program measures the surface water physical parameters at seven locations monthly. Only dissolved oxygen at Bear Creek 4.5 in August 2011 did not meet the TWQC.

The Benthic Macroinvertebrate Surface Water Monitoring program is performed in conjunction with the benthic macroinvertebrate survey. Water samples are collected and analyzed to determine the stressors for the macroinvertebrates. The water samples are compared to the TWQC. Mercury levels exceeded the TWQC in all five East Fork Poplar Creek sample locations.



Andy Robinson and Gerry Middleton measure and record water data at Mitchell Branch

The Rain Event Surface Water Monitoring program collected 18 samples from six locations to determine if point and non-point source contaminant releases to stream are occurring during heavy rain events. Six samples from three locations (East Fork Poplar Creek 23.4, White Oak Creek 0.0 and Mitchell Branch 0.1) detected mercury and/or chromium, respectively, above the TWQC.

The office monitors for the presence of radionuclides in upstream locations, and in liquid effluents discharged from the EMWMF facility to ensure that potential leaks are identified promptly and to verify that effluents released from EMWMF and associated contaminant control mechanisms are consistent with criteria agreed upon by parties to the Federal Facility Agreement. Data from samples collected by office staff in 2011 indicate that the levels of radionuclides released from the facility were below the agreed upon dose limit of 25 mrem/year.

The Sediment Monitoring program collected 14 sediment grab samples located on the Clinch River and some of its tributaries that are considered potential exit pathways. The sediment samples were compared to DOE Preliminary Remediation Goals (PRGs). No compounds exceeded DOE PRGs.





Tab Peryam spoons Clinch River sediment into a sample bottle.

The Trapped Sediment Monitoring program captures sediments that are actively being transported in the river. Three trap sampling devices were deployed but only two were recovered. The samples were analyzed for metals and radiological compounds and compared to DOE PRGs. No compounds exceeded DOE PRGs.

d. **Groundwater**

<b>Stations</b>	<b>Number</b>	<b>Met Criteria*</b>
Springs	8	6
Monitoring Wells	3	3
<b>Total</b>	<b>11</b>	<b>9</b>

Groundwater Criteria is EPA (MCL) Maximum Contaminant Levels, National Secondary Drinking Water Standards, and EPA Health Advisory. (2011 Edition of the Drinking Water Standards and Health Advisories – EPA 820-R-11-002)

Eleven groundwater (springs and monitoring wells) samples were collected from eight locations. Only two springs from three samples exceeded the National Secondary Drinking Water Standard for aluminum, iron, and/or manganese.

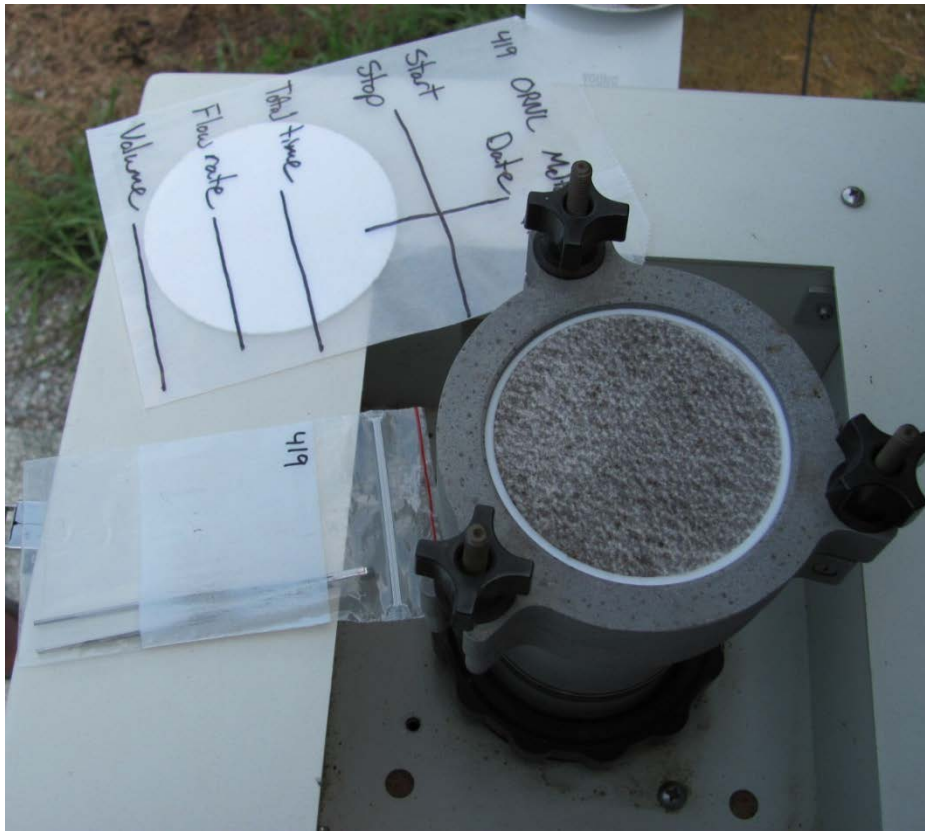


Eddie Worthington and John Sebastian take groundwater parameters prior to sampling a spring.

e. **Air Quality Sampling**

Stations	Number	Met Criteria*
HAPs	3	3
RadNet Air	5	5
Fugitive	5	5
ORR Perimeter	12	12
RadNet Precipitation	3	3
Total	28	28

\*For hazardous air pollutants or radionuclides



RadNet Air Monitor

Particulate air samples are collected twice weekly at the five RadNet Air monitoring stations on the Oak Ridge Reservation and analyzed for radioactive contaminants at the EPA's National Air and Radiation Environmental Laboratory in Montgomery, Alabama. In 2011, all five sites sampled met the designated criteria.

The fugitive air monitoring program uses five high-volume air samplers. Four samplers are mounted on trailers to monitor fugitive/diffuse sources of radioactive air emissions; the other is at Fort Loudoun Dam and serves as a background station. Since the four samplers are mobile, the units can be placed near sites where contaminants might be released (e.g. due to building demolition or remedial activities). The data from the mobile units are compared to the background station and standards provided in the Clean Air Act. All five stations were in compliance in 2011.



Natalie Pheasant changes air filters at the background station in Loudon County.

The RadNet Precipitation monitoring program analyzes monthly composite precipitation samples from three stations on the Oak Ridge Reservation. Analysis of the samples measures radiological contaminants that are washed out of the atmosphere and carried to the earth's surface by precipitation. There are no standards that apply directly to contaminants in precipitation, but the data can provide an indication of the presence of radioactive materials that may not be evident in particulate analysis. This project uses RadNet precipitation data at other locations in Tennessee, in adjacent states, and throughout the United States for reference, as well as drinking water limits. All three sites met sampling criteria with the exception of \* I-131 for a month. (\*attributed to Japan Nuclear Incident)



Monitoring RadNet Precipitation

g. **Radiological Monitoring**

<b>Stations/events</b>	<b>Number</b>	<b>Met Criteria*</b>
Real Time Gamma	6	6
Haul Road Survey	71	71
Env. Dosimeters	141	128**
Transportation	11	11
Facility Surveys	3	2
<b>Total</b>	<b>232</b>	<b>218</b>

\* Contamination not present and exposure pathways below criteria.

\*\* Criteria is 100 mrem/year (allowable dose to members of the public). None of the areas that exceeded criteria were accessible to the public.

**Haul Road**

TDEC performs road surveys to monitor for items that may have fallen off of trucks in-route from the waste source to the EMWFM along the Haul Roads. A total of 71 road surveys were performed in 2011. All ambient gamma readings during the 2011 surveys were within normal background range for the area. Visual inspections for items that may have fallen off trucks were conducted and 211 items were identified as potential waste lot articles. These items were further

surveyed with beta activity ranging from less than background to 584 dpm/100cm<sup>2</sup> and activity for alpha ranging from less than background to 329 dpm/100cm<sup>2</sup>. No significant radiological concerns were noted. Radon was suspected for the high alpha reading. All items were removed by the DOE contractor.



David Foster walks the Haul Road with a gamma detector.



Robert Storms scans an item found on the Haul Road for alpha/beta/gamma contamination.



### **EMWMF Portal Monitor**

A Radiation Portal Monitor (RPM) has been located at the check-in station for trucks delivering waste to the EMWMF disposal area. The RPM uses two large area gamma-ray scintillators located on each side of the road to measure gamma radiation as trucks pass the check-in station. The RPM stores the measurements and associated information (e.g., date, time) then uploads the data to a secure website where it is available for review. If measurements exceed a predetermined level, the RPM software generates an alert notification that is sent by email to RMO staff members. In 2011, no alarms were sent due to radiological elevated shipments.

## Emergency Response

Events	Number	Met Criteria*
Exercises, Graded	1	1
General Emergencies	0	na
Site Area Emergency	0	na
Exercises, not graded	2	2
Total	3	3

Met core exercise objectives, or response to actual event.

### 3. National Environmental Policy Act Review (NEPA)

NEPA requires federal agencies to ensure that citizen participation and environmental impacts are properly factored into the agency's decision-making.

The division commented on the following NEPA document in 2011.

- The *National Environmental Policy Act (NEPA) Environmental Assessment (EA)* was reviewed for proposed changes to the Sanitary Biosolids land application program on the Oak Ridge Reservation, Oak Ridge, Tennessee. This proposed action would allow the future expansion of additional industrial users to the City of Oak Ridge Sewer System. It would also implement a more effective method of managing treated wastewater from West End Treatment Facility (WETF) than the current method. Currently, the treated wastewater is discharged through the existing Y-12 National Pollution Discharge Elimination System (NPDES) point at a higher sampling and materials treatment cost.

NEPA requires decisions to be made through a sustained process of inquiry, analysis, and learning. It ensures that federal agencies provide the public an opportunity to learn about and comment on significant proposals. When followed as required, it ensures adequate planning and prevents costly mistakes.

NEPA documents related to federal decisions affecting the ORR are available for the public to review at DOE's Information Center.

### 4. Legacy Low-Level Radioactive Waste

Under the Oak Ridge Accelerated Cleanup Plan, DOE was to dispose of all its more than 32,000 cubic meters of legacy low-level waste by the end of FY 2005. ("Legacy" waste refers to waste that was in DOE EM program inventories prior to September 30, 2000.) By June 2006, most had been disposed of, with two notable exceptions: waste streams for which there is no treatment capacity and a small portion of the waste for which DOE has given its EM contractor a contractual extension. As of the end of CY 2011, with the addition of MSRE Fuel Salts and Uranium Laden Charcoal Canisters in October 2011, this inventory stood at 88 cubic meters.

Phase II of the Compliance Agreement between TDEC and DOE, which addresses the management and disposition of hazardous and mixed wastes (generated as a result of sorting, segregating, processing and characterizing wastes previously determined to be non-hazardous,



including the category of “newly generated” low-level radioactive waste) is being implemented as funding and capacities become available.

As of the end of CY 2011, the last six of the containers once used in the barrier wall at Y-12 have been found to contain quantities of U-235 that are considered economically viable for recovery. For this reason the contents of the containers are no longer being considered as waste. They will be sorted, segregated and may eventually go through some sort of U-235 recovery process. They have been taken off from the legacy LLW inventory. Therefore, Y-12’s entire legacy LLW inventory has essentially been eliminated.

## **5. Newly Generated Low-Level Radioactive Waste**

The “newly generated” category contains low-level waste generated since October 1, 2000. As of the end of CY 2011, DOE-EM’s inventory of this category of waste had stood at 93 m<sup>3</sup>. This represents a decrease of 94 m<sup>3</sup> from the previous year.

As of the end of CY 2011, NNSA had continued to disposition its newly generated waste in a routine manner with a zero inventory of waste which had been in storage for greater than 365 days.

As of the end of CY 2011, ORNL had generated 97 m<sup>3</sup> of low-level waste since October 1, 2011, which is the beginning of DOE’s fiscal year. Of this amount, none had been shipped for disposal. All 97 m<sup>3</sup> had been in compliant storage awaiting shipment for disposal.

## **6. Federal Facility Compliance Act, Site Treatment Plan (STP)**

**TRU WASTE PROCESSING** Throughput has increased, but equipment breakdowns and waste anomalies caused lower productivity than expected. Our oversight of the facility shows no serious concerns, even though a faster processing goal is expected by schedule. The facility must be expanded with a build-out to be able to treat legacy sludges. This build-out is now a line item appropriation that is subject to external financial and engineering oversight. There is no current certification of TRU wastes for offsite disposal at the Waste Isolation Pilot Plant (WIPP). Processing results in Suspected TRU, Low Level and Mixed Low Level waste. The Low Level and Mixed Low Level wastes are then shipped offsite for disposal and credit is given towards the total volume reduction of the STP. The suspected TRU waste is then placed back into storage awaiting certification for shipment to WIPP.

TRU waste is not considered completely processed and off the STP until it is certified for disposal at WIPP, or treated, if necessary and shipped to disposal.

**TSCA INCINERATOR** The incinerator closed operations. The RCRA permit is being closed out. It is expected that by association with chemicals, the RCRA close out will remove most radioactive contamination too. DOE Oversight will integrate the closed facility with the CERCLA ROD for ETTP after the RCRA closure is complete.

## **7. Federal Facility Agreement (FFA) for the Oak Ridge Reservation (Negotiated Activities)**

### **Y-12 NATIONAL SECURITY COMPLEX**

- a. Upper East Fork Poplar Creek (UEFPC)
  - i. Soil removal from the Old Salvage Yard (OSY) was completed.
  - ii. Continued soil characterization of the 81-10 area (EU-9)
  - iii. Relining of the storm drains in WEMA continued. This should dramatically reduce mercury inputs into East Fork Poplar Creek.
  - iv. Completed legacy material disposition from building Beta-3.
  - v. Began installation of mercury traps in the storm drain system. This should reduce mercury inputs into East Fork Poplar Creek.
  
- b. Bear Creek Valley - no activities have occurred here since the completion of Phase I of the Bear Creek Valley Interim Record of Decision.

### **OAK RIDGE NATIONAL LABORATORY (ORNL)**

- a. Bethel Valley
  - i. D&D of the Building 3026 hot cells continues.
  - ii. Excavation on the Tank W1-A Project (Core Hole 8) was completed.
  - iii. The Core Hole 8 extraction system upgrades were completed and the system was activated.
  - iv. Remediation of the SWSA 3 and SWSA 1 burial grounds was completed.
  - v. Completed D&D of the 34 building project
  - vi. Began legacy material disposition from building 3038.
  
- b. Melton Valley - Monitoring of offsite monitoring wells continued.

### **EAST TENNESSEE TECHNOLOGY PARK (ETTP)**

- a. Zone 1 – Work continues toward developing a final ROD for this area.
- b. Zone 2 – Removal of the K-33 slab was completed.
- c. Remaining Facilities D&D efforts continue on the East Wing of the K-25 building.

### **OFFSITE – Outside the DOR-ORR Boundary**

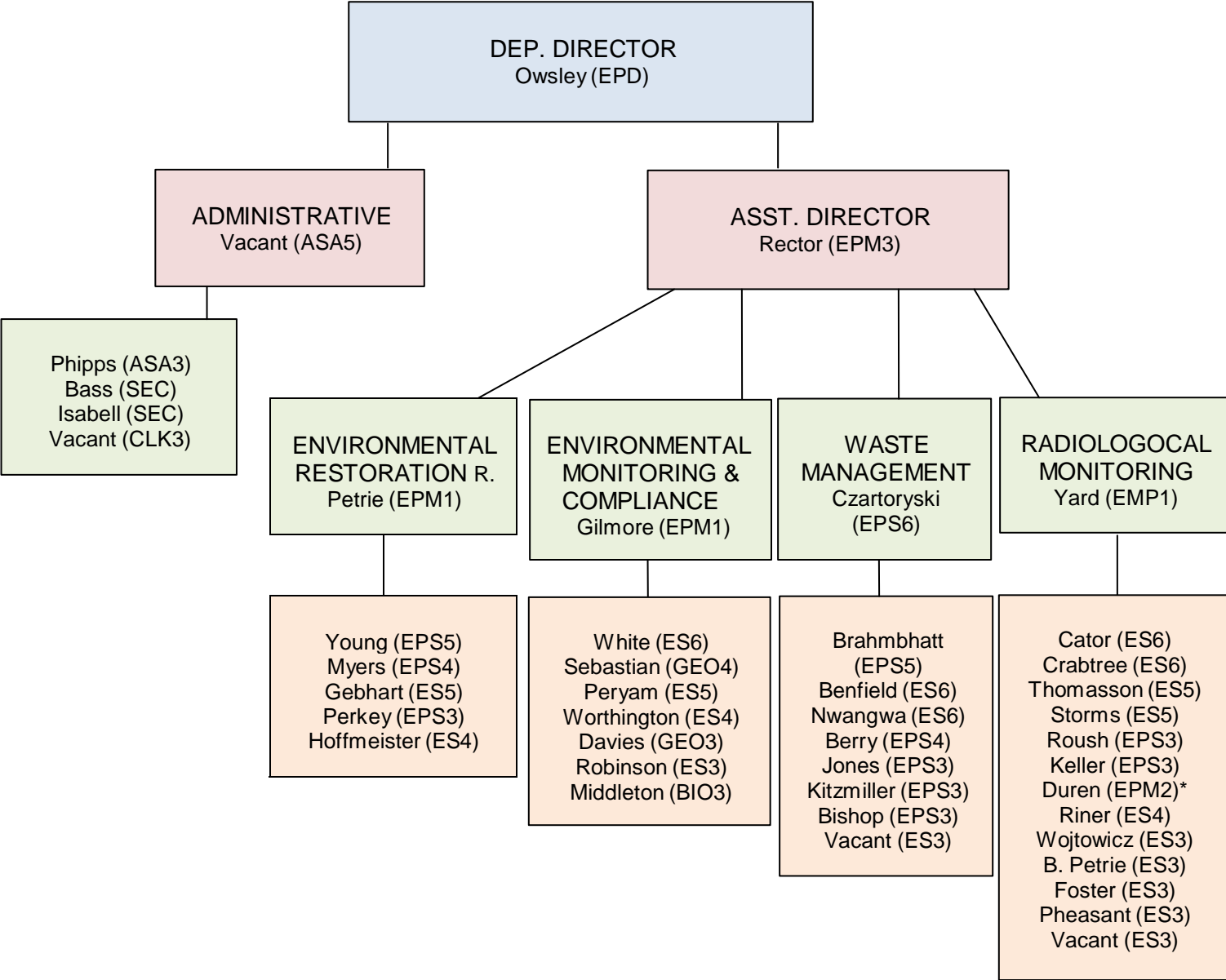
- a. Lower Watts Bar Reservoir (LWBR) - NRDA activities were finalized on this operable unit. Long-term monitoring continues.
- b. Clinch River/Poplar Creek - Long-term monitoring continues.
- c. Lower East Fork Poplar Creek (LEFPC) floodplain - this action was completed in 2000.

### **NATURAL RESOURCE DAMAGES**

- a. Lower Watts Bar Reservoir – The Trustee Council finalized all matters pertaining to the settlement of damages. An Administrative Order of Consent was signed by DOE and the state to finalize this agreement.
  
- b. Oak Ridge Reservation – The Trustee Council is pursuing a final settlement for damages on the entire ORR.

Organizational Chart

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION  
 DIVISION OF REMEDIATION  
 DOE OVERSIGHT OFFICE  
 Andy Binford, Director



EPM2 Position is NRDA Funded Position – Nashville

## Local Outreach



John Wojtowicz  
and Gerry Middleton answer a  
question at the Secret City  
Festival in Oak Ridge.  
(TDEC photo)

The office is supportive of efforts to inform the community about environmental issues associated with the ORR. It undertakes community outreach efforts at venues such as the Secret City Festival and National Night Out. The office also provides grant funding for the Oak Ridge Reservation Communities Alliance (ORRCA). An office representative attends ORRCA meetings. The office has an *ex officio* membership on DOE's Oak Ridge Site Specific Advisory Board (SSAB) and has a representative present at its monthly meetings. On request, the office provides speakers for schools and citizen groups.

The office not only discusses ORR environmental issues but also disseminates information and materials related to general pollution prevention, home radon monitoring, recycling and similar activities. The office is often the first contact by a concerned individual for just about any environmental question. Likewise other TDEC offices may receive questions regarding ORR issues that are then forwarded to the DOE Oversight Office.

The office works specifically with the following local and regional organizations on issues associated with the ORR:

- Watts Bar Interagency Working Group,
- Oak Ridge Reservation Communities Alliance, and
- Oak Ridge Site Specific Advisory Board.

## National Outreach and Cooperative Interstate Activities



The division participates in activities and meetings as a member or affiliate of the following organizations.

**Interstate Technology and Regulatory Council** The Interstate Technology and Regulatory Council was formed in 1995 as a multi-state coalition working to achieve regulatory acceptance of innovative environmental technologies. The state-led council became affiliated with the Environmental Council of States in 1999 and has been working closely with that organization to promote innovative technologies that would lead to more cost-effective and efficient site cleanups. ITRC offers free internet training and documents provided by the different teams. The division has a representative on the Natural Attenuation of Metals and Radionuclides Team. Another member in the office is the Point of Contact for the State of Tennessee and was instrumental in the document development and internet training of “Decontamination and Decommissioning of Radiologically Contaminated Facilities.” Access to the ITRC website is [www.itrcweb.org](http://www.itrcweb.org).

**National Governors Association Federal Facilities Task Force** The task force is composed of governor-appointed policy and technical representatives from states hosting major DOE facilities. NGA task force members work collaboratively with DOE officials on technical, economic, and political challenges, including budget and regulatory issues, waste treatment and disposal options, and equitable decisions on waste management.

**National Conference of State Legislatures’ State and Tribal Government Working Group** The State and Tribal Government Working Group is a forum in which all tribes affected by DOE sites can interact directly with the states and DOE. The working group helps ensure that DOE facilities are operated and cleaned up in compliance with all applicable federal and state laws and regulations, and tribal rights. These rights include those retained by treaty and conferred by statute and the trust responsibility. Remedies must also protect human health, safety, and the environment.

**Intergovernmental Meeting with DOE** The Energy Communities Alliance, Environmental Council of the States, National Association of Attorneys General, National Governors Association, and State and Tribal Government Working Group meet annually with DOE. The meeting provides an opportunity for senior DOE officials to talk with these groups collectively. It also allows the groups to coordinate on issues involving the operation and cleanup of the DOE complex.

**The Association of State and Territorial Solid Waste Management Officials Radiation Task Force** This organization tracks radiation-related issues that could affect states. The group emphasizes federal facility issues and has cooperative projects with the EPA, DOE, Department of Defense, Council of Radiation Program Directors, the Health Physics Society, and the American National Standards Institute.

## Contacts

### **STATE OFFICES**

#### **Tennessee Department of Environment and Conservation Department of Energy Oversight Office**

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Web site: [www.state.tn.us/environment/doeo](http://www.state.tn.us/environment/doeo)

Dale Rector, Assistant Director  
Kristof Czartoryski, Waste Management  
Don Gilmore, Environmental Monitoring and Compliance  
Roger Petrie, Environmental Restoration and FFA Manager  
Charles Yard, Radiological Monitoring and Oversight  
Vacant, Administrative Services

#### **Tennessee Emergency Management Agency**

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### **LOCAL GOVERNMENT BOARDS**

#### **City of Oak Ridge Environmental Quality Advisory Board**

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[www.oakridgetenn.org/departement/CityClerk/content.aspx?article=2052](http://www.oakridgetenn.org/departement/CityClerk/content.aspx?article=2052)  
♦ [www.oakridgetn.gov/departement/CityClerk/Boards-%26-Commissions/About-Boards-%26-Commissions](http://www.oakridgetn.gov/departement/CityClerk/Boards-%26-Commissions/About-Boards-%26-Commissions)

#### **Roane County Environmental Review Board**

Roane County Courthouse  
200 E. Race Street  
Kingston, TN 37763  
Web site: [www.roanegov.org/id11.html](http://www.roanegov.org/id11.html)

### **STAKEHOLDER ORGANIZATIONS**

#### **Oak Ridge Reservation Communities Alliance (ORRCA)**

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#### **Oak Ridge Site Specific Advisory Board**

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#### **Advocates for Oak Ridge Reservation**

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#### **League of Women Voters of Oak Ridge**

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#### **Community Reuse Organization of East Tennessee**

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#### **Energy, Technology, and Environmental Business Association – Tennessee Chapter**

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