

1. Site and Operations Overview

The Oak Ridge Reservation (ORR), a government-owned, contractor-operated facility, contains three major operating sites: the Y-12 National Security Complex, Oak Ridge National Laboratory, and East Tennessee Technology Park. The ORR was established in the early 1940s as part of the Manhattan Project, a secret undertaking that produced materials for the first atomic bombs. The reservation's role has evolved over the years, and it continues to adapt to meet the changing defense, energy, and research needs of the United States. Both the work carried out for the war effort and subsequent research, development, and production activities have involved, and continue to involve, the use of radiological and hazardous materials.

The *Oak Ridge Reservation Annual Site Environmental Report* and supporting data are available at http://www.ornl.gov/Env_Rpt or from the project director.

1.1 Background

This document is prepared annually to summarize environmental activities, primarily environmental-monitoring activities, on the Oak Ridge Reservation (ORR) and within the ORR surroundings. The document fulfills the requirement of Department of Energy (DOE) Order 231.1A, "Environment, Safety and Health Reporting," for an annual summary of environmental data to characterize environmental performance. The environmental-monitoring criteria are described in DOE Order 450.1, "Environmental Protection Program." The results summarized in this report are based on data collected prior to and through 2006. This report is not intended to provide the results of all sampling on the ORR. Additional data collected for other site and regulatory purposes, such as environmental restoration remedial investigation reports, waste management characterization sampling data, and environmental permit compliance data, are presented in other documents that have been prepared in accordance with applicable DOE guidance and/or laws and are referenced herein as appropriate. Corrections to the report for the previous year are found in Appendix A.

Environmental monitoring on the ORR consists primarily of two major activities: effluent monitoring and environmental surveillance. Effluent monitoring involves the collection and analysis of samples or measurements of liquid and gaseous effluents at the point of release to the environment; these measurements allow the quantification and official reporting of contaminants, assessment of radiation and chemical exposures to the public, and demonstration of

compliance with applicable standards and permit requirements. Environmental surveillance consists of the collection and analysis of environmental samples from the site and its environs; these activities provide direct measurement of contaminant concentrations in air, water, groundwater, soil, foods, biota, and other media. Environmental surveillance data provide information regarding conformity with applicable DOE orders and, combined with data from effluent monitoring, allow the determination of chemical and radiation dose/exposure assessments of ORR operations and effects, if any, on the local environment.

1.2 Description of Site Locale

The city of Oak Ridge lies within the Great Valley of Eastern Tennessee between the Cumberland and Great Smoky Mountains and is bordered on two sides by the Clinch River (Fig. 1.1). The Cumberland Mountains are 16 km to the northwest; the Great Smoky Mountains are 51 km to the southeast. The ORR encompasses about 13,651 hectares of mostly contiguous land owned by DOE in the Oak Ridge area. Most of it lies within the corporate limits of the city of Oak Ridge; 243 hectares west of the East Tennessee Technology Park (ETTP) are outside the city limits. The residential section of Oak Ridge forms the northern boundary of the reservation. The Tennessee Valley Authority's (TVA's) Melton Hill and Watts Bar reservoirs on the Clinch and Tennessee rivers form the southern and western boundaries

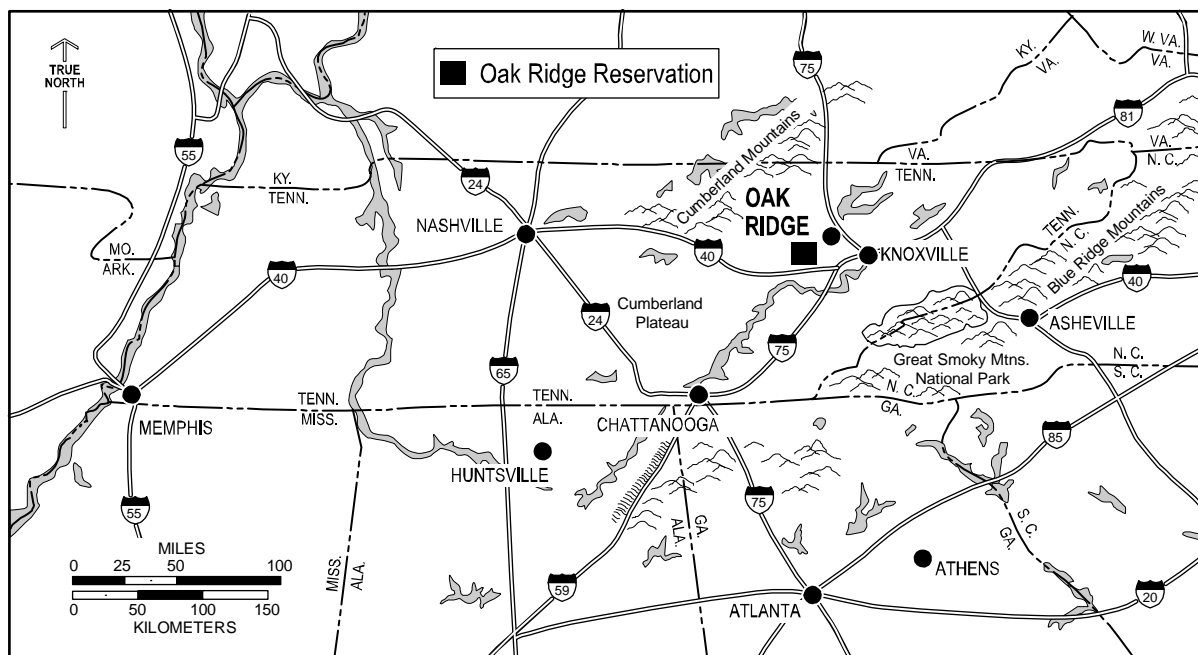


Fig. 1.1. Location of the city of Oak Ridge.

(Fig. 1.2). The population of the ten-county region surrounding the ORR is about 895,890 with about 4% of its labor force employed on the reservation (Fig. 1.3). Other towns close to the reservation include Oliver Springs, Clinton, Karns, Lenoir City, Farragut, Kingston, and Harriman (Fig. 1.4).

Knoxville, the major metropolitan area nearest Oak Ridge, is located about 40 km to the east and has a population of about 180,130. Except for the city of Oak Ridge, the land within 8 km of the ORR is semirural and is used primarily for residences, small farms, and cattle pasture. Fishing, boating, water skiing, and swimming are popular recreational activities in the area.

1.3 Climate

The climate of the Oak Ridge region may be broadly classified as humid subtropical and is characterized by significant temperature changes between summer and winter. The average temperature for the Oak Ridge area during 2006 was 15.3°C compared with a 30 year mean temperature (1976–2005) of 14.4°C. The coldest month is usually January, with temperatures averaging about 2.3°C. July tends to be the warmest month, with average temperatures of 25.3°C.

Average annual precipitation in the Oak Ridge area for the 30 year period from 1976 to 2005 was 1,374.3 mm, including about 27.4 cm of snowfall (NOAA 2006). Total rainfall during 2006, measured at the Oak Ridge meteorological tower, was 1,233.6 mm, and total 2006 snowfall was 8.9 cm. This marks the third consecutive year with below-normal precipitation. Monthly summaries of precipitation averages, extremes, and 2006 values are provided in Appendix B, Table B.1.

In 2006 wind speeds at Oak Ridge National Laboratory (ORNL) Tower C (MT2) measured at 10 m above ground level averaged 1.4 m/s. This value increased to about 3 m/s for winds at 100 m above the ground (about the height of local ridgetops). The local ridge-and-valley terrain reduces average wind speeds at valley bottoms, resulting in frequent periods of nearly calm conditions, particularly during clear, early morning hours. Wind direction and speed frequencies for Tower C at 10, 30, and 100 m above the ground can be found in Appendix B (Figs. B.1 thru B.3).

Detailed information on the climate of the Oak Ridge area is available in *Oak Ridge Reservation Physical Characteristics and Natural Resources* (Parr and Hughes 2006).

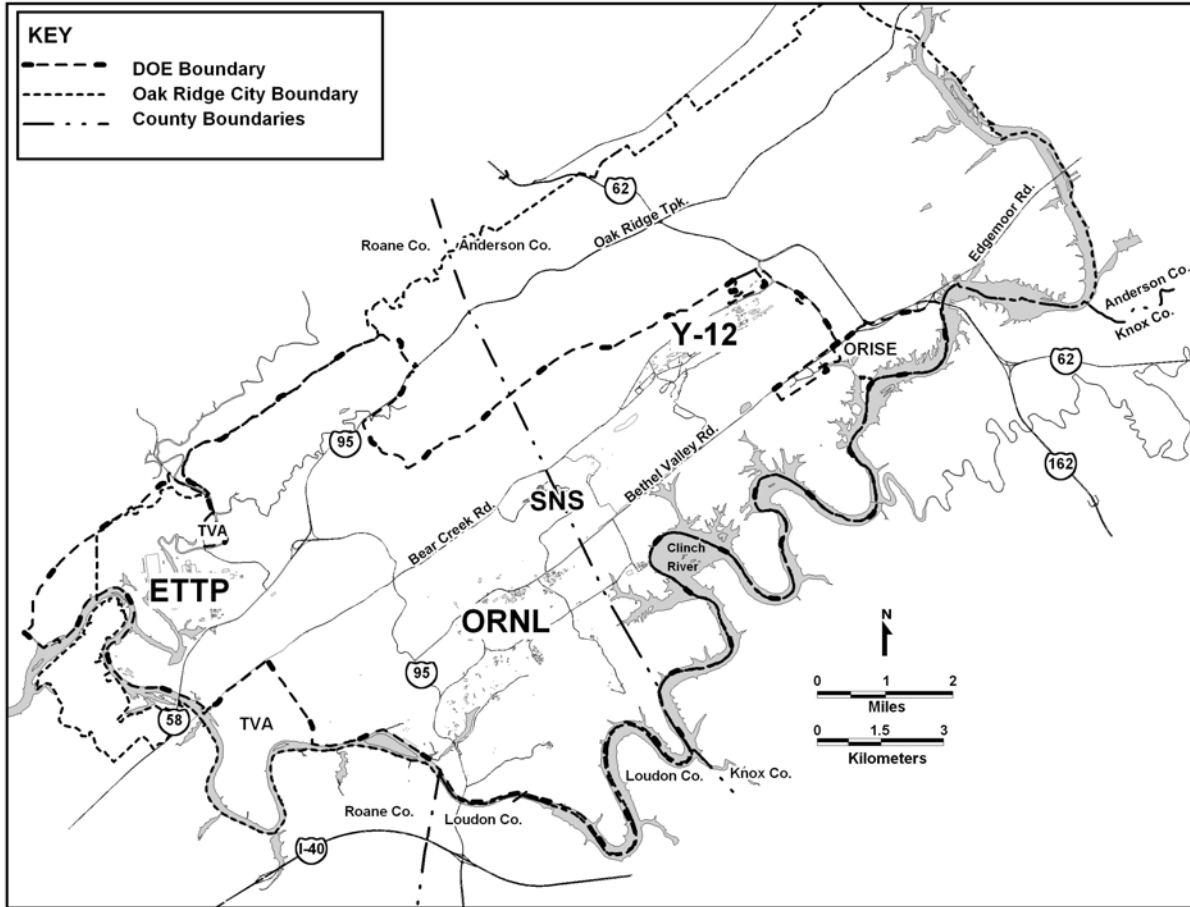


Fig. 1.2. The Oak Ridge Reservation.

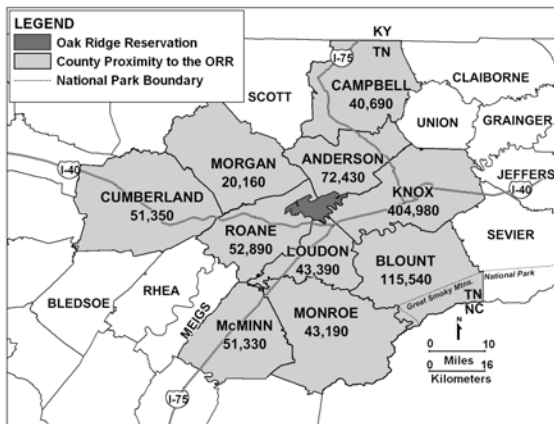


Fig. 1.3. Population by county in the 10-county region surrounding the Oak Ridge Reservation.

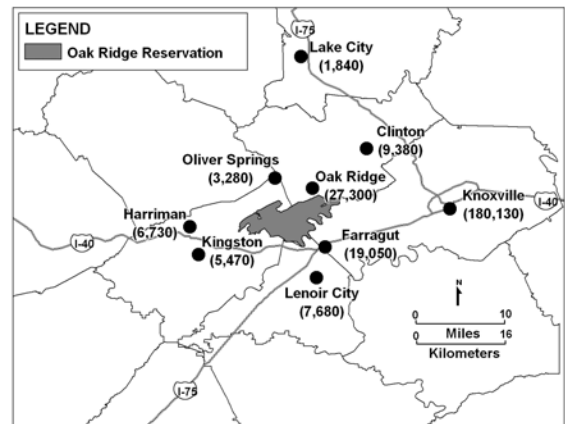


Fig. 1.4. Locations and populations of the towns nearest to the Oak Ridge Reservation.

1.4 Regional Air Quality

Appendix C contains a glossary of technical terms that may be useful for clarifying some of the language used in this document.

The Environmental Protection Agency (EPA) Office of Air Quality Planning and Standards has set National Ambient Air Quality Standards (NAAQSs) for key principal pollut-

ants, which are called “criteria” pollutants. These pollutants are sulfur dioxide (SO₂), carbon monoxide (CO), carbon dioxide (CO₂), nitrogen dioxide (NO₂), lead (Pb), ozone (O₃), particulate matter with aerodynamic diameter less than or equal to 2.5 microns (PM_{2.5}), and particles with an aerodynamic diameter less than or equal to 10 microns in diameter (PM₁₀). EPA evaluates NAAQS based on ambient (outdoor) levels of the criteria pollutants. Areas that satisfy NAAQS are classified as attainment areas, and areas that exceed the NAAQS for a particular pollutant are classified as nonattainment areas for that pollutant.

The ORR is located in Anderson and Roane counties in Air Quality Control Region 207 (East Tennessee-Southeastern Virginia). The EPA has designated Anderson County as a basic nonattainment area for the 8-h O₃ standard as part of the larger Knoxville 8-h basic O₃ nonattainment area, which encompasses several counties. In addition, the EPA has designated Anderson, Knox, and Blount counties as nonattainment for the new, stricter federal fine particulate matter (PM_{2.5}) air quality standard. EPA designated the portion of Roane County surrounding the Kingston Steam Plant as nonattainment as well. For all other criteria pollutants, for which EPA has made attainment designations, existing air quality in the greater Knoxville and Oak Ridge area is in attainment with the NAAQS.

1.5 Surface Water Setting

Waters drained from the ORR eventually reach the Tennessee River via the Clinch River, which forms the southern and western boundaries of the ORR (Fig. 1.2). The ORR lies within the Valley and Ridge Physiographic Province, which is composed of a series of drainage basins or troughs containing many small streams feeding the Clinch River. Surface water at each of the major facilities on the ORR drains into a tributary or series of tributaries, streams, or creeks within different watersheds. Each of these watersheds drains into the Clinch River.

The largest of the drainage basins is that of Poplar Creek, which receives drainage from a 352-km² area, including the northwestern sector of the ORR. It flows from northeast to southwest, approximately through the center of the

ETTP, and discharges directly into the Clinch River.

East Fork Poplar Creek, which discharges into Poplar Creek east of the ETTP, originates within the Y-12 National Security Complex (Y-12 Complex) near the former S-3 Ponds and flows northeast along the south side of the Y-12 Complex. Various Y-12 Complex wastewater discharges to the upper reaches of East Fork Poplar Creek from the late 1940s to the early 1980s left a legacy of contamination (e.g., mercury, polychlorinated biphenyls [PCBs], uranium) that has been the subject of water quality improvement initiatives over the past two decades. Bear Creek also originates within the Y-12 Complex with headwaters near the former S-3 Ponds, where the creek flows southwest. Bear Creek is mostly affected by stormwater runoff, groundwater infiltration, and tributaries that drain former waste disposal sites in the Bear Creek Valley Burial Grounds Waste Management Area and the current Environmental Management Waste Management Facility (EMWMF).

Both the Bethel Valley and Melton Valley portions of ORNL are in the White Oak Creek drainage basin, which has an area of 16.5 km². White Oak Creek headwaters originate on Chestnut Ridge, north of ORNL, near the Spallation Neutron Source (SNS) site. At the ORNL site, the creek flows west along the southern boundary of the developed area and then flows southwesterly through a gap in Haw Ridge to the western portion of Melton Valley, where it forms a confluence with Melton Branch. The waters of White Oak Creek enter White Oak Lake, which is an impoundment formed by White Oak Dam. Water flowing over White Oak Dam enters the Clinch River after passing through the White Oak Creek embayment area.

1.6 Geological Setting

The ORR is located in the Tennessee portion of the Valley and Ridge Physiographic Province, which is part of the southern Appalachian fold-and-thrust belt. As a result of thrust faulting and differential erosion rates, a series of parallel valleys and ridges have formed that trend southwest-northeast.

Two geologic units on the ORR, designated as the Knox Group and the Maynardville Limestone of the Conasauga Group, both consisting

of dolostone and limestone, constitute the Knox Aquifer. A combination of fractures and solution conduits in the aquifer control flow over substantial areas, and large quantities of water may move long distances. Active groundwater flow can occur at substantial depths in the Knox Aquifer (91.5 to 122 m deep). The Knox Aquifer is the primary source of groundwater to many streams (base flow), and most large springs on the ORR receive discharge from the Knox Aquifer. Yields of some wells penetrating larger solution conduits are reported to exceed 3,784 L/min.

The remaining geologic units on the ORR (the Rome Formation, the Conasauga Group below the Maynardville Limestone, and the Chickamauga Group) constitute the ORR Aquitards, which consist mainly of siltstone, shale, sandstone, and thinly bedded limestone of low to very low permeability (Fig. 1.5). Nearly all groundwater flow in the ORR Aquitards occurs through fractures. The typical yield of a well in the ORR Aquitards is less than 3.8 L/min, and the base flows of streams draining areas underlain by the ORR Aquitards are poorly sustained because of such low flow rates. Detailed information on ORR groundwater hydrology and flow is available in *Oak Ridge Reservation Physical Characteristics and Natural Resources* (Parr and Hughes 2006).

1.7 Description of Site Facilities and Operations

1.7.1 History of the Oak Ridge Reservation

Beginning in early 1943, thousands of scientists, engineers, and workers came from all over the United States to small crossroads communities such as Scarboro, Wheat, Robertsville, and Elza to build and operate three huge facilities that would change the history of the region and the world forever. These people came to rural East Tennessee to do whatever was necessary to end World War II and, as part of the then secret Manhattan Project, helped produce the first nuclear weapons.

The site was selected for use by the Manhattan Project because the Clinch River provided ample supplies of water, nearby Knoxville was a good source of labor, and the TVA could supply

the huge amounts of electricity needed. About 3,000 residents received court orders to vacate within weeks the homes and farms that their families had occupied for generations. Very soon afterwards, the site was given its wartime name of “Clinton Engineering Works.”

The workers’ city, named Oak Ridge, was established on the reservation’s northern edge. The “Secret City” grew to a population of 75,000, used one-seventh of the electrical power generated in the country at the time, and was the fifth-largest city in Tennessee; however, it was not shown on any map. At the Y-12 Complex, south of the city, an electromagnetic method was used to separate fissionable isotopes of uranium (^{235}U) from natural uranium. At its peak operation, the Y-12 Complex employed 22,000 workers. A gaseous diffusion plant, later known as K-25, was built on the reservation’s western edge and included a multistory process building covering more area than any other structure ever built. Operated by 12,000 workers, the K-25 Plant separated ^{235}U from ^{238}U . Near the reservation’s southwest corner, about 16 km from Y-12, was a third facility, known as X-10 (or Clinton Laboratories), where the Graphite Reactor was built. Employing only about 1,500 people during the war, X-10 was a pilot plant for the larger plutonium production plant built at Hanford, Washington. The Graphite Reactor used neutrons emitted in the fission of ^{235}U to convert ^{238}U into a new element, plutonium-239 (^{239}Pu).

The primary missions of the three sites have evolved during the past 60+ years and continue to adapt to meet the changing defense, energy, and research needs of the United States. The reservation contains three major DOE installations: the Y-12 National Security Complex (formerly the Y-12 Plant), ORNL (formerly the X-10 site), and ETPP (formerly the K-25 site). DOE also operates a number of facilities in addition to the major installation sites.

1.7.2 The Y-12 National Security Complex

The Y-12 Complex (Fig. 1.6), operated by BWXT Y-12 for the National Nuclear Security Administration (NNSA) within DOE, is a one-of-a-kind manufacturing facility that plays an important role in U.S. national security and is dedicated to making the nation and the world a

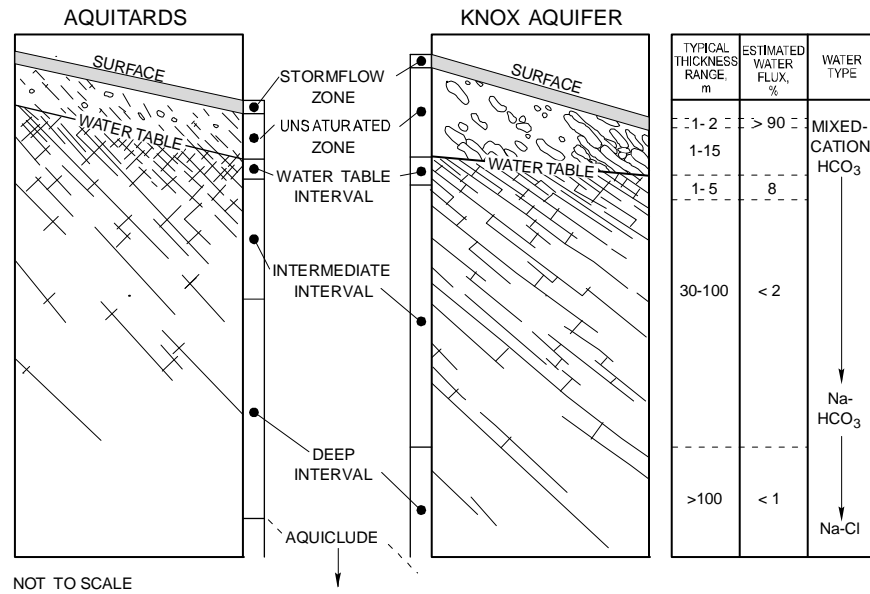


Fig. 1.5. Vertical relationships of flow zones of the ORR: estimated thicknesses, water flux, and water types.

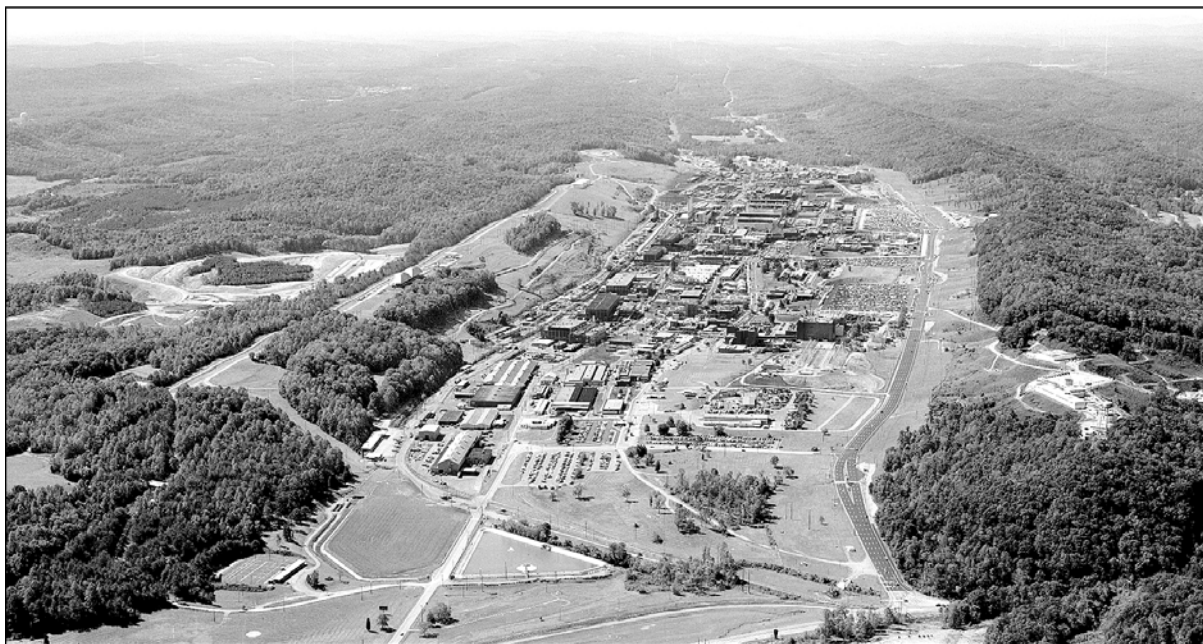


Fig. 1.6. The Y-12 National Security Complex.

safer place. With more than 60 years of experience to draw from, Y-12 is uniquely qualified to address the existing and emerging security challenges facing our nation and the world today. Today Y-12's roles include

- providing critical elements of NNSA's missions that ensure the safety, reliability,

and performance of the U.S. nuclear weapons deterrent;

- supplying the special nuclear material for use in naval reactors;
- promoting international nuclear safety and nonproliferation;

- reducing global dangers from weapons of mass destruction; and
- supporting U.S. leadership in science and technology.

Presently, the Y-12 Complex is pursuing an aggressive program of infrastructure reduction, modernization, and investment in technology to make the site as safe and efficient as possible and to improve production capabilities. The *Ten-Year Comprehensive Site Plan* is a rolling 10-year plan of missions, programs, workload, and investments outlining the new construction, re-capitalization, maintenance requirements, and excess facility demolition required to modernize the Y-12 Complex. Overall implementation of the modernization program is consistent with NNSA's Complex 2030 vision for the nuclear weapons complex. The Y-12 Complex is making all these improvements while maintaining safety, security, and environmental stewardship as its highest priorities.

1.7.3 East Tennessee Technology Park

The ETTP was built as the home of the Oak Ridge Gaseous Diffusion Plant (ORGDP) (Fig. 1.7). The plant's original mission was production of highly enriched uranium for nuclear weapons.

Enrichment was initially carried out in two process buildings, K-25 and K-27. Later, the K-29, K-31, and K-33 buildings were built to increase the production capacity of the original facilities by raising the assay of the feed material entering K-27. After military production of highly enriched uranium was concluded in 1964, the two original process buildings were shut down. For the next 20 years, the plant's primary missions were production of only slightly enriched uranium to be fabricated into fuel elements for nuclear reactors and the recycling of fuel elements from nuclear reactors. Other missions during the latter part of this 20-year period included development and testing of the gas centrifuge method of uranium enrichment and the laser isotope separation research and development (R&D).

By 1985, demand for enriched uranium had declined, and the gaseous diffusion cascades at ORGDP were placed in standby mode. That

same year, the gas centrifuge program was canceled. The decision to permanently shut down the diffusion cascades was announced in late 1987, and actions necessary to implement that decision were initiated soon thereafter. Because of the termination of the original and primary missions, ORGDP was renamed the "Oak Ridge K-25 Site" in 1990. In 1997, the K-25 Site was named the "East Tennessee Technology Park" to reflect its new mission.

DOE's long-term goal for ETTP is to convert the site into a private industrial park. The site is undergoing environmental cleanup, which is now expected to be completed on an accelerated schedule. The new accelerated closure plan will achieve cleanup several years ahead of the original plan, and thereby will reduce environmental and safety risks more quickly and will reduce long-term maintenance costs. The reuse of key site facilities through title transfer is part of the closure plan for the site. The accelerated cleanup approach makes land and various types of buildings (e.g., office, manufacturing) suitable for private industrial use and suitable for title transfer to the Community Reuse Organization of East Tennessee (CROET) or other entities, such as the city of Oak Ridge. The facilities may then be subleased or sold, with the goal of stimulating private industry and recruiting business to the area.

The ETTP mission is to reindustrialize and reuse site assets through leasing of excess or underutilized land and facilities and incorporation of commercial industrial organizations as partners in the ongoing environmental restoration, decontamination and decommissioning, and waste treatment and disposal. During 2006, two additional office buildings, K-1400 and K-1036, were transferred from DOE ownership to CROET. There are now a total of six transferred facilities, and work continues on the transfer of additional facilities and land parcels. In a process similar to its leasing process for federally owned facilities, CROET also subleases transferred facilities.

George Jones Memorial Baptist Church, commonly called the Wheat Church (part of the early Wheat Community), located within the ETTP, predates World War II and is included in the *National Register of Historic Places* (National Park Service 2003).



Fig. 1.7. The East Tennessee Technology Park.

1.7.4 Oak Ridge National Laboratory

ORNL is DOE's largest science and energy laboratory (Fig. 1.8). Managed since April 2000 by UT-Battelle, a partnership between the University of Tennessee (UT) and Battelle, ORNL was established in 1943 as a part of the secret Manhattan Project to pioneer a method for producing and separating plutonium. ORNL's involvement with nuclear weapons ended after the war, and the Laboratory's scientific expertise shifted in the 1950s and 1960s to peacetime research in medicine, biology, materials, and physics. The Graphite Reactor evolved from a wartime role to produce the world's first medical radioisotopes for treating cancer. Following the creation of DOE in 1977, ORNL's mission broadened to include research in energy production, transmission, and consumption. The end of the Cold War and the growth of international terrorism led to a further expansion of research into a range of national security technologies. As the laboratory entered the twenty-first century, new cross-disciplinary programs in nanophase materials, computational sciences, and biology led to the term "nano-info-bio" to describe the emerging synthesis in ORNL's research agenda. As ORNL's missions have changed over the

years to meet the nation's priorities and needs, the Laboratory's underpinning standards in science and public service have remained.

ORNL supports the DOE Oak Ridge Office (DOE-ORO) in its responsibilities for land use planning, land management activities, and natural resource management for the ORR. ORNL also coordinates research and its associated operational and maintenance activities within the National Environmental Research Park.

The SNS site is located on approximately 35 hectares of Chestnut Ridge near ORNL. The SNS, an accelerator-based neutron source, is currently operating at low power, and will provide neutron beams with up to ten times more intensity than any other such source in the world. Construction began in 1999 and was completed in May 2006 at a total cost of \$1.4 billion. Design and construction was performed by a partnership of six DOE national laboratories (Argonne, Brookhaven, Jefferson, Lawrence Berkeley, Los Alamos, and Oak Ridge). At present, limited operational experiments are being conducted at the SNS. Once the SNS reaches full power in 2009, it will attract scientists and

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Fig. 1.8. The Oak Ridge National Laboratory.

engineers from universities, industries, and government laboratories in the United States and abroad.

In 2006 a small portion of ORNL property was leased to CROET for development into the Oak Ridge Science and Technology Park (ORSTP). The ORSTP will provide space where companies doing research at ORNL, partner universities, start-ups built around ORNL technologies, and ORNL contractors can do business within a short distance of ORNL researchers and DOE user facilities such as the SNS, the Center for Nanophase Materials Sciences and the High Flux Isotope Reactor (HFIR).

1.7.5 Oak Ridge National Environmental Research Park

In 1980, DOE established the Oak Ridge National Environmental Research Park (Fig. 1.9). Consisting of about 8,094 hectares, the Research Park serves as an outdoor laboratory to evaluate the environmental consequences of energy use and development as well as the strategies to mitigate those effects. The combination of protected, undeveloped areas with dis-

turbed, developed, or developing areas within the Research Park allows the demonstration and assessment of various environmental and land-use options.

Major DOE Office of Science research programs use the ORR land to meet mission objectives. In fiscal year (FY) 2006 almost \$10 million was spent on DOE-supported environmental field-based research directly dependent on the ORR land base. This expenditure is independent of construction of new facilities such as the SNS. The Office of Science considers the research and science value of the ORR to be critical and provides primary operations funding. The Oak Ridge National Environmental Research Park is one of the few sites in the nation where large-scale ecological research, environmental technology, and measurement science are integrated with 50 years of environmental monitoring and research.

The availability of the protected lands and field research sites on the ORR allows DOE to support major field experiments that could not be conducted if the lands and associated eco-

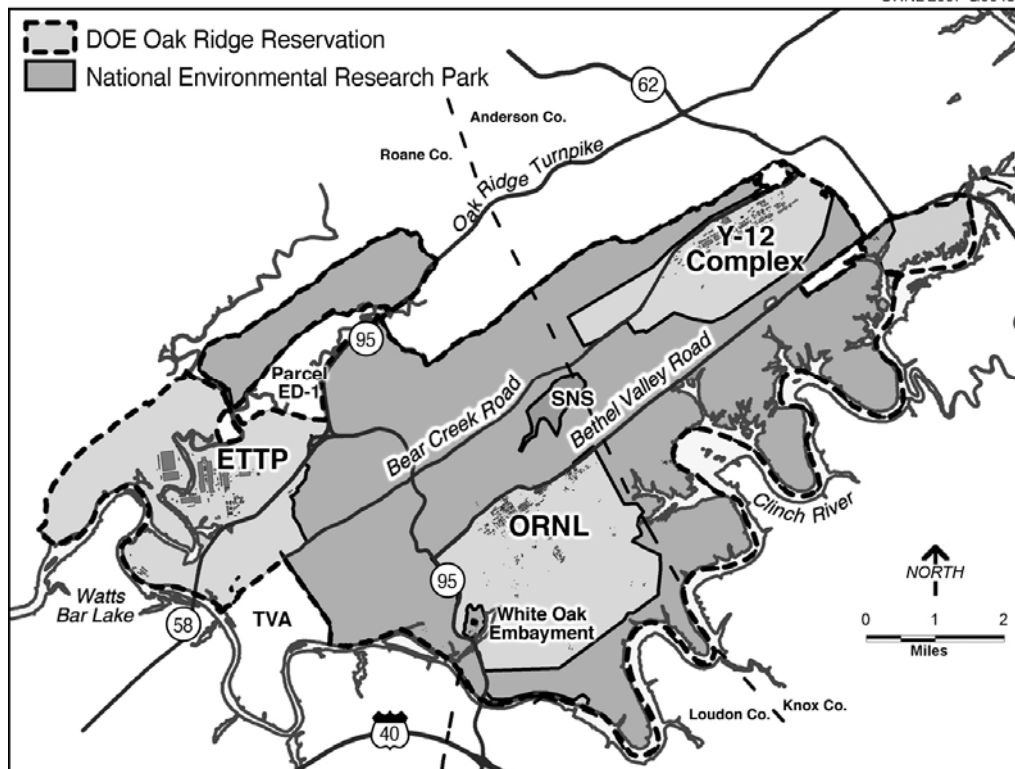


Fig. 1.9. The Oak Ridge National Environmental Research Park covers about 8,094 hectares (about 20,000 acres) on the reservation.

logical systems were not protected and secured for such long-term studies. This research addresses fundamental questions about the effects of energy-related activities on ecological systems and compares such effects with the natural variation of ecological systems.

The Oak Ridge National Environmental Research Park is a DOE national user facility that has attracted more than 1200 users from ORNL, 150 colleges, universities, industries, and other state and federal agencies over the past 5 years. The 270 users during 2006 represented 50 organizations, including educational institutions, state and federal agencies, and others.

1.7.6 Oak Ridge Institute for Science and Education

The Oak Ridge Institute for Science and Education (ORISE) is managed for DOE by Oak Ridge Associated Universities (ORAU), a non-profit consortium of 91 doctoral-granting members and 10 associate members. ORISE includes 94 hectares on the southeastern border of the ORR that from the late 1940s to the mid-1980s was part of an agricultural experiment station

owned by the federal government and, until 1981, was operated by UT.

The ORISE South Campus lies immediately southeast of the intersection of Bethel Valley Road and Pumphouse Road. The site houses offices, laboratories, and storage areas for the ORISE program offices and support departments, and it is being developed for other productive uses.

For more information, visit the ORAU home page at <http://www.ornl.gov> and the ORISE home page at <http://www.ornl.gov/orise.htm>.

1.7.7 Other Sites

DOE operates a number of facilities in addition to the major installation sites. The other facilities are described in the following sections.

1.7.7.1 American Museum of Science and Energy

The American Museum of Science and Energy occupies a 7-hectare site contiguous to the ORAU campus, on South Tulane Avenue in Oak Ridge. In 1975, the American Museum of Science and Energy was moved from its previous

facility (55–59 Jefferson Circle) to a masonry structure with about 53,000 ft². In addition to the main museum facility, the site contains the Energy House, which is licensed to the city of Oak Ridge for use by the Convention and Visitors' Bureau. The museum also has warehouse space in the Office of Scientific and Technical Information (OSTI) Building 1916T-2 complex. The museum is managed by UT-Battelle.

1.7.7.2 Atmospheric Turbulence and Diffusion Division—National Oceanic and Atmospheric Administration Facility

The Atmospheric Turbulence and Diffusion Division—National Oceanic and Atmospheric Administration (ATDD-NOAA) Facility is composed of a wood-frame building built in the 1940s and several smaller buildings at 456 South Illinois Avenue in Oak Ridge. ATDD conducts meteorological and atmospheric diffusion research that is jointly supported by DOE and NOAA. It also provides services to other DOE contractors and operates the Weather Instrument Telemetry Monitoring System for DOE.

1.7.7.3 Buildings 2714 and 2715

Building 2714 (the “Laboratory Road Facility”) and Building 2715 are DOE-owned facilities that DOE shares with ORISE. The facilities are used for general offices. In February 2007, ORISE relocated its laboratory-based training program to the ORISE South Campus and turned the G wing over to DOE-ORO. The ORISE-occupied facilities now comprise only Building 2715 (about 3,413 ft²). Both buildings are located in Oak Ridge immediately south of the Federal Office Building.

1.7.7.4 Central Training Facility

The Central Training Facility, used primarily by security forces, consists of a small office building, an indoor firing range, two classroom/storage trailers, on-site parking, fitness facilities (an outdoor track), and numerous outdoor firing ranges. The site, including a buffer area, is south of Bear Creek Road, less than

1.6 km southeast of ETTP, and currently occupies about 61 hectares.

1.7.7.5 Checking Stations

Three checking stations (gatehouses), which are DOE-ORO properties, are included in the *National Register of Historic Places* (National Park Service 2003): (1) the Oak Ridge Turnpike Checking Station (Turnpike Checking Station), (2) the Scarboro Road Checking Station (Midway Checking Station), and (3) the Bethel Valley Road Checking Station. Although these structures are listed as checking stations in the *National Register*, they were originally called “gatehouses.” The main building of the Bethel Valley Road Checking Station is located on a parcel of land that was transferred to the city of Oak Ridge. However, the small associated block building just opposite the main structure is still owned by DOE-ORO.

1.7.7.6 Clark Center Recreation Park

Clark Center Recreation Park, an area containing about 32 hectares, is currently being used for recreational park purposes and is available to DOE and its contractor personnel and to the public on a limited basis. The area lies within landholding under the jurisdictional control of DOE and is managed by DOE.

1.7.7.7 DOE Information Center

The DOE Information Center, located at 475 Oak Ridge Turnpike, provides centralized public access to DOE documents and information. The Information Center consolidates Freedom of Information Act documents that were previously available at the DOE Public Reading Room and information about the DOE Office of Environmental Management (DOE-EM) Program that was previously located at the Information Resource Center. The building, which is leased to DOE by R&R Rental Properties, has about 8,000 ft² of space and provides public meeting rooms and office space for the Oak Ridge Site Specific Advisory Board.

1.7.7.8 Federal Office Building

The Federal Office Building, located in Oak Ridge and owned by the General Services Administration, is maintained by DOE. DOE-ORO offices occupy the vast majority of the 113,000 ft² of space in the building.

1.7.7.9 National Transportation Research Center

The National Transportation Research Center (NTRC), an alliance among ORNL, UT, DOE, NTRC, Inc., and the Development Corporation of Knox County, is the site of activities that span the whole range of transportation research. The center is an 85,000-ft² building, located on a 2.4-hectare site in the Pellissippi Corporate Center and is leased to ORNL and UT separately by Pellissippi Investors LLC.

1.7.7.10 Office of Scientific and Technical Information

OSTI is located in Buildings 1916T-1 and 1916T-2, two masonry buildings constructed as warehouses in the 1940s. Building 1916T-1 houses the main OSTI functions as well as other occupants. Portions of it were converted to office space in the 1950s, and additional bays were added in the 1950s and 1960s. Currently, the building has one office bay and seven other bays, for a total space of 135,000 ft². Building 1916T-2 houses DOE-ORO operations, including warehousing and maintenance staff. The two DOE buildings are located on a tract (about 3 hectares) that parallels the Oak Ridge Turnpike about 3.2 km east of the Federal Office Building. Because of their age and configuration, they are classified as Class B buildings (i.e., semipermanent buildings, constructed primarily of wood, which may need to be renewed, renovated, or rehabilitated in the near future) but are deemed adequate for current functions.

1.7.7.11 The Horizon Center

The Horizon Center (previously known as ED-1), was leased to CROET, effective April 28, 1998, and 198 hectares were transferred (by quit claim deed) to CROET in April 2003. The developable portions of the parcel were transferred. The other portions (the natural area that surrounds the East Fork Poplar Creek

floodplain and other locations), remain part of the CROET leasehold. CROET may sublease the land transferred to it or may sell it to others for purposes of economic development. CROET is responsible for the protection and maintenance of all portions of the property.

1.7.7.12 Parcel ED-2

Parcel ED-2, which includes the K-1252 barge facility and an adjacent laydown/access area, is about 4 hectares in size. ED-2 is located in the K-700 area west of the main ETTP site, and it has been leased to CROET. CROET has changed its long-range plan for the barge facility and adjoining property. The current plan recognizes the advent of Rarity Ridge, a residential community across the river from the barge facility. CROET wishes to ensure that future use and further development of the peninsula would be achieved in a manner compatible with this evolving residential community and will be in contact with Rarity Ridge as plans for the barge area are identified.

1.7.7.13 Office of Secure Transportation Firing Range

The Office of Secure Transportation Firing Range, located to the east of the Central Training Facility, is operated by the NNSA Albuquerque Service Center. The surface danger zones for the Central Training Facility and the Office of Secure Transportation Firing Range overlap and together comprise about 1,012 hectares.

1.7.7.14 Office of Secure Transportation Vehicle Maintenance Facility

The Office of Secure Transportation Vehicle Maintenance Facility is located on an 8-hectare site about 1.6 km east of ETTP, on the south side of State Route 58 (Oak Ridge Turnpike), near the intersection with Blair Road. The building has undergone major modifications, including the addition of security fencing, paved parking, and paved access around the building. The total site area constitutes about 40 hectares. The facility is maintained by the Y-12 Complex's Facilities, Infrastructure, and Services

Organization and is funded by the NNSA Albuquerque Service Center.

1.7.7.15 Union Valley Facility

The Union Valley Facility, located on Union Valley Road, is a leased facility operated by the Y-12 Analytical Chemistry Organization. Analytical Chemistry provides a wide range of routine and nonroutine analytical services for environmental and hazardous waste programs of NNSA, DOE, and other customers.

1.7.7.16 Vance Road Facility

On June 20, 2006, the DOE-owned Vance Road Facility, formerly operated by ORISE, was deeded to the Oak Ridge Methodist Medical Center. ORISE and DOE worked together to complete all the necessary paperwork and to obtain all the required approvals to allow DOE to make it available for community reuse.

1.7.7.17 Transuranic Waste Processing Center

The Transuranic (TRU) Waste Processing Center (TWPC), managed by Foster-Wheeler Environmental Company, LLC, is located at 100 Wipp Road, in Lenoir City, Tennessee. The site is located on about 2 hectares of leased land

adjacent to the Melton Valley Storage Tanks, along State Route 95 on the western boundary of ORNL. On November 3, 2006, DOE took over ownership of the TWPC from Foster Wheeler. EnergX is the managing subcontractor.

The TWPC's mission is to receive current inventories of retrievably-stored and legacy TRU wastes and future wastes to be generated from decontamination and decommissioning, remediation, and ongoing mission operations at the ORNL complex. TWPC processes, treats, repackages, and ships the waste for final disposal at the Waste Isolation Pilot Plant (WIPP), Nevada Test Site, or any other designated disposal facility. The TWPC is the only facility of its type in the region specifically designed to accomplish this mission. Low-level radioactive waste, and low-level mixed wastes generated as by-products of TRU process operations are also processed for shipment to the Nevada Test Site or other appropriate disposal facility.

The TWPC consists of the Waste Processing Facility, the Contact-Handled Staging Area, the Personnel Building, and numerous support buildings and storage areas. The TWPC began processing supernatant liquid from the Melton Valley Storage Tanks in 2002, and contact-handled solids in December 2005.

