3. Environmental Management and Reservation Activities

Much of the work done under the DOE Oak Ridge Operations Office of Environmental Management (EM) on the ORR is performed as a result of the requirements of the Federal Facility Compliance Act and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The 1992 Federal Facility Compliance Agreement requires that all DOE facilities manage and dispose of mixed waste in accordance with their respective site treatment plans. Bechtel Jacobs Company LLC has established programs to address the storage, transportation, treatment, disposal, and recycling of legacy and newly generated waste from the ORR. Bechtel Jacobs LLC manages the Toxic Substances Control Act Incinerator, wastewater treatment facilities, landfill operations, and certain other treatment and recycle facilities that also contribute to meeting the requirements of the Federal Facility Compliance Agreement and other EM milestones.

Another large part of the EM work conducted at ORR is done according to the requirements of CERCLA, which is implemented by the 1991 Federal Facility Agreement. The Federal Facility Agreement, signed by DOE, TDEC, and EPA addresses contamination resulting from past activities of DOE operations that remain in structures, buildings, facilities, soil, groundwater, surface water, or other environmental media.

3.1 INTRODUCTION

For over half a century, one of the primary missions of DOE and its predecessor agencies was the production of nuclear weapons for the nation's defense. Production of materials for nuclear weapons, which began in 1943, produced hazardous and radioactive waste and resulted in contamination of facilities, structures, and environmental media. Two laws passed by Congress included requirements to address these problems. These two laws are the Federal Facility Compliance Act and CERCLA. The Federal Facility Compliance Agreement, made in accordance with the Federal Facility Compliance Act, requires that all DOE facilities manage and dispose of waste in accordance with their respective site treatment plans. The Waste Disposition and Waste Operations projects address waste stored, treated, disposed of, or recycled on the ORR in accordance with the Site Treatment Plan. The DOE Environmental Management program also operates and maintains waste treatment, storage, disposal, and recycling facilities at each of the three Oak Ridge sites (ETTP, ORNL, and Y-12). These activities are included in the Waste Operations project.

CERCLA addresses any environmental contamination resulting from past industrial operations, not just those performed at federal facilities. CERCLA requires that sites requiring cleanup actions be placed on the National Priorities List. Once on the list, the responsible entities are required to investigate and remedy abandoned or uncontrolled hazardous waste sites where a release has occurred or may occur. The ORR was placed on the National Priorities List in 1989. In 1990, DOE Headquarters (DOE-HQ) established the Office of Environmental Management (EM), making DOE-ORO responsible for cleanup of the reservation. CERCLA also requires public involvement to ensure that citizens will be informed of cleanup decisions that may affect them or the area in which they live.

The following sections highlight some of the EM activities for 2002 and some related activities carried out to ensure good stewardship of the reservation.

3.2 EAST TENNESSEE TECHNOLOGY PARK

3.2.1 ETTP Building Demolition Continues

Buildings and facilities at ETTP have been divided into two groupings: Group I, K-25 Facilities Area, and Group II, Main Plant Area Auxiliary Facilities. Because the Auxiliary

Facilities and Main Plant Facilities removal actions are interim actions, future CERCLA decisions will determine the final remedy for the contaminated slabs, soils, and below-grade structures.

Most buildings at ETTP are scheduled for demolition as part of DOE's accelerated cleanup plan. However, 26 facilities have been targeted for potential transfer of title under the reindustrialization program. Buildings and other facilities that have been demolished prior to or during FY 2002 are described in Sects. 3.2.1.1 and 3.2.1.2.

3.2.1.1 Group I, the K-25 Auxiliary Facilities Area

The five facilities included in the K-25 Auxiliary Facilities Area Demolition, Group I, are K-724, K-725, K-1031, K-1131, and K-1410. After demolition, the building concrete slabs were scabbled to remove fixed contamination. The K-724 slab and a large portion of the K-725 slab were successfully cleaned to unrestricted use levels. After two passes with scabbling equipment, contamination still was present on the K-1031, K-1131, and K-1410 concrete slabs. These slabs had the potential to create mobile, transferable contamination close to surface waters and storm drains. A 2-in. layer of asphalt was applied to cover the concrete slabs to stop the weathering of the fixed contamination and to help reduce the potential for the spread of radioactive contamination. Remaining activities for this project include debris disposition.

In 2001, 945 ft^3 of industrial waste from this action was sent to the ORR Industrial Landfill. Disposition of the remaining low-level waste was delayed so that it can be disposed of at the Environmental Management Waste Management Facility (EMWMF), which was then under construction. Disposing of this waste at the on-site facility, rather than shipping it out of state, will save $250,000. Low-level waste disposition is planned for FY 2003.

3.2.1.2 Group II, Main Plant Area Facilities

The Main Plant Project involves characterizing, sampling, hazardous material abatement, radiological decontamination, demolition, and disposal of ten buildings on the ETTP Project Site: K-1300, K-1301, K-1302, K-1303, K-1404, K-1405, K-1407, K-1408, K-1413, and K-1045A. Activities completed in FY 2002 are described in Sect. 3.2.1.3.

3.2.1.3 2002 Actions

The facilities were demolished in 2002, and the slabs were removed from K-1407, K-1303, and K-1300. The slabs at K-1405, K-1301, and the lower slab of K-1407 were capped, and it is anticipated that K-1413 will be as well. The waste from K-1301, K-1404, K-1405, K-1407, K-1408, and K-1045A has been disposed of. Abated hazardous materials included asbestos, radiological materials, fluorine piping, lead, PCBs, and mercury. Most of the waste went to Envirocare of Utah, Inc., a private company that disposes of low-level radioactive and mixed wastes. The uncontaminated waste went to the ORR Industrial Landfill. The disposal of the remaining waste is primarily planned for the EMWMF. The Transportable Vitrification System was certified as closed in September.

3.2.1.4 Future Actions Planned

The remaining scope for FY 2003 is the removal of the uranium hexafluoride vent lines, their disposal at the Nevada Test Site, and disposal of the remaining waste.

K-25/K-27 Buildings

The K-25 Building is the largest building on the ORR and covers 1,637,170 ft^2. The U-shaped building was built during the Manhattan Project and contains 3,018 stages of gaseous diffusion process equipment and associated auxiliary systems, which will be removed and disposed of. Each stage consists of a converter, two compressors, two compressor motors, and associated piping. The K-27 Building covers 383,000 ft^2 and contains 540 stages of gaseous diffusion equipment and associated auxiliary equipment.

A public information session was held in 2001 to solicit comments from the public on the engineering evaluation/cost analysis developed for this project. An action memorandum for the decontamination and demolition of the K-25 and

K-27 buildings was signed in February 2002. Phase 1, hazardous materials removal, started in spring 2002 and is ongoing. Phase 1 activities primarily include the removal of asbestos-containing building materials from the inside of the K-25 and K-27 facilities.

Phase 2, Process Equipment Removal activities in FY 2002, included the preparation of a waste-handling plan, which was transmitted to the regulatory agencies for review in September. Phase 2 also included the initiation of the requests for proposals for contracting the Phase 2 work, which involved process equipment removal and disposal action.

Group II Buildings, Phase II Demolition Project

DOE signed an action memorandum for the decontamination and demolition of 18 ETTP facilities and the removal of scrap material on July 31, 2002. These facilities and the scrap material are primarily located in the K-1064 Peninsula Area of the ETTP. Decontamination and demolition of the 18 facilities will start in FY 2003.

3.2.2 Excavation Begins at K-1070-A Burial Ground

Organic compounds and radioactively contaminated wastes from 62 pits and 26 trenches at the K-1070-A Burial Ground at ETTP are being excavated and disposed of at the EMWMF. The primary waste type being disposed of is soil; however, there is some construction debris commingled with the soil.

Included in the estimated 20,000 yd^3 of waste are as many as 500 gas cylinders and containers of various sizes (reported in the site disposal inventory as empty). However, precaution is being taken during remediation as if all containers encountered are not empty until a determination is made. Waste characterization was completed in September 2001. Excavation began in June 2002 and is ongoing. As of the end of FY 2002, 21,651 yd^3 (this total includes the swell factor) has been excavated and disposed of in the EMWMF. The excavation was completed on March 26, 2003.

3.2.3 ETTP Three-Building Decontamination and Decommissioning Project Progressing

The scope of this project is to remove and disposition all radiologically and nonradiologically contaminated process and process-support equipment from the gaseous diffusion buildings (K-29, K-31, and K-33) and to decontaminate the interior of the buildings to a specified end-point criterion under a non-time-critical removal action. The purpose of the project is to clean out the three buildings so that they are available for reuse without radiological and other (nonradiological) concerns. The three buildings contain 4.89 million square feet of space under the roof and 136,000 tons of contaminated or potentially contaminated material. The material is made up of approximately 1800 stages of gaseous diffusion process equipment and associated ancillary systems, which will be removed and disposed of as part of the dismantlement and disassembly process. Each stage consists of a converter, compressor, compressor motor, associated piping and valves, and electrical support components. The scope also includes the dismantlement and removal of the K-31 and K-33 Switchyard equipment and packaging, transportation, and disposal of 20,000-plus drums of stabilized pond and Portmouth soils waste from Buildings K-31 and K-33.

The project is a DOE fixed-price prime contract with BNFL, Inc. BNFL decontaminates and recycles the materials and equipment where economically feasible and disposes of all nonrecyclable project waste at regulated facilities (i.e., Envirocare of Utah and the Nevada Test Site). To date, BNFL has dispositioned 88,900 tons of metal from K-33, K-31, and K-29, either as low-level radioactive waste (LLW) or as recycled metal.

The following actions were taken in 2002:

- the project reached 72% total completion,
- Building K-33 reached 94% total completion,
- a total of 20,125 tons of metal was dispositioned,
- an on-site supercompactor for compacting the LLW to reduce disposal volume continued to operate,

- classified LLW shipments to the Nevada Test Site continued,
- Building K-31 reached 40% completion,
- a total of 1,338,548 lb of concrete was disposed at EMWMF,
- decontamination of the Building K-33, Unit Four, cell floor was initiated, and
- Building K-29 reached 10% completion.

BNFL is now accelerating its cleanup activities. Parallel dismantlement activities in K-29 and K-31 plus the combination of shipping converters whole, while also disassembling, will be conducted to speed the process. The project is currently scheduled to be completed by no later than August 2004. (The contract-scheduled completion date is March 2004.) BNFL has resumed full disassembly and removal operations after various work suspensions during FY 2002. DOE and BNFL have resolved cost and schedule issues revolving around the secretary of energy's moratorium on the release of metal into commerce.

3.2.4 Zone 1 Record of Decision Developed

A record of decision was submitted to the EPA and the TDEC on October 31, 2001, for the ETTP Zone 1 remediation. Zone 1 encompasses an area of approximately 1,400 acres located outside of the ETTP main fence and surrounding the former main plant production area. DOE, TDEC, and EPA have not yet signed the record of decision. It specifically addresses known areas of contaminated soil, Blair Quarry, scrap metal and debris in the K-770 Area, and the K-710 Sludge Beds and Imhoff tanks. In addition, it establishes remediation levels for soil and burial areas and a methodology for making action/no action determinations that will be used throughout Zone 1.

3.2.5 K-1085 Old Firehouse Drum Site Excavation Completed

Waste disposition of the K-1085 Old Firehouse Burn Area Drum Burial Site will occur in FY 2003. In October 2001, excavation and waste containerization activities were completed under the action memorandum for the site. This removal action included the excavation of six potential drum burial areas identified using geophysical survey results after a Tennessee Department of Transportation highway construction contractor accidentally uncovered drum fragments. The excavated material from only two of the six areas was contaminated. Identified contaminants included volatile organic compounds, PCBs, and radiological material. A total of 77 m^3 of material was placed into waste containers and is awaiting disposition. The K-1085 Old Firehouse Burn Area Drum Burial Site is located outside the ETTP perimeter fence near State Highway 58.

3.2.6 K-1070-C/D Pit and Contaminated Pad Remediation Continues

Portions of the K-1070-C/D Burial Ground were remediated in a two-phase project. Phase I consisted of excavation, segregation, characterization, and packaging of buried material in G-Pit, located in the K-1070-C/D Burial Ground, and covering of the K-1071 concrete pad, also located in the K-1070-C/D Burial Ground. Phase II of the remedial action consisted of the treatment and disposal of the excavated material from G-Pit.

During Phase I, the concrete pad was covered with approximately 2 ft of soil, over an existing plastic cover, to prevent direct contact with and provide radiation shielding at the K-1071 concrete pad area. This activity was completed in April 1999. Approximately 230 yd^3 of waste in G-Pit was also excavated and placed in interim storage within the K-1070-C/D Burial Ground. This waste material, which included portions of drums, was placed into interim storage and disposed of in Phase II.

Approximately 70 small intact laboratory containers that held small quantities of lubricating oil (approximately 3 gal total volume) were also excavated. These containers were placed in a 5-gal container and were disposed of in the TSCA Incinerator at ETTP. This activity was completed in January 2000.

During Phase II, the waste generated during Phase I was treated in a mobile low-temperature thermal desorption treatment unit, for volatilization of organic compounds, to meet the disposal

facility waste acceptance criteria and RCRA land disposal restrictions. Treatment began in February 2001 and was completed in April 2001. After evaluation of soil sample results demonstrated that the treated soils met the land disposal restrictions, the material was disposed of in the ORR Industrial Landfill at Y-12 in 2002, following approval of an authorized limit request by DOE-HQ and approval of a special waste request by TDEC. DOE submitted the remedial action report for regulatory review in December 2002.

3.3 OAK RIDGE NATIONAL LABORATORY

As at the Y-12 Complex, ORNL CERCLA activities can be grouped into remedial action and decontamination and decommissioning projects with definitions similar to those at ETTP. Additionally, ORNL hosts the Nuclear Material Facility Stabilization Program, which is addressing radioactive contamination in abandoned reactors before they become candidates for decontamination and decommissioning.

3.3.1 Remedial Actions

Remedial actions at ORNL are being addressed in two watersheds: Bethel Valley (the main area of ORNL) and Melton Valley, which is south of the ORNL main plant area and where most of the historic waste disposal operations took place.

3.3.1.1 Melton Valley Remedial Actions

Melton Valley Watershed Record of Decision for Interim Actions Project

CERCLA areas located in the Melton Valley Watershed at ORNL are addressed under this project. The project used existing data, supplemented by a small amount of new data, to prepare a record of decision for interim actions for the watershed. Source units in the watershed were evaluated as a single entity to ensure that (1) a consistent approach to remediation was implemented across the valley and (2) remedial actions at specific sites were prioritized to achieve the greatest risk reduction. Selection of the preferred alternative for the remediation of the Melton Valley watershed led to the establishment of remediation goals and the identification of the sequence of actions to be taken during watershed remediation. The record of decision was signed by the Federal Facility Agreement parties in September 2000. The Melton Valley Land Use Control Implementation Plan required by the record of decision was submitted to the regulators in 2001 and was revised in response to comments in 2002.

Solid Waste Storage Area 4 Capping/Intermediate Holding Pond Remediation Project

The first major remedial action resulting from the Melton Valley Watershed Record of Decision is remediation of the Intermediate Holding Pond and installation of approximately 30 acres of a multilayer engineered cap over SWSA 4, along with upgradient and downgradient groundwater interception trenches to isolate the SWSA 4 buried wastes from groundwater. Sediments were excavated from the Intermediate Holding Pond and disposed of in the EMWMF in 2002.

3.3.1.2 Bethel Valley Remedial Actions

Bethel Valley Watershed Record of Decision

The Record of Decision for Interim Actions in Bethel Valley was signed in May 2002, and a draft Bethel Valley land use control implementation plan was submitted to the regulators in September 2002.

Bethel Valley Groundwater Engineering Study

The Bethel Valley Record of Decision specified that a groundwater engineering study be conducted to satisfy data needs for the design of several remedial actions related to groundwater. Planning for the groundwater engineering study was summarized in a draft Engineering Study Work Plan for Groundwater Actions in Bethel

Valley, issued for regulatory agency review and comment in 2002.

ORNL Main Plant Surface Impoundments

The Main Plant Surface Impoundments, originally consisting of four surface impoundments located in the south-central portion of the ORNL main plant area, were used to collect, mix, or store untreated wastewaters. Transfer of the sediment and underlying soil from the two smaller impoundments, C & D (3539 and 3540), to Impoundment B (3513) was completed in 1998. Transfer of the sediment and underlying soil from Impoundment A (3524) to B and backfilling of Impoundment A were completed in 2000. A treatment facility for the consolidated sludge and subimpoundment soil from Impoundment B was completed in 2001, and sludge removal and treatment neared completion in 2002. The final waste forms are being shipped for disposal at an approved facility.

Prior to remediation of Impoundment B, inactive discharge pipes were sealed to prevent seepage through the impoundment berm. The berm is routinely inspected for signs of seepage or erosion, and corrective actions are taken as required.

Core Hole 8 (Tank W-1A) Plume Source Removal

The liquid radioactive waste collection/storage Tank W-1A was commissioned in 1951 and remained in service for 35 years, until 1986. Tank W-1A was used as a storage tank for wastes from the high-radiation analytical facilities (Buildings 2026 and 3019) and the isotope separation building (3019B). During rock-coring activities in 1991, high concentrations of radiological contamination were detected in groundwater in the central main plant area of ORNL at a location designated as Core Hole 8. Subsequent groundwater sampling in 1995 indicated significant gross beta and alpha contamination in the vicinity of Tank W-1A in the North Tank Farm. Actions have been taken to intercept and treat the contaminated groundwater.

The plume source removal project is focused on the removal of Tank W-1A and the surrounding soils suspected of being a primary source of contamination to groundwater. A remedial action work plan was approved by the regulators in March 1999, and field work began in August 1999. Additional soil analyses performed in 1999 indicated higher-than-expected levels of some radionuclides, requiring modification of plans for excavation and disposal of the soil. Tank contents were removed in November 2000, and 90% of the contaminated soil was excavated. Unexpectedly high concentrations of transuranic contaminants were encountered while excavating soils immediately surrounding the tank. Excavation of this material was not within the approved scope of the removal action. The tank and approximately 100 yd^3 of highly contaminated soil were left in place to be addressed by a future CERCLA action, and the excavated area was backfilled to protect ORNL workers and to minimize contaminant migration.

3.3.2 Decontamination and Decommissioning

3.3.2.1 Molten Salt Reactor Experiment

The Molten Salt Reactor Experiment facility holds an experimental reactor, once fueled by molten uranium tetrafluoride salt and cooled by molten salts of lithium and beryllium. It operated from 1965 to 1969. After being shut down, the reactor was mothballed. The fuel was solidified in tanks for long-term storage, and surveillance and maintenance programs were initiated.

In subsequent years, a number of potential problems were found in the facility. Samples of off-gas revealed that fluorine and uranium hexafluoride gas were being emitted, leading to the discovery of a 15-kg deposit of uranium in a charcoal-bed off-gas filter. Because the charcoal bed was within a water-filled chamber, it raised a concern that a nuclear criticality was possible. In addition, the fluorine had reacted with the charcoal to form chemically unstable compounds. These discoveries led to the initiation of remedial actions, which began in 1994, to reduce or eliminate three potential risks: a nuclear criticality accident, an explosive release of radioactive material, and a release of reactive and/or radioactive gases.

Removal of reactive uranium hexafluoride gas began in 1996 and was completed in 1999, resulting in the removal of approximately 22.6 kg of uranium.

In 1996, an action memorandum for removal of uranium deposits from the charcoal bed was issued. A remedial action work plan was approved in 1999, but examination of the charcoal revealed that it is nongranular rather than granular, as had been assumed. Consequently, a revised approach and remedial action work plan were submitted to the regulators and were approved in 2000. Installation of equipment and removal of the uranium deposits were completed in 2001.

A record of decision for removal of fuel and flush salts was signed in 1998. The remedial design report/remedial action work plan was approved by the regulators in 1999. Installation of fuel and flush salt removal equipment was completed in 2001, and equipment testing was performed in 2002.

3.3.2.2 Old Hydrofracture Facility

Between 1964 and 1980, waste liquid and suspended solids from the ORNL main plant liquid low-level radioactive waste (LLLW) system were decanted and pumped to five tanks at the Old Hydrofracture Facility, from which the radioactive liquid was mixed with grout and injected deep into shale bedrock. The Old Hydrofracture Facility Impoundment was a riprap-lined pond used between 1965 and 1979 to receive various types of wastes from facility operations. Remediation of the tanks and impoundment was completed in 2000.

The CERCLA remedial action, which is part of the Melton Valley Record of Decision, addressed the decontamination and decommissioning of the Old Hydrofracture Facility structures and equipment. Removal of equipment and demolition of the aboveground structures was completed in 2002.

3.3.2.3 New Hydrofracture Facility

The New Hydrofracture Facility was constructed in 1980, following the closure of the Old Hydrofracture Facility, to serve as the operational hydrofracture waste disposal facility for ORNL. The facility performed 13 operational injections, averaging approximately 220,000 gal of waste-grout mixture per injection, between June 1982 and January 1984. The New Hydrofracture Facility CERCLA action, required by the Melton Valley Record of Decision, addresses decontamination and decommissioning of surface structures and equipment. Above-grade structures (e.g., Building 7860, bulk storage bins) will be demolished to 2 ft below grade; the remaining below-grade structure and equipment (e.g., piping, valves, pumps) will be grouted in place. The contents of underground tank T-13 will be removed, and the tank shell will be grouted in place. The remedial design report and remedial action work plan were submitted to the regulators in 2001 for review and comment. Revisions in response to comments were completed in 2002.

3.3.2.4 Hydrofracture Wells Plugging and Abandonment

Between the 1960s and mid-1980s, the process of deep injection of waste was used at ORNL to dispose of radioactive liquids and sludges in mixtures of waste with portland-cement-based grout and various additives. Two experimental injection wells, called HF-1 and HF-2, were constructed, along with boreholes and wells, to observe the behavior of the injected grout in the bedrock. Small quantities of radionuclides were added to the injected grout to make the grout sheet detectable with instrumentation. The third and fourth injection wells, called the Old Hydrofracture Facility and the New Hydrofracture Facility, along with numerous observation and monitoring wells and boreholes, were constructed for large-scale radioactive waste disposal. The waste disposals were generally at depths greater than 780 ft. The injection and monitoring wells and boreholes provided potential pathways for migration of radionuclide contamination. To prevent this migration, the four injection wells and about 100 associated monitoring wells and boreholes will be plugged and abandoned, as specified in the Melton Valley Record of Decision.

The remedial action work plan for this project was approved and 33 monitoring wells were plugged and abandoned in 2001. An additional 49 monitoring wells were plugged and abandoned in 2002.

3.3.3 Spent Nuclear Fuel Program

The purpose of the Spent Nuclear Fuel Program is to place spent nuclear fuel at ORNL in a safe and stable condition as quickly as possible. Spent nuclear fuel at ORNL is being retrieved from underground storage wells, repackaged, certified, and placed in interim storage until it can be shipped to the Idaho National Engineering and Environmental Laboratory (INEEL). Retrieval of spent nuclear fuel began in 1996 and was completed in 2001. Repackaging of the fuel was completed in 2002, in preparation for shipment to INEEL.

3.4 Y-12 NATIONAL SECURITY COMPLEX

3.4.1 Steps Taken to Reduce S-3 Pond Releases

DOE is taking additional steps to stem contaminant releases from four unlined disposal ponds, called the S-3 Ponds, at the west end of the Y-12 National Security Complex. These ponds, constructed in 1951, were used to store various liquid wastes containing uranium and nitrate from Y-12 operations. The ponds were closed and capped, but because they are located on a shallow groundwater and surface water divide, contaminants have been migrating from the site. The contaminants seep into groundwater that eventually discharges into Bear Creek and its associated tributaries.

Three primary pathways of groundwater flow have been identified on the western side of the ponds. Pathways 1 and 2 are shallow-flow regimes that discharge into the main stem of Bear Creek. Both pathways are contaminated primarily with uranium. Pathway 3 is deeper and travels through the bedrock, discharging nitrate- and cadmium-contaminated groundwater to two tributaries of Bear Creek. DOE is capturing and treating contaminated groundwater from these pathways so that risks to human health and the environment are reduced.

Modifications were completed for the Pathway 1 and Pathway 2 systems to improve performance. Continuous operation of the modified system began in December 2000. During 2001, more than 2 million gal of contaminated groundwater was treated by the system. A treatment system for Pathway 3 is under development.

3.4.2 Remediation of Boneyard/Burnyard Reducing Contaminant Releases

Some of the first wastes that were disposed of in Oak Ridge began in 1943 at a waste site called the Boneyard/Burnyard. Both radiological and nonradiological wastes were disposed at this site, which continued receiving wastes until 1970. DOE is now cleaning up portions of the site to reduce the release of contaminants into Bear Creek and its tributaries.

Three release sites are associated with the Boneyard/Burnyard remediation project: Oil Landfarm Soils Containment Pad; Hazardous Chemical Disposal Area; and the Boneyard/Burnyard, including Bear Creek Tributary 3 Floodplain Soils. The Oil Landfarm Soils Containment Pad structure was a below-grade storage pad that contained approximately 570 yd^3 of PCB-contaminated soils excavated during closure of the oil landfarm. The Hazardous Chemical Disposal Area was historically used to dispose of chemicals, including acids, bases, and miscellaneous liquids that were deemed to be hazardous to plant workers. The area was covered in the late 1980s with an engineered cap, similar to what is required under RCRA. The Boneyard/Burnyard was used for the disposal of combustible wastes, including uranium turnings, which were placed either on the surface or in unlined trenches and set on fire. The area was also used for storing abandoned equipment, which resulted in surface contamination. These wastes are now leaching from the Boneyard/Burnyard to shallow groundwater, which then discharges to surface water.

Remedial actions have been divided into three phases. Phase I consisted of the remedial design. Phase II included the hydraulic isolation at the Boneyard/Burnyard to reduce the contaminant flux entering Bear Creek and to dry the site in preparation of the Phase III work, as well as the removal of the Oil Landfarm Soils Containment

Pad structure and disposal of the soils at an off-site facility. Phase III consists of excavation and disposal of Boneyard/Burnyard wastes.

Phase III field activities at the Boneyard/Burnyard began in May 2002. This final phase of the remedial action includes excavation of the waste material with the highest concentrations of uranium contamination and disposal of the material in the newly constructed EMWMF. By the close of FY 2002, approximately 49,000 yd^3 of Boneyard/Burnyard wastes had been excavated and disposed of in the new facility. Material with lower levels of contamination that is not in contact with groundwater is being excavated and consolidated on site and will then be covered with a low-permeability clay cap. After excavation and capping are completed in early FY 2003, the stream channel of North Tributary 3 of Bear Creek will be restored with natural meanders and gradients to reduce erosion of the bank and to more efficiently transport surface water and sediment load through the site. The removal activities were completed in 2002. Site restoration activities will be completed in 2003.

3.4.3 Interim Source Controls Selected for Upper East Fork Poplar Creek

DOE, EPA, and TDEC signed the Record of Decision for Phase 1 Interim Source Control Actions in Upper East Fork Poplar Creek area on May 2, 2002. This record of decision focuses on remediation of mercury-contaminated surface water.

The remedy includes treatment of mercury-contaminated groundwater that discharges to surface water, hydraulic isolation of the West End Mercury Area by repairing storm sewers and capping, and by removal of contaminated sediments and bank soils from Upper East Fork Poplar Creek and Lake Reality. Institutional controls will also be provided to prevent exposure to contaminated soils and ingestion of contaminated fish in Lower East Fork Poplar Creek.

This remedy will be implemented with an effort to minimize disruption of the continuing mission and modernization of the Y-12 National Security Complex. Subsequent records of decision will address additional soil remedial actions, additional surface water actions as necessary, building decontamination and decommissioning, and groundwater actions.

3.4.4 Building 9201-2 Water Treatment System To Be Constructed

To mitigate the mercury being released to Upper East Fork Poplar Creek, the Building 9201-2 Water Treatment System will be designed and constructed as the first action following the approval of the record of decision for Phase 1 Interim Source Control Actions in the Upper East Fork Poplar Creek Characterization Area.

The new 300-gal-per-minute water treatment system will remove mercury from groundwater discharged from Outfall 051 in addition to the groundwater collected in the basement sumps of Building 9201-2. The discharge from Outfall 051 is attributed to a large natural spring that was filled over and piped to Upper East Fork Poplar Creek during the construction of Y-12.

The East End Mercury Treatment System, which will be replaced by the new system, is currently treating the groundwater from the Building 9201-2 basement sumps. The water treatment system will be designed using best available technology and is anticipated to reduce mercury to the 200-ppt interim mercury goal minimum in the system discharge. Additional methods for removal of mercury, potentially bringing levels to the ambient water quality criteria of 51 ppt, are being evaluated as part of a predesign study.

The predesign study, conducted in spring and summer of 2002, investigated the applicability of various treatment technologies for reducing mercury at Outfall 051. The approach to the predesign study was to evaluate a traditional technology and then compare it with other innovative technologies to determine the feasibility of achieving the concentration of total mercury in water to 51 ppt.

The studies have been operated in two phases: the first with only activated carbon adsorption and the second with an ozone/ultraviolet/air-stripping treatment system identified as a potential technology during the bench-scale, laboratory studies. Both systems have provided consistent results

below 100 ppt. An ongoing technical and cost/benefit comparison is being preformed to determine which technology will be employed in the design of the system.

3.4.5 Bear Creek Burial Ground D-East Revegetated

Additional soil and vegetative cover were placed over the Bear Creek Burial Ground D-East site in September 2002 to mitigate the potential for future radiation exposures or releases to the environment.

Burial Ground D-East is a nonpermitted waste disposal unit that is part of the Bear Creek Burial Grounds, located approximately 2 miles west of the Y-12 National Security Complex. The site was used between 1962 and 1989 for disposal of uranium chips, scrap metal, and oxide wastes in a series of trenches ranging in depth from 14 to 25 ft. The site is approximately 350 ft by 200 ft and consists of two terraced areas running east to west, roughly parallel to one another and separated by a slope.

Burial Ground D-East was originally covered with a layer of soil and then seeded with grass. During May 2001, uranium metal chips were observed at the ground surface at the site. It appeared that surface water runoff and soil erosion had removed some of the existing soil and vegetation from the site, resulting in the exposure of contaminants at the surface. Radiological surveys were conducted and the posting of the site was upgraded to a Contamination Area, requiring more stringent access controls through the use of a radiation work permit.

Prior to placement of topsoil, erosion controls (silt fencing and hay bales) were placed in strategic locations around the perimeter of the site. An additional 6- to 12-in. layer of soil cover was placed over the areas of concern and compacted sufficiently to stabilize the area. An elevation survey confirmed the thickness of the additional soil cover. Grass seed, fertilizer, and mulch were spread over the area using hydroseeding equipment. Additional seed was spread over the area after heavy rainfall over the weekend of September 21 and 22, 2002. Surveillance and maintenance of the site will continue until the area is completely stabilized and then will be repeated semiannually thereafter.

3.5 OAK RIDGE RESERVATION OPERATIONS

3.5.1 Operations Start at CERCLA Waste Management Facility

The EMWMF, located in East Bear Creek Valley near the Y-12 Complex, is an on-site waste facility that is being used to contain the waste generated during cleanup of the ORR and associated sites in Tennessee. Construction of the EMWMF, also know as the CERCLA Waste Management Facility, was begun in 2001 and was completed in early May 2002. Final elements of the facility completed in CY 2002 include

- installation of the multi-layer liner system, including the 3-ft-thick clay liner, the primary liner, leachate detection system, secondary liner, leachate collection system, and protective soil cover;
- installation of security features, such as fencing and lighting;
- completion of the leachate storage area, including five 30,000-gal tanks and associated piping;
- installation of four 450,000-gal contact water ponds with synthetic liners;
- installation of the administration buildings;
- installation of the truck scale and regrading of access roads; and
- installation of the waste off-loading ramp.

Following internal and independent readiness evaluations (including a mock waste placement exercise) to ensure that the subcontractor operating the facility was ready to operate, the EMWMF accepted its first waste shipment in late May 2002. Waste primarily consists of contaminated soil removed from former burial grounds as well as debris from building decontamination and decommissioning activities. By the end of CY 2002, 142,000 tons of solid and debris waste was disposed of in the facility. This represents approximately 85,000 yd^3 of waste placed in the EMWMF. All of this material has been placed in Cell 1. This volume represents 21% of the total disposal capacity of 400,000 yd^3 in the first phase

of the EMWMF. Projects contributing waste in CY 2002 included the following:

- Boneyard/Burnyard Remedial Action Project near the Y-12 Complex;
- Intermediate Holding Pond Remedial Action Project at ORNL;
- K-1070A Remedial Action Project at ETTP;
- K-25/27 Demolition Project at ETTP; and
- BNFL Decontamination Project at ETTP.

3.5.2 Millions of Gallons of Wastewater Treated in FY 2002

Many millions of gallons of wastewater were treated in FY 2002 at the ORR. The Environmental Management Program treated 22.4 million gal of liquid waste at the Groundwater Treatment Facility, East End Mercury Treatment System, Central Mercury Treatment System, and the East End Volatile Organic Compound System.

The West End Treatment Facility and a Central Pollution Control Facility at the Y-12 National Security Complex processed about 600,000 gal of wastewater, primarily in support of NNSA operation activities. This wastewater included hazardous materials such as PCBs, cyanide, mercury, cadmium, chromium, and uranium. The hazardous materials end up in the sludge that results from wastewater treatment. A total of 1.2 million kg of sludge (about 1,320 tons) was treated and shipped for off-site disposal in compliance with Site Treatment Plan milestones. The remaining sludge inventory will be treated and disposed of by the end of FY 2004.

At ETTP, the Central Neutralization Facility treated more than 27 million gal of wastewater in FY 2002. The Central Neutralization Facility is ETTP's primary wastewater treatment facility and processes both hazardous and nonhazardous waste streams arising from multiple waste treatment facilities and remediation projects. The facility removes heavy metals and suspended solids from the wastewater, adjusts pH, and discharges the treated effluent into the Clinch River. Sludge from the treatment facility is treated, packaged, and disposed off-site.

3.5.3 Waste Stockpile Continues to Diminish

Operations at the ORR produce wastes that frequently contain radionuclides. Such wastes are characterized as either low-level waste or transuranic wastes. Mixed LLW contains materials deemed hazardous and is regulated under RCRA.

Transuranic wastes from throughout the DOE complex are to be disposed of at the WIPP. Before shipping transuranic wastes to WIPP; however, they must be treated and packaged to meet the waste acceptance criteria.

DOE awarded a contract to Foster Wheeler Environmental Corporation in 1998 to build and operate a transuranic waste treatment facility on the ORR. In FY 2001, an extension to the access road (about 1000 ft) from White Wing Road (State Route 95) and fencing of the approximately 20-acre site was completed. Waste processing at the Transuranic Waste Treatment Facility begins in 2003.

ORR has the largest inventory of legacy LLW in the DOE complex. In addition, active DOE missions at Y-12 and ORNL produce newly generated LLW that must be managed and disposed of safely and efficiently. The reservation also has a large inventory of mixed LLW, but most mixed waste has been dispositioned since the Site Treatment Plan agreement was signed in 1995.

The ORR mixed LLW inventory was reduced by more than 3,500 m^3 in FY 2002, which included 1 million kg of mixed waste from sewage treatment plants and approximately 0.5 million kg of PCB waste. With less than 20% of the mixed waste inventory remaining, more than nine acres of waste storage area have been closed across the reservation since April 1998.

Also in FY 2002, 793 items of potentially shock-sensitive chemicals were treated and safely disposed of. A total of 1,000 m^3 of LLW was disposed of off site in FY 2002.

3.5.4 TSCA Incinerator Continues Hazardous Waste Treatment

The TSCA Incinerator, located at ETTP, plays a key role in treatment of radioactive PCB waste and hazardous waste (mixed waste) from the ORR and other DOE facilities.

The TSCA Incinerator continued to be responsive to the treatment needs of Oak Ridge projects as well as serve as a national resource, burning waste from seven out-of-state sites. The incinerator treated 767,971 lb of liquid and solid waste in FY 2002. More than 50% of the total was out-of-state waste.

3.5.5 Improved Technologies Being Used for Cleanup

The mission of the Environmental Technology Program is to provide the scientific foundation, new approaches, and new technologies to bring about significant reductions in risk, cost, and schedule for completion of the EM cleanup mission. The need for real time technology solutions has been made even more urgent with the renewed emphasis on site closure. In FY 2002, the DOE-ORO Environmental Technology Program focused on several key problem areas at the five DOE-ORO sites.

The Y-12 National Security Complex has had historical releases of mercury from four main process buildings. The loss of an estimated 2 million lb of mercury to soil and surface waters has created a mercury management problem involving contamination of numerous sumps and outfalls. The Environmental Technology Program supported three mercury treatability studies for the in situ treatment of mercury in soils. One study evaluated an amalgamation stabilization process, the second an electrochemical process, and the third a specialized grout. Another process, still in the R&D phase, is investigating phytoremediation for the stabilization and transpiration of mercury. Additionally in FY 2002, development and testing of a microcantilever sensor for the detection of mercury in water at the parts-per-trillion level was initiated.

The reliability and maintainability of reactive barrier systems is an important consideration in the long-term treatment of contaminated groundwater. In FY 2002, the Environmental Technology Program funded the study of a number of operating barriers, including those at the Y-12 S-3 ponds. The purpose of the study was to understand how the barriers function over time. Additionally, new reactive media were developed and tested in FY 2002, including biogenic apatite (Apatite II) sorbent for removal of metals from Y-12 groundwater.

Recent proposed rules for limiting heavy metal releases in stack emissions include provisions for use of continuous emission monitors. In some cases, the implementation of a suitable continuous emission monitor could enable the operator of the incinerator to use higher release standards and employ a more verifiable means of monitoring compliance with regulations. In FY 2002, the TSCA Incinerator at ETTP, in conjunction with the EPA Environmental Technology Verification Program, tested and evaluated several mercury continuous emission monitors for performance and reliability. Results of this study will be published in FY 2003.

Bioremediation continued to be evaluated as a viable treatment process for groundwater contaminated with volatile organic compounds. Bioremediation studies continued for the Y-12 Upper East Fork Poplar Creek carbon tetrachloride plume.

ORNL has a mixture of transuranic organic ion-exchange resin and sludge stored in two inactive USTs (the T1 and T2 tanks) and radioactive sludge and resin with transuranic constituents in the High Flux Isotope Reactor (HFIR) tank. This waste must be retrieved and treated prior to disposal to meet the Federal Facility Agreement and achieve accelerated closure of the site by 2006; however, the waste does not meet the waste acceptance criteria for any existing treatment/storage facilities. The waste must be pretreated to destroy the organic resins prior to solidification at the Oak Ridge Transuranic Waste Treatment Facility and disposal at the WIPP.

In FY 2002, the Environmental Technology Program focused efforts on developing a process to chemically destroy the ion-exchange resin using Fenton's Reagent (hydrogen peroxide and a ferrous iron catalyst), which oxidizes the resin to

carbon dioxide and ammonium sulfate. The process has been successfully tested using both simulated and actual waste.

3.6 PUBLIC PARTICIPATION

The public is entitled to participate in decisions and information exchange regarding remediation of contaminated areas on the ORR. DOE-ORO encourages such participation by actively seeking and considering the views of its stakeholders, thereby providing the opportunity to influence decisions. Stakeholders include individuals, groups, host communities, and other entities in the public and private sectors that are interested in or affected by DOE CERCLA activities and decisions.

Specific efforts by DOE to provide information to the public and to solicit input from stakeholders have made the following sources available.

- Information is available at the DOE web site (http://www.energy.gov/), the DOE Oak Ridge Operations web site (http://www.oakridge.doe.gov), and the DOE environmental management web site (http://www.em.doe.gov/index4.html).
- The Oak Ridge Site Specific Advisory Board, a federally appointed citizen panel, provides advice and recommendations to DOE on environmental management activities (http://www.oro.doe.gov/em/ssab).
- TDEC [http://www.state.tn.us/environment] contracts with the surrounding counties and the city of Oak Ridge through the Local Oversight Committee (http://www.local-oversight.org) to provide independent public oversight of DOE-ORO and DOE-EM activities.
- Public meetings serve as forums for DOE to present project information to the public and to allow citizens to voice their concerns. The schedule for upcoming public meetings is available at http://www.oro.doe.gov/meetings.html.
- The DOE Information Center (phone: 865-241-4582) (http://www.oro.doe.gov/Foia/EFOIA.htm) provides newsletters, reports, and tapes and transcripts of public meetings.
- The City of Oak Ridge Environmental Quality Advisory Board, an appointed advisory board of the Oak Ridge City Council, provides environmental leadership to the city government on environmental matters (http://orserv01.ci.oak-ridge.tn.us/ComDev-html/EQAB.htm).
- NEPA requires federal agencies to provide the public with environmental information for proposed major federal actions that could affect environmental quality. Announcements on pending NEPA actions are available at http://tis-nt.eh.doe.gov/nepa.
- Advocates for the Oak Ridge Reservation is an educational and scientific organization supporting the continued preservation and protection of the ORR for science, conservation, education, health and safety, hunting and other forms of recreation, and cultural values (http://www.korrnet.org/aforr/).
- The *DOE Public Involvement Plan for CERCLA Activities at the U.S. Department of Energy Oak Ridge Reservation* and the monthly DOE publication, *Public Involvement News*, are available by calling 865-576-0885.
- The Oak Ridge Health Agreement Steering Panel, funded by DOE and administered through the Tennessee Department of Health, looks at historical contaminant releases from the ORR and their potential impact on the health of nearby residents. Steering Panel meetings and information sessions are open to the public. For information contact the Tennessee Department of Health at http://www.state.tn.us/health/.
- Information on each of the Oak Ridge environmental management projects is available at http://www.bechteljacobs.com/facts/facts-or.htm.
- The Roane County Environmental Review Board advises the county government on environmental matters and monitors cleanup and waste transportation activities on the ORR. Members are appointed by the county executive and are confirmed by the County Commission. For information call 865-376-5287.
- The *Comprehensive Integrated Plan for the Oak Ridge Reservation* (http://www.ornl.gov/~dmsi/cip/cip.htm) is a planning reference that identifies primary issues regarding major changes in land and facility use for three of the DOE-ORO sites: the ORR; the Paducah

Gaseous Diffusion Plant in Paducah, Kentucky; and the Portsmouth Gaseous Diffusion Plant in Piketon, Ohio.

3.6.1 Accelerating Cleanup of the Oak Ridge Reservation: The Primary Focus of Public Involvement

The primary focus of public involvement for FY 2002 was the new accelerated cleanup process. The introduction of this new cleanup concept garnered much interest of local stakeholders and became the primary focus of public involvement meetings for the year.

In February 2001, with the release of the FY 2002 president's budget, the administration announced a planned "Top-to-Bottom Review" for the DOE EM Program. The purpose of the review was to evaluate more efficient methods to complete cleanup in the national EM Program. Results of the Top-to-Bottom Review, which were released in February 2002, underscored the need to refocus EM cleanup work on risk reduction, not risk management; to reduce mortgage costs; and to execute the work expediently.

In response to the Top-to-Bottom Review, on March 11, 2002, DOE-ORO submitted a comprehensive cleanup proposal to accelerate the closure of the Oak Ridge EM Program by six years (2021 to 2015) and to reduce the planned baseline cost by more than $2 billion. Public comments on the proposal were incorporated into the DOE *Performance Management Plan* and life cycle baseline.

An initial public meeting was held in June 2002 to provide stakeholders with an overview of the *Performance Management Plan* and to answer any questions they might have regarding the document. A second meeting was held in September to define the Life Cycle Baseline for the planned work to be performed to meet the requirements stated in the plan.

In another step to keep the public informed, DOE established an accelerated cleanup web page. This public web page contains key documents associated with the new way of doing business and describes the public involvement strategy and opportunities for providing input. A public involvement schedule is also provided. The web page can be accessed from the DOE-ORO web site at http://www.oakridge.doe.gov.

While accelerated cleanup was the primary focus of public involvement for the year, additional opportunities for public involvement also were provided. In February 2002, DOE, in conjunction with the Oak Ridge Site Specific Advisory Board, provided an update of the EM FY 2002 budget. This meeting provided a forum for stakeholders to ask questions regarding the budget.

DOE also held a ribbon-cutting ceremony in June 2002 for the EMWMF. The opening of the EMWMF was a major step in the safe, effective remediation of contaminated sites on the ORR. Waste from cleanup activities can now be safely disposed of in the state-of-the-art disposal cell, saving DOE millions of dollars in transportation and other costs, plus avoiding potential safety hazards associated with transporting waste across the country.

In July 2002, DOE took a major step in providing information to the public by opening the DOE Information Center. The DOE Information Center brings together information and documents previously housed in two separate DOE public access document centers in Oak Ridge. The new facility now provides a single, convenient location for a broad range of documents and information about DOE-ORO. This will become a tremendous resource for area stakeholders who are interested in DOE programs and activities. The Information Center also provides offices for the Oak Ridge Site Specific Advisory Board officers and serves as a consistent meeting location for DOE public meetings.

Other EM-related activities that involved the public included

- TSCA RCRA Permit Reapplication public meeting, March 26, 2002;
- Federal Compensation Act public meeting, with the U.S. Department of Labor, June 3, 2002; and
- RCRA Postclosure Permit Application for SWSA public meeting, July 16, 2002.

3.6.2 Oak Ridge Site Specific Advisory Board Posts Accomplishments in Public Involvement, Providing Recommendations to DOE

The Oak Ridge Site Specific Advisory Board made significant progress this year in its mission to provide advice and recommendations to DOE on its Oak Ridge EM Program and to involve the public in environmental decision making. The board, an independent, volunteer, federally appointed citizens' panel, was formed in 1995.

Significant accomplishments of the board for FY 2002 include the following:

- Provided 16 recommendations to DOE, EPA, and the state of Tennessee on a variety of EM topics, including the following:
  - — accelerated disposition of legacy low-level waste at the ORR;
  - — the *Oak Ridge Performance Management Plan*;
  - — public participation and long-term stewardship issues in the DOE Top-to-Bottom Review of the EM Program;
  - — TSCA Incinerator closure issues; and
  - — deletion of milestones for mixed trans-uranic wastes from the Site Treatment Plan for Mixed Wastes on the DOE Oak Ridge Reservation.
- Endorsed a DOE plan to reclassify outdoor-stored legacy LLW as "CERCLA-generated waste" for the purpose of disposing this material at the EMWMF. The board agreed with DOE that this will result in the most expeditious disposal of the material and that it will result in a considerable cost savings to taxpayers.
- Made a formal recommendation to endorse the accelerated closure proposal for the ORR, which will save taxpayers an estimated $2.2 billion in cleanup costs at the Oak Ridge site. Through its public outreach program, the board helped educate the community about the proposal.
- Sponsored a public meeting with Helen Belencan, Low-Level Waste and Mixed Low-Level Waste Program Manager for the DOE Headquarters Office of Integration and Disposition, to discuss her analysis of DOE complex-wide incineration needs and the pending decision regarding the planned closure of the TSCA Incinerator. The meeting gave local stakeholders a forum to express their views on incineration and led to a recommendation by the board to DOE regarding continued incinerator operations.
- Continued working to increase ties with area students and educators through an aggressive outreach program, which included the following:
  - — seating two nonvoting high school student representatives on the board this year;
  - — delivering several presentations about the board and the DOE cleanup program to area schools;
  - — developing a teacher resource kit to foster education about environmental cleanup; and
  - — working with two area high school advance placement sciences classes to develop "student friendly" summaries of long-term stewardship documents prepared by a local stakeholder organization affiliated with the board.

All meetings of the Oak Ridge Site Specific Advisory Board are open to the public and are announced in newspaper advertisements, in the *Federal Register*, through the board's 24-hour information line (865-576-4750), and on the board's web site at http://www.oakridge.doe.gov/em/ssab. Information also is available by calling the board's support office at (865) 241-3665 or (800) 382-4582.

3.7 POLLUTION PREVENTION

During FY 2002, DOE-ORO continued to implement a substantial number of pollution prevention projects, which were reported to DOE.

The ORO and ORR sites' pollution prevention programs are regulatorily driven by federal and state laws and regulations; executive orders; and DOE policies, notices, and orders. During FY 2002, in addition to supporting the implementation of pollution prevention projects, the ORR facilities performed activities to ensure that the

requirements of the new drivers established in FY 2000 were addressed as well as all other existing requirements. The ORR facilities must complete pollution-prevention-related requirements such as planning and reporting to comply with many regulatory requirements, including the RCRA, the Tennessee Hazardous Waste Reduction Act, and EPCRA. The ORR facilities must also comply with DOE requirements, including reporting of pollution prevention project and program activities. The *Annual Report on Waste Generation and Pollution Prevention Progress as Required by DOE Order 5400.1*, the annual affirmative procurement report required by Executive Order 13101 and RCRA Section 6002, and pollution prevention project reporting completed by each site are designed to provide data used to measure progress toward DOE's FY 2005 and 2010 pollution prevention goals.

Additionally, each site's data are included in DOE's complex-wide reports. Elements of DOE's annual reports are extracted and included in DOE's Central Internet Database, which provides national level DOE waste management and cleanup data to the public, as required by the December 1998 settlement agreement between DOE and the Natural Resources Defense Council, Inc.

To support future pollution prevention implementation, compliance, and goal achievement, the ORR sites' pollution prevention programs continue to pursue site projects where possible, perform required activities, and complete required reporting.

3.8 LAND-USE PLANNING

DOE programs in Oak Ridge depend not only on the facilities at ORNL, ETTP, and the Y-12 Complex, but also on the land base of the ORR. UT-Battelle, LLC, has the management and planning responsibility for most of the ORR's undeveloped land area. This responsibility includes planning for approximately 18,000 acres of undeveloped and developed land. The *2002 Oak Ridge National Laboratory Land and Facilities Plan* has been prepared to assist DOE and contractor personnel in implementing ORNL's land and facility responsibilities for management and planning. The plan is available at http://www. ornl.gov/~dmsi/landUse/.

The ORR includes multiple, overlapping reservation land uses. Details on the various uses are discussed in Sect. 2 of the *2002 Oak Ridge National Laboratory Land and Facilities Plan*. With major changes in mission at ETTP and at the Y-12 National Security Complex, demonstrating current land use and planning for future land use needs by DOE and ORNL are critical. Decisions on how to use the land area have an effect not only at local and regional levels but also on the national and international levels.

The ORR is a unique and irreplaceable resource for DOE to use for its national science and technology missions. The DOE ORR vision, as stated in the *ORR Comprehensive Integrated Plan* (September 1999), emphasizes that the ORR serves as an integrated science, education, industrial, and technology complex managed by DOE in partnership with the private sector—supporting a dynamic regional and national economy. Future use is to include a mixture of activities that are compatible with and contribute to ongoing and anticipated DOE missions. According to current plans, the reservation will be used to support many of the same programs it currently supports while adapting to changing national goals and interests and reduced federal budgets. Portions of the reservation will be used to promote the development of private-sector enterprises in ways that are consistent with and complementary to DOE missions. DOE's environmental management and reindustrialization initiative is highlighted at the ETTP; defense support, manufacturing, and storage are highlighted at the Y-12 National Security Complex; R&D is highlighted at ORNL.

A set of possible land-use scenarios developed for the northwest portion of the reservation will help guide DOE decisions for future use of that area. Public input through a Land Use Planning Process Focus Group, public workshops, and other communications was a critical component of the process. The planning initiative took into consideration existing resources and interests, including historic and preservation sites, wetlands and other sensitive habitats, research and monitoring, leased areas, and ongoing environmental remediation. Technical analyses of land use were performed for each of the scenarios. Site-specific and reservation-wide consequences were considered, including individual and cumulative

effects. The planning process, which began the end of August 2001, was completed the end of September 2002 with publication of the *Technical Report* and *Focus Group Report*. The information is available at the Land Use Planning Process Initiative website: http://landuseplanning.ornl.gov/.

DOE and the state of Tennessee signed an agreement in principle to set aside approximately 3,000 acres of the ORR for conservation purposes. The agreement was in response to natural resources damages resulting from past U.S. government nuclear weapons production and research activities on the ORR. The agreement was developed through a joint effort by the state, DOE, U.S. Fish and Wildlife Service, and TVA. The 3,000-acre area to be protected is part of the area included in the land use planning process for the northwest portion of the ORR.