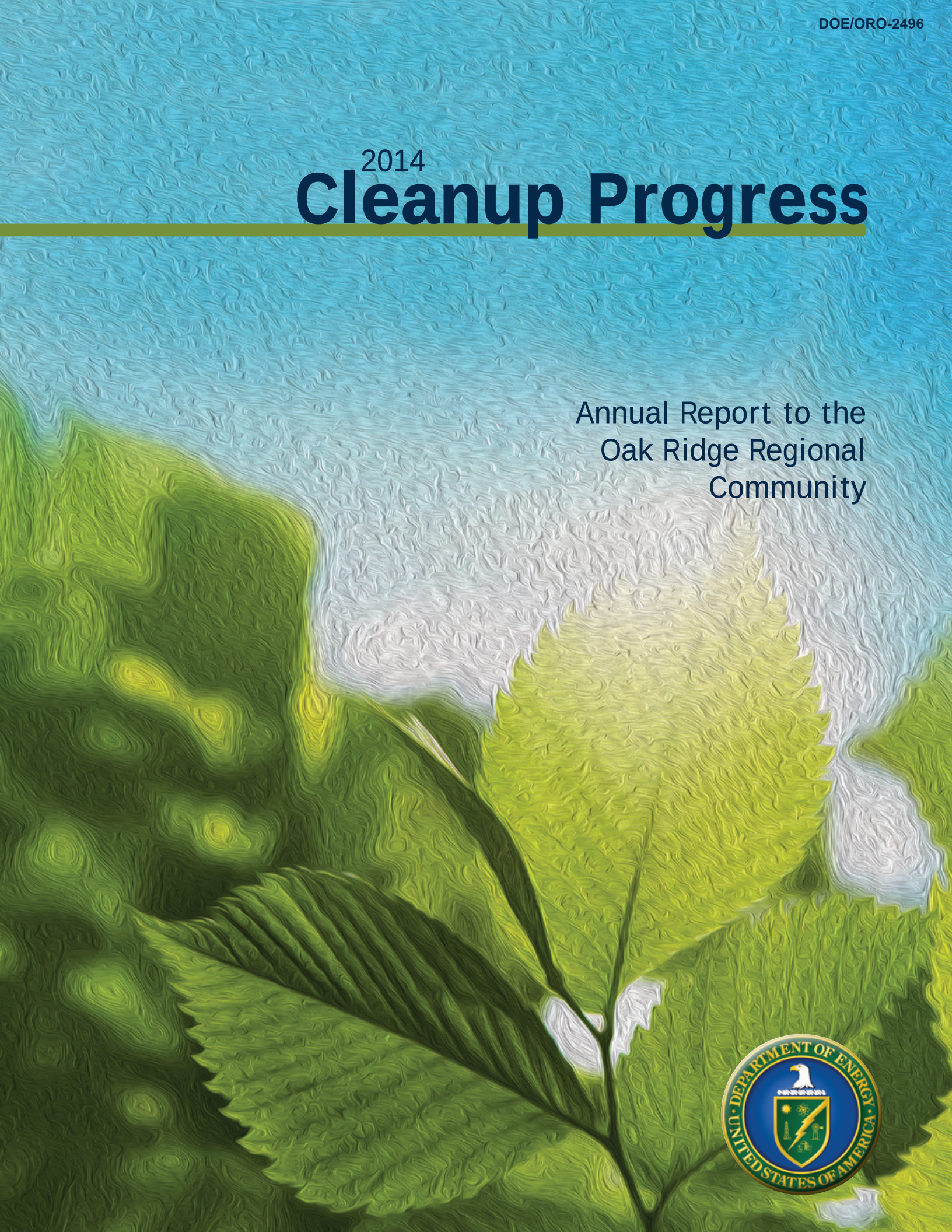
DOE/ORO-2496

# 2014 Cleanup Progress

## Annual Report to the Oak Ridge Regional Community



# Message from the EM Manager

## Department of Energy Oak Ridge Office

To the Oak Ridge Regional Community:

**Sue Cange**

Reflecting on 2014, I am extremely proud of the Department of Energy (DOE) Oak Ridge Office's accomplishments. We completed the Department of Energy's largest-ever demolition project, transferred unneeded land to the community to bolster economic development opportunities, and progressed on cleanup projects at the Oak Ridge National Laboratory (ORNL) and the Y-12 National Security Complex (Y-12). And, planning is under way to carry this momentum forward and continue to realize tangible successes in our effort to complete cleanup of the Oak Ridge Reservation.

Undoubtedly, our most notable accomplishment in Fiscal Year 2014 was the successful completion of the K-25 Building Demolition Project at East Tennessee Technology Park (ETTP), the former Oak Ridge Gaseous Diffusion Plant. The K-25 Building was built in the 1940s to support the Manhattan Project and later produced enriched uranium for commercial and defense purposes. We completed the K-25 project six months ahead of schedule and almost $300 million under its federal baseline budget. This early completion allowed us to retain our highly skilled workforce and begin the K-31 Demolition Project earlier than expected. Concurrently, we are continuing to prepare the K-27 Building for demolition, which is slated to begin next year.

Eliminating all of the former ETTP gaseous diffusion process buildings will bring us one step closer to completing the transformation of a former Manhattan Project and Cold War complex into a viable location for private industry and sustainable economic development. In a 2014 visit to ETTP, Tennessee Governor Bill Haslam agreed with that assessment and shared our excitement about the possibilities to attract major industry to the site. Our work at the site has made that vision a possibility in the immediate future.

Of course, our cleanup focus extends beyond demolition at ETTP. The Oak Ridge Office of Environmental Management is currently planning three capital asset projects that will further advance our cleanup objectives. At Y-12, we are proposing to construct a mercury treatment facility that will reduce the concentration of mercury in surface water and help prepare us for large-scale demolition at Y-12. We are also planning to construct a new disposal facility that will accept the debris from future cleanup at Y-12 and ORNL. And finally, we will build a sludge treatment facility at the Transuranic Waste Processing Center that will get us closer to removing all the transuranic waste from Oak Ridge.

Finally, I would like to recognize you, our stakeholders, as the best community partner in the Department's Environmental Management program. Through your unwavering support, we are able to share a vision for Oak Ridge's future and work together to make that a reality. I am encouraged that we will continue our important dialogue, and together we can develop a set of ideas that will help maintain our cleanup momentum.

Thank you for your time, interest, and shared commitment to protect and restore the environment. We are grateful for your involvement and feedback that provide valuable insight to enhance our operations. I look forward to another great year of partnership and public participation as we work together to advance our cleanup mission in Oak Ridge.

Susan M. Cange
Manager

EM *Environmental Management*

*safety ❖ performance ❖ cleanup ❖ closure*

# Contents

Page 8

Page 10


**Introduction** ..... 4

**East Tennessee Technology Park** ..... 5

Historic K-25 Building demolished ..... 7
K-31 demolition begins ..... 9
Workers preparing K-27 for demolition ..... 10
Work continues to reduce ETTP environmental contamination ..... 12
Progress continues on commemorating the K-25 Site ..... 13
Parcels transferred as ETTP Reindustrialization progresses ..... 14

**Oak Ridge National Laboratory** ..... 15

Waste handling plan approved for Molten Salt Reactor Experiment Facility ..... 16
Prep work continues for U-233 disposition ..... 17
Completion reports issued for various ORNL projects ..... 17

**Y-12 National Security Complex** ..... 19

Mercury technology development activities under way for Y-12, East Fork Poplar Creek ..... 20
Remediation strategy developed ..... 21
Alpha 4 roof repairs completed ..... 21
Outfall 200 mercury treatment facility treatability study, conceptual design report prepared ..... 22
Debris from UPF haul road work disposed ..... 22

**Waste Management** ..... 23

Reservation facilities receive and oversee waste from cleanup ..... 24
Site under consideration for new on-site waste disposal facility ..... 25
Transuranic Waste Processing Center addressing ORNL wastes ..... 27
Wastewater treatment continues on Oak Ridge Reservation ..... 28
Legacy waste disposed ..... 28

Page 17

Page 20

Page 34


**Oak Ridge Reservation** ..... 29

Reservation groundwater strategy document details efforts to evaluate off-site movement ..... 30
Remediation Effectiveness Report submitted ..... 31
Monitoring shows no man-made contaminants ..... 31

**Public Involvement** ..... 33

Stakeholder event held to celebrate completion of K-25 demolition ..... 34
Advisory Board provides input on DOE cleanup activities ..... 34
DOE Information Center ..... 38

**Information Resources** ..... 39

**Internet Sites** ..... 39

**Commonly Used Abbreviations** ..... 40

**Commonly Used Terms** ..... 40



UCOR
URS | CH2M
Oak Ridge LLC

This report was produced by URS | CH2M Oak Ridge LLC, DOE's Environmental Management contractor for the Oak Ridge Reservation.

# Introduction

Cleanup activities are taking place across the Department of Energy's (DOE's) Oak Ridge Reservation, and the agency has made great progress in 2014. The most notable achievement is completing demolition of the K-25 Building, the largest facility in the Environmental Management (EM) complex. This project joins numerous others across the 33,500-acre Oak Ridge Reservation that were completed or in progress in Fiscal Year 2014 (Oct. 1, 2013, to Sept. 30, 2014).

The Oak Ridge Reservation has played key roles in our nation's defense and energy research. However, past waste disposal practices and unintentional releases have left land and facilities contaminated. These contaminants include radioactive elements, mercury, asbestos, polychlorinated biphenyls, and industrial wastes.

DOE's Oak Ridge Office of EM is responsible for cleaning up this legacy contamination at the Reservation's three major facilities: East Tennessee Technology Park (ETTP), Oak Ridge National Laboratory (ORNL), and Y-12 National Security Complex (Y-12).

The contaminated portions of the Reservation are on the U.S. Environmental Protection Agency's (EPA) National Priorities List, a list of hazardous waste sites across the nation that are to be cleaned up under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). In 2013, DOE completed a project that clearly defines the areas that require cleanup or further action throughout the Oak Ridge Reservation, and the EM program is working to clean those areas under a Federal Facility Agreement with the Environmental Protection Agency and the State of Tennessee.

# East Tennessee Technology Park

The former K-25 Gaseous Diffusion Plant began operations during World War II as part of the Manhattan Project. Its original mission was to produce enriched uranium for use in atomic weapons. The 2,200-acre plant was permanently shut down in 1987 and is undergoing cleanup for ultimate conversion to a private sector industrial park. Restoration of the environment, deactivation and demolition of facilities, and disposition of wastes are the major activities at the site.

***The K-25 Building was built in the early 1940s as part of the Manhattan Project and continued enriching uranium for defense and power generation purposes until it was shut down in 1964. Its demolition was a high priority due to its contamination and deteriorated state.***

# Historic K-25 Building demolished

## Largest demolition project in DOE Complex

Demolition of the historic K-25 Building, one of the original Manhattan Project facilities, was completed in December 2013, and workers removed the final debris in June 2014. The K-25 Building was constructed in the mid-1940s to produce highly enriched uranium for the atomic bombs that would end World War II. At 44 acres, the mile-long, U-shaped facility was once the largest building under one roof in the world.

Completing K-25's demolition on schedule required creative solutions to several challenges; however, EM and its cleanup contractor, URS | CH2M Oak Ridge LLC (UCOR), worked together and completed the project six months ahead of schedule and nearly $300 million under its federal baseline budget.

During demolition of the building's west wing, material without a clear disposition path was placed in other parts of the building so that demolition could continue. This material included a collection of process equipment that had been disconnected and placed in the east wing. Enclosures were built around the equipment, the uranium was mined out, and the hulls stayed in place to be disposed as part of the building demolition.

*Last section of K-25 Building coming down*

Completing demolition of Building K-25 required crews to address and move a collection of high risk equipment, including items called monoliths—large blocks of uranium-containing components encased in concrete—and sodium fluoride (NaF) traps. NaF traps were used as part of the uranium separation process. The sodium fluoride pellets were used to trap the uranium, and the traps still contained uranium from when workers conducted operations in the facility. Each NaF trap was approximately the size of a household hot water heater and ranged in weight from 1,500-2,000 pounds.

Employees opened, mined, and repackaged the high risk equipment to meet disposal criteria. The concrete in the monoliths was chipped away, and the uranium content was mined out of the components in an on-site facility. The NaF traps, some of the highest risk equipment in the building, were removed prior to demolition.

EM and UCOR also altered how they evaluated and removed compressors and converters from K-25. Previously, the components were taken into the shop to be surveyed without breaching or damage, a process known as non-destructive assay. Instead, as part of the deactivation and demolition of units contaminated with Technetium-99 (Tc-99), these components

were decontaminated and sprayed with fixative in the demolition field. Teams brought the non-destructive assay equipment into the field and established a packaging, assay, and shipping production line.

Following demolition and debris removal, Tc-99, which is extremely mobile, was found in storm water and underground utilities associated with Building K-25. EM performed an extensive investigation of storm water sewers, underground electrical duct banks, sanitary sewers, and groundwater. Despite levels below regulatory compliance levels for any concern to human health, EM and UCOR worked to capture the material and dispose the waste offsite. A Removal Site Evaluation was prepared that documented the findings.

***Jim Kopotic, former Oak Ridge Office of Environmental Management's Federal Project Director for ETTP, talks with workers who gathered to watch the last load of K-25 demolition debris be shipped from the site.***

# K-31 demolition begins

## Fourth gaseous diffusion facility to be demolished

*First cut into the K-31 Building*

Demolition of the K-31 Building at ETTP began Oct. 8, 2014, after months of preparation. This demolition marks the removal of the fourth of five gaseous diffusion buildings at the former uranium enrichment site.

The two-story building covers 750,000 square feet and spans a 17-acre footprint. The K-31 facility began operations in 1951, and it was used to enrich uranium for defense and power generation purposes until it was shut down in 1985. In 2005, EM removed most of the hazardous materials from the building's interior.

UCOR, EM's cleanup contractor for ETTP, is responsible for demolishing the facility. The company prepared it for demolition in 2014 by conducting asbestos abatement, removing the facility's exterior transite paneling, disconnecting the building's power sources, and completing pollution prevention efforts, such as filling interior and exterior storm drains. EM and UCOR worked together to accelerate K-31's demolition five months ahead of its original proposed baseline schedule. The early start was achieved through UCOR's work and EM's oversight on other projects, such as the K-25 Building Demolition Project. EM selected the K-31 project to continue removing former gaseous diffusion facilities at the site and maintaining the existing skilled workforce onsite.

Once the K-31 demolition is completed, the 383,000-square-foot K-27 Building will be the only remaining gaseous diffusion building at ETTP. Crews will begin the first stage of the building's removal in 2015.

*K-31 Building*

# Workers preparing K-27 for demolition

## Final gaseous diffusion facility to be demolished

Pre-demolition work continues in Building K-27, one of last remaining gaseous diffusion buildings at ETTP. The building is one of EM's highest priorities at the site due to its risk and severely deteriorated state. The K-27 Building is similar in structure to the already-demolished K-25 Building. It is spans more than 8 acres, approximately 900 feet long, 400 feet wide, and 58 feet in height.

In 2014, workers completed inventory management and nondestructive assay measurements; characterized process equipment; performed vent, purge, and drain operations on process equipment; and prepared necessary regulatory documents.

The first stage of the building's removal is expected to begin in 2015 and conclude the next year. When complete, it will mark the removal of the final gaseous diffusion building at ETTP.

***Workers remove process piping inside the K-27 Building***

***K-27 Building***

*Among other activities, workers will be removing tie lines, pictured overhead, that connect K-27 to another facility.*

# Work continues to reduce

## ETTP environmental contamination

EM continued remediation activities to reduce ETTP soil contamination in 2014. The site is divided into two cleanup regions: Zone 1, a 1,400-acre area outside the main plant area, and Zone 2, the 800-acre area that comprises the main plant area.

**Zone 1**

The interim Record of Decision, which documents the cleanup method for the site, required EM to remediate soil to a depth of 10 feet (suitable for the protection of an industrial work force) and remove sources of groundwater contamination. The EM program prepared a Remedial Investigation/Feasibility Study (RI/FS) to address groundwater, surface water, ecological protection, and final land use controls. The EPA and the Tennessee Department of Environment and Conservation (TDEC) provided comments on the RI/FS, and the agencies reached an agreement to initiate a Zone 1 Final Soils Record of Decision and defer Zone 1 surface water and groundwater to a future decision. In FY 2014, TDEC prepared and approved a revised RI/FS. The initial draft of the Zone 1 Final Soils Proposed Plan was also prepared and transmitted to EPA and TDEC for review. Upcoming work includes addressing EPA and TDEC comments and finalizing the Zone 1 Final Soils Proposed Plan, conducting a public meeting on the Proposed Plan, and preparing the Zone 1 Final Soils Record of Decision.

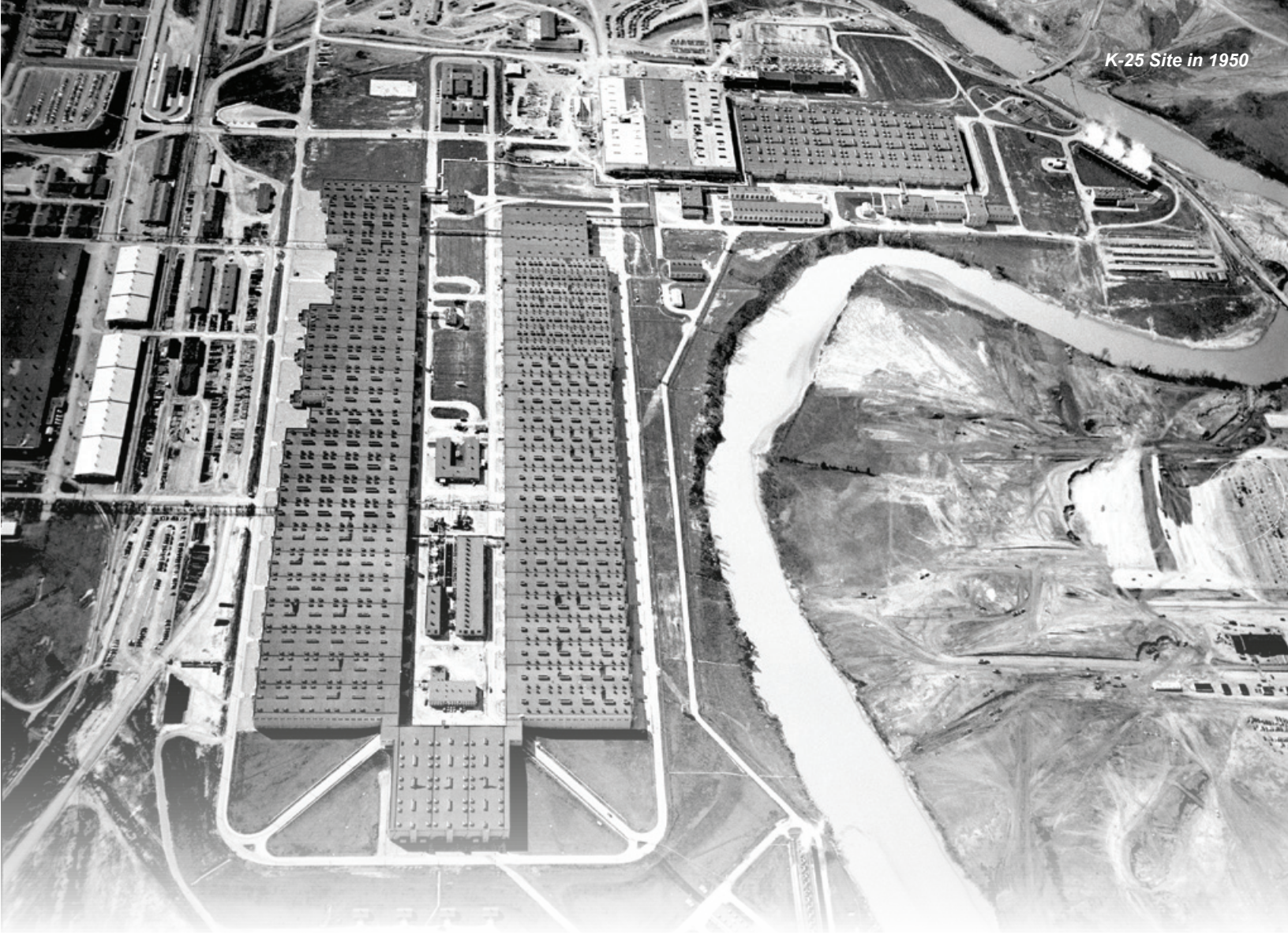
**Zone 2**

Remediating Zone 2 involves removing some contaminated soil so that the site is safe for industrial use and removing sources of groundwater contamination.

In FY 2014, EM initiated characterization of the footprints of Building K-25 and Building K-31. The approximately 40-acre footprint of Building K-25 has been declared the K-25 Preservation Footprint, and it is dedicated for historical commemoration and interpretation activities. To determine how to preserve this footprint, EM began characterization to determine if cleanup is required, and it is also conducting a study to evaluate potential end states of the slab.

During pre-demolition activities on Building K-31, workers also performed characterization of the surrounding land to determine if it required cleanup to support reindustrialization planning at the site.

***Workers sample the soil under the K-31 slab as part of characterization***



*K-25 Site in 1950*

## Progress continues on

# commemorating the K-25 Site

DOE achieved several major milestones in FY 2014 toward meeting the commitment made in a Memorandum of Understanding with historic preservation agencies and interested parties. These measures will preserve the history of the K-25 Site and interpret the significance of ETTP. Milestones achieved in FY 2014 include:

- Demolish Building K-25 and remove all of the waste to prepare the slab for evaluation.
- DOE and UCOR awarded a Professional Site Design Team and Museum Professional design subcontract.
- A team of subject matter experts, historians, design experts, and historic preservation agencies inventoried and reviewed all of the equipment identified for preservation and provided input for the conceptual design.
- A web design services firm was awarded the contract to develop and maintain a web-based K-25 Virtual Museum.

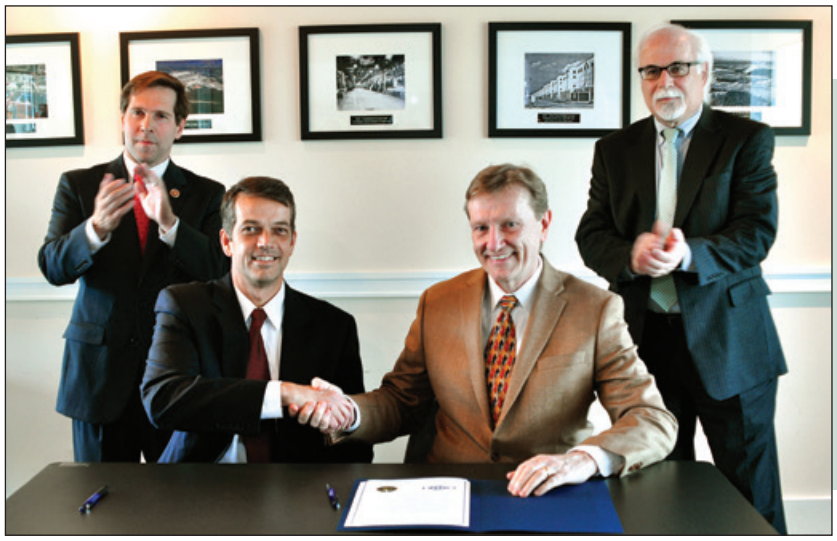
Conceptual design of the equipment building, viewing tower, K-25 history center, wayside exhibits, and K-25 slab delineation is progressing and will be submitted to the historic preservation consulting parties in 2016 for review and comment. Employees completed numerous field activities in support of the conceptual design, including:

- Completed a field inventory of historic equipment and artifacts stored at the ETTP. The inventory included inspecting, photographing, conducting radiological surveys, and, where necessary, performing minor decontamination activities to release the items for potential use in the Professional Site Design Team's wayside exhibits designs.

- Conducted radiological surveys and released the bricks associated with the Powerhouse Area for potential use in the Professional Site Design Team's wayside exhibits designs.
- Initiated characterization activities on the Building K-25 footprint to determine contamination levels on and beneath the slab and the final slab end state.

# Parcels transferred
## as ETTP Reindustrialization progresses

DOE successfully completed the transfer of ED-11 and ED-12 to the Community Reuse Organization of East Tennessee (CROET) on May 12, 2014. The combined acreage of these two parcels is 28.3 acres and will allow CROET to pursue commercial clients for this centrally-located industrial area of the ETTP site. This flat parcel of land once housed a machine shop and other support facilities, but has since undergone environmental cleanup and been approved for reuse by EPA and TDEC. With this successful property transfer, DOE has transferred a total of 721 acres to CROET for reuse, which increases potential economic development in the local community. These transfers also reduce maintenance costs for DOE, which frees up additional money for environmental cleanup.



***Mark Whitney, DOE's environmental manager in Oak Ridge, Lawrence Young, president and CEO of CROET, U.S. Rep. Chuck Fleischmann, R-Tenn., and David Klaus, DOE's Deputy Undersecretary for Management and Performance attend the signing ceremony for the transfer of ED-11 and ED-12 from DOE to CROET.***

***Tennessee Governor Bill Haslam tours ETTP and views the progress being made to further reindustrialization efforts.***

# Oak Ridge National Laboratory

Oak Ridge National Laboratory is one of the world's most modern campuses for scientific discovery in materials and chemical sciences, nuclear science, energy research, and super-computing. However, among all this modern infrastructure are large contaminated areas that resulted from past operations and waste disposal practices. The Environmental Management Program has divided ORNL into two major cleanup areas: Bethel Valley and Melton Valley. The Bethel Valley area includes reactors and the principal former research facilities, and Melton Valley area includes reactors and waste management areas, such as burial grounds.

# Waste handling plan approved

## for Molten Salt Reactor Experiment Facility

MSRE

The Molten Salt Reactor Experiment facility was a graphite-moderated, liquid-fueled test reactor that operated at ORNL from June 1965 until December 1969. Since the reactor's shutdown, EM has performed several studies and removal actions to stabilize the facility, including removal of uranium deposits and defueling of the reactor salts. Routine surveillance and maintenance activities continue to manage the remaining hazards associated with the facility, including periodic removal of reactive gas generated by the defueled salts.

In 2014, an addendum to the waste handling plan for the facility was approved to address disposition of remaining waste from the earlier actions. The addendum includes a schedule for characterization and disposition of seventy-four waste items. Thirty waste items were characterized, and twenty waste items were disposed in 2014. Additional study and planning were performed to support future removal and disposal of the defueled salt. A draft report was prepared documenting the completion of defueling and the status of the salt as transuranic waste eligible for disposal at the Waste Isolation Pilot Plant.

***Waste from MSRE being packaged for transport***

# Prep work continues for U-233 disposition

Oak Ridge has a significant inventory of uranium-233 (U-233) stored in Building 3019 at ORNL. U-233 is a special nuclear material that requires strict safeguards and security controls to protect against access. The U-233 Project's objective is to address safeguards and security requirements, eliminate safety and nuclear criticality concerns, and safely dispose of the material.

Processing and transporting the U-233 inventory as expeditiously as possible will reduce the substantial annual costs associated with safeguards and security requirements, eliminate the risk of a nuclear criticality event, and avoid the need for future facility upgrades to Building 3019 to ensure safe storage of the inventory. Constructed in the 1940s, Building 3019 is the oldest continually operating nuclear facility in the DOE complex.

In 2014, DOE continued working to address concerns with the planned disposition of the Consolidated Edison Uranium Solidification Project (CEUSP) material. CEUSP originated from a 1960s research and development test of thorium and uranium fuel at Consolidated Edison's Indian Point 1 nuclear plant in New York. Following the completion of that test, the fuel was processed by Nuclear Fuel Services in West Valley, New York. Approximately 8,000 liters of liquid uranium nitrate were shipped to ORNL for storage in anticipation of future reuse. However, when no future use was identified, the material was solidified in the 1980s and placed in sealed stainless steel canisters for storage.

Preparations for the processing campaign also continued in FY 2014. The campaign will focus on the material that cannot be directly disposed. The conceptual design work is in progress, and it is expected to be completed in late 2015. Building 2026, located directly across from Building 3019 at ORNL, will be used for this processing work. Initial preparations in Building 2026 continued in FY 2014, including clean out of the existing hot cells and cell access areas.

*Building 3074*

*Building 3136*

# Completion reports

## issued for various ORNL projects

**Buildings 3074 and 3136**

In FY 2014, EM submitted a Removal Action Report documenting dismantlement of Buildings 3074 and 3136 to the EPA and TDEC.

Building 3074 was a 3,500-ft$^2$, single-story structure built in the early 1950s used to repair and maintain hot cell manipulators. Building 3136 was a 30-foot-tall structure constructed in 1994 used as a mock-up test facility; however, it was most recently

used for document storage. Both buildings were dismantled in FY 2009, and the resulting waste was disposed in FY 2012. Since the 3020 stack continues to be used for Building 3019's ventilation, it was not dismantled. If dismantled in the future, the scope will be performed as a separate CERCLA response action.

**Building 3550**

During FY 2014, the EPA and TDEC approved a completion report documenting the demolition work performed on Building 3550.

One of the first facilities constructed at ORNL, Building 3550 once housed the Lab's chemistry facilities. It is one of 34 buildings recently demolished in the Central Campus area of ORNL.

This facility's slab was selected for excavation because it is the largest in the area and the only one located along Central Avenue. It was excavated, along with the contaminated soil beneath the slab to a depth of up to two feet, and the area was graded and seeded with grass.

**Building 3038**

During FY 2014, the EPA and TDEC approved a report documenting completion of demolition of Building 3038.

Building 3038 is a 7,773-$ft^2$ nuclear facility located in the ORNL Central Campus area. It was used for packaging, inspecting and shipping radioisotopes until operations ceased in 1994.

In the previous fiscal year, in order to prepare the building for demolition, workers removed and disposed all waste from the building, re-started the local ventilation system, and placed the air-monitoring equipment on-line.

**4500 Hot Cells/Duct Stabilization**

During FY 2014, the EPA and TDEC approved a Phased Construction Completion Report outlining finished and future stages of work for 4500 Hot Cells/Duct Stabilization.

The 4500 Area Central Gaseous Waste System provides containment ventilation, off-gas treatment and discharge of gaseous waste from many ORNL Central Campus facilities. The system is designed to prevent environment and safety risks associated with accidental release of airborne pollutants. Risks have increased over the years as the central gas waste system and connected facilities have aged.

The objective of the 4500 Area Gaseous Waste System Upgrades Project was to deactivate one of the five cell ventilation system branches and remove several facilities from the central hot off-gas system. This, in turn, would reduce the potential for some of the older facilities in ORNL's central campus to have a release through the stack.

The ventilation system branches and off-gas system are part of the central gaseous waste system that vent through the 3039 Central Stack. The project provided localized ventilation systems to the 4501, 4505, 4500N, and 4507 facilities; stabilized the hot cells in Building 4507; cleaned out filter pits 3106 and 4556; and stabilized hundreds of feet of deactivated underground ductwork.

Past work includes demolition, removal of existing equipment, and fabrication and installation of the replacement ventilation system for the 4501, 4505, and 4500N facilities, characterization and stabilization of the underground ductwork and cleanout of the 3106 and 4556 filter pits. Design, fabrication, installation, and operation of the local ventilation system for Building 4507 were also completed along with stabilization of the 4507 hot cells.

***3550 area after being cleared***

# Y-12 National Security Complex

The Y-12 National Security Complex is a premier manufacturing facility dedicated to making our nation and the world a safer place. The Y-12 Complex helps ensure a safe and reliable U.S. nuclear weapons deterrent. The site also retrieves and stores nuclear materials, fuels the nation's naval reactors, and performs highly skilled, specialized manufacturing work for other government and private-sector entities.

*Workers collect streambank samples at Lower East Fork Poplar Creek*

# Mercury technology development

## activities under way for Y-12, East Fork Poplar Creek

Mercury remediation is a high priority for DOE in the Oak Ridge area. Releases of mercury during Y-12 Site operations during the 1950s and early 1960s resulted in contamination of soil and groundwater. Subsequent transport from these sources resulted in off-site contamination of the Lower East Fork Poplar Creek.

As EM continues its mercury studies, results are revealing that source reduction alone at Y-12 may not achieve mercury regulatory goals in downstream waters. Mercury concentration, methylation and bioaccumulation processes in the creek are complex and are driven by mass of mercury in the system in addition to physical, chemical, and ecological factors in the receiving stream.

In FY 2014, DOE contracted with UCOR and ORNL to develop a number of mercury remediation technology development activities. The UCOR/ORNL technology development studies in the next few years are timely because they will support evaluations of alternatives by regulators, which are scheduled in the early 2020s.

In the years leading to that time, EM will conduct studies in a phased, adaptive approach to reduce uncertainties to better define and target potential actions or new technology use, and to increase efficiencies in characterization targeted removal and treatment, and waste disposition.

The mercury remediation technology development scope for FY 2014 includes three main areas:

ORNL field and laboratory studies are investigating the use of chemical, physical, and ecological manipulations and management actions in the watershed to decrease mercury concentration and bioaccumulation.

DOE is conducting preliminary evaluations to determine the feasibility of placing a Field Research Station along Lower East Fork Poplar Creek. The station will serve as a near-stream research facility for mercury research.

UCOR is investigating waste management practices to gain a better understanding of mercury-contaminated debris disposal techniques, strategies to reduce the quantity of debris that requires treatment, and the extent of contamination in mercury contaminated areas at the Y-12 site. The results of these studies will be used in planning future D&D and Remedial Action projects within Y-12 mercury contamination zones using the latest cleanup and treatment techniques.

# Remediation strategy developed

A final Mercury Remediation Strategy Plan, incorporating regulator comments and suggestions, was completed and submitted in 2014. EM is proposing a phased, adaptive management approach to first address mercury contamination in surface water. A key component of the plan is the proposed construction of a water treatment facility, the Outfall 200 Mercury Treatment Facility, to reduce the amount of mercury currently in the creek and to prepare for potential future releases during future cleanup in the West End Mercury Area at Y-12.

Other proposed actions included in the plan will also advance mercury cleanup in the creek and throughout the site, including diverting water sources to avoid contact with contaminated soils and sediments. Technology development efforts, described in the plan and further refined in a recently completed Mercury Technology Development Plan, will help support future cleanup. For example, gaining an understanding of mercury bioaccumulation and movement in the environment can help refine and target effective methods for remediation—reducing cost and time investments.

Mercury source removal—building demolition and soil/sediment remediation—is planned to begin in the early 2020s. Since the majority of the waste resulting from these activities will be generated after the existing onsite disposal facility reaches capacity, the plan calls for disposal of the waste in a proposed future landfill. As outlined in the strategy, evaluations on disposal options, including microencapsulation, are ongoing.

# Alpha 4 roof repairs completed

***Above, workers perform flashing repairs on one of the eight Alpha 4 roof decks. Below is leaking roof pan and drain before repair.***

Roof repairs to the 9201-4 Building, also known as Alpha 4, were completed in 2014. Cleanup contractor UCOR, along with the Y-12 Project Management and Construction organizations and contractors from the National Nuclear Security Administration's (NNSA) Roof Asset Management Program, conducted the project. The project included repairs to large areas of the nearly four-acre roof footprint.

"This project demonstrates that multiple federal agencies, contractors, and functional organizations can work together to achieve excellent project and safety performance," said Laura Wilkerson, Y-12 portfolio federal project director for the Oak Ridge Office of Environmental Management. "It's exciting to see projects like the 9201-4 roofing repair being accomplished safely, while saving the government valuable dollars."

While roof work may seem like a basic task, it requires the extensive use of hazard controls including personal fall restraint/arrest systems, fall protection carts, and warning lines to ensure worker safety.

This work was completed as part of EM's ongoing Surveillance and Maintenance Program to ensure the building remains in a safe condition. The project is expected to extend Alpha-4's roof life by 7-10 years, and it also decreases the cost of demolition by eliminating safety issues within the building.

# Outfall 200 mercury treatment facility

## treatability study, conceptual design report prepared

Outfall 200 is the point at which the west end Y-12 storm drain system discharges to Upper East Fork Poplar Creek. EM initiated a treatability study and conceptual design to evaluate options for a treatment plant to reduce the release of mercury from Outfall 200 into Upper East Fork Poplar Creek.

In 2014, EM completed the Outfall 200 Mercury Treatment Facility (MTF) Conceptual Design Report. The recommended treatment configuration includes grit removal, chemical precipitation, and media filtration for flow rates up to 3000 gallons per minute. The Outfall 200 MTF conceptual design incorporates flexibility and expandability of treatment processes and capacities, if required, including if conditions change.

In 2014, work also progressed with the facility's pre-design and additional treatability data required for the Outfall 200 MTF design. Teams also searched for opportunities to achieve cost savings and/or operational efficiencies. These studies are scheduled to be performed 2015, with the results used to support the MTF preliminary and final design.

*Sampling equipment at Outfall 200*

# Debris from UPF haul road work disposed

Currently under construction, the Uranium Processing Facility (UPF) is a state-of-the-art consolidated facility for enriched uranium operations, including assembly, disassembly, dismantlement, quality evaluation and product certification.

A new haul road will support construction of the UPF by providing separate travel routes for routine traffic on the west end of Y-12 and the heavy vehicle construction traffic required for moving materials and equipment to and from the UPF construction site.

*Excavated haul road debris*

In January 2014, the haul road construction contractor encountered a fill area that contained both uncontaminated and radioactively contaminated debris ranging from wood to metal pipes, concrete, and transite (an asbestos-containing material). The area was on the south slope of Pine Ridge just northeast of the Bear Creek Road-Old Bear Creek Road intersection. The construction work and waste management plan were re-evaluated and arrangements were made to properly segregate and dispose the wastes.

In April 2014, the crews encountered the first of several large (roughly 3-feet x 3-feet x 10-feet) concrete pedestals. None of these pedestals exhibited radioactive contamination, but some contained very small beads of mercury. Work and waste management options were re-evaluated.

In consultation with regulators, DOE decided to remove, treat, and dispose the contaminated debris from the road corridor. Uncontaminated debris was disposed at the ORR landfill, and radioactive and mercury-contaminated debris were shipped off site for disposal.

# Waste Management

Wastes on the Oak Ridge Reservation are being disposed in a variety of ways. Much of the waste is going into the on-site disposal cell called the Environmental Management Waste Management Facility. Wastewater is treated at the Chromium Water Treatment System at ETTP and the Process Waste Treatment Complex at ORNL.

# Reservation facilities

## receive and oversee waste from cleanup

Much of the waste generated during FY 2014 cleanup activities was disposed at facilities on the Oak Ridge Reservation.

The Environmental Management Waste Management Facility (EMWMF), located in east Bear Creek Valley near the Y-12 Complex, received 6,059 truckloads of waste, accounting for 69,198 tons during FY 2014. This engineered landfill consists of six disposal cells, and it only accepts low-level radioactive and hazardous waste that meets specific waste acceptance criteria. Waste types that qualify for disposal include soil, dried sludge and sediment, solidified wastes, stabilized waste, building debris, scrap equipment, and personal protective equipment.

EMWMF operations collected, analyzed, and dispositioned approximately 5.1 million gallons of leachate at the ORNL Liquid/Gaseous Waste Operations Facility in FY 2014. No contact water (water that comes in contact with waste but does not enter the leachate collection system) required treatment in FY 2014. An additional 9.8 million gallons of contact water was collected, analyzed, and released to the storm water retention basin after employees verified it met all discharge standards. Operating practices at the landfill also effectively controlled site erosion and sediment.

During FY 2014, waste and debris from K-25, K-31, and several smaller cleanup projects at ETTP, ORNL, and Y-12 was shipped to the EMWMF.

DOE also operates solid waste disposal facilities called the Oak Ridge Reservation Landfills. These landfills, located near the Y-12 Complex, are engineered facilities used to dispose sanitary, industrial, construction, and demolition waste. In FY 2014, approximately 29,661 $yd^3$ of industrial wastes and construction/demolition debris were disposed in the landfill.

Operation of the Oak Ridge Reservation Landfills generated approximately 1.556 million gallons of leachate that was collected, monitored, and discharged into the Y-12 Complex sanitary sewer system.

# Site under consideration for new on-site disposal facility

The EMWMF, the existing on-site disposal facility for low-level, mixed, and classified waste, is expected to reach capacity before all Oak Ridge Reservation cleanup waste has been generated and disposed. Therefore, it is important that planning begin for another landfill so that there is not an interruption of cleanup work once EMWMF is full.

During 2014, EM revised a Remedial Investigation/Feasibility Study to include characterization data for a proposed new Environmental Management Disposal Facility (EMDF). The document, issued in FY 2012, analyzed three alternatives to support cleanup decisions:

- Under the no action alternative, no coordinated Oak Ridge Reservation-wide strategy to manage wastes generated by future CERCLA actions would be implemented. The no action alternative provides a benchmark for comparison with the action alternatives.
- The on-site disposal alternative would provide consolidated disposal of future-generated CERCLA waste in a newly

***Workers drill into the proposed EMDF site in order to characterize the area***

constructed, engineered facility referred to as the EMDF.

- Under the off-site disposal alternative, future CERCLA waste would be transported off-site for disposal in approved disposal facilities, primarily by rail.

The alternatives document concludes that both the on-site and off-site disposal alternatives would protect human health and the environment long-term by disposing the waste in a landfill designed for site-specific conditions; however, short-term risks are much higher for the off-site disposal alternative due to significant transportation efforts required to dispose of the waste off-site. Inversely, the off-site disposal alternative has the potential to isolate the wastes more effectively, since other disposal are located in arid climates.

While the on-site disposal alternative requires a permanent commitment of additional Oak Ridge Reservation land for waste disposal and impact environmental resources, it would be much less costly, has lower transportation risk, and provides a greater level of certainty that long-term disposal capacity will be available.

***The proposed EMDF site is located next to the Environmental Management Waste Management Facility, which is shown in the background. OREM is collecting additional data before making a decision on the location.***

# Transuranic Waste Processing Center

## addressing ORNL wastes

The Transuranic (TRU) Waste Processing Center characterizes and packages TRU waste from the Oak Ridge Reservation for disposition in underground salt caverns at DOE's Waste Isolation Pilot Plant (WIPP) near Carlsbad, New Mexico.

TRU waste contains man-made elements heavier than uranium, such as plutonium, hence the name "trans" or "beyond" uranium. Transuranic waste material is generally associated with the human manipulation of fissionable material dating back to the Manhattan Project. It consists primarily of clothing, tools, rags, residues, soil and debris.

Two waste streams—contact-handled (CH) and remote handled (RH)—are processed at the TRU Waste Processing Center. Contact-Handled TRU can be safely handled without remote equipment, although workers never actually touch the waste without protective barriers such as special clothing or equipment. Higher energy radioactive TRU is processed by remote control equipment in special rooms called "hot cells." Workers who process remote-handled waste are protected by barriers, such as thick concrete walls and leaded glass viewing windows.

In FY 2014, the TRU Waste Processing Center processed 70 $m^3$ of CH waste, achieving an overall total of 1440 $m^3$ of processed CH waste. In addition, employees at the facility processed 112 $m^3$ of RH waste for an overall total of 414 $m^3$. These values represent approximately 96% of the legacy CH TRU waste and approximately 64% of the legacy RH TRU waste.

During the year, employees shipped a total of 187 $m^3$ of CH TRU inventory, reaching a total of 1157 $m^3$ disposed. In addition, they shipped 180 $m^3$ of RH TRU inventory, reaching a total of 290 $m^3$ disposed. These values represent approximately 77% of the legacy CH TRU waste disposed and approximately 45% of the legacy RH TRU waste disposed.

More than 350,000 gallons of radioactively contaminated sludge are stored in tanks at ORNL. The sludge was produced as a result of the collection, treatment and storage of liquid radioactive waste originating from ORNL radiochemical processing and radioisotope production programs. To eliminate long-term liability, EM will remove the sludge from the tanks and process the material for permanent off-site disposal in a new sludge processing facility. The project includes the construction of a test facility to verify the technology associated with sludge treatment process and support the design and construction of the future sludge processing facilities.

During the year, the project received approval to update the cost range and reaffirm the solidification and stabilization alternative. Solidification and stabilization is one of three alternatives DOE is considering to treat sludge contaminated with transuranic constituents. Other alternatives include drying or dewatering the sludge. In FY 2014, progress continued toward acquiring Architect and Engineering Services to design the facility.

***Workers process contact-handled waste at TWPC***

# Wastewater treatment continues
## on Oak Ridge Reservation

During 2014, as in past years, activities on the Oak Ridge Reservation generated millions of gallons of wastewater that must be treated to remove oil, chemical, radiological materials and other contaminants.

At ORNL, the Process Waste Treatment Complex treated approximately 92,217,000 gallons of wastewater. In addition, the liquid low-level waste evaporator at ORNL treated 122,200 gallons. The ORNL 3039 Stack Facility treated a total of 1.6 billion $m^3$ of gaseous waste. These waste treatment activities supported both EM and Office of Science mission activities in a safe and compliant manner.

The National Nuclear Security Administration at the Y-12 Complex treats wastewater generated from both production activities and environmental cleanup activities. Safe and compliant treatment of a total of almost 109,000,000 gallons of wastewater was provided at various facilities this year.

# Legacy waste
## disposed

A total of 3,578 $m^3$ of legacy waste was disposed—consisting of large transformers, shielding, waste containers that were emptied and reused and various individual items of low-level radioactive waste. The waste came primarily from ETTP, ORNL, and the Fernald site in Ohio. Most of it was disposed in the Oak Ridge Reservation Landfill and the Nevada Nuclear Security Site.

DOE's goal is to effectively manage waste from identification through disposal so the waste does not require on-site storage. Prior to beginning waste-generating activities, EM and its cleanup contractors identify a disposition path, and together they make plans to dispose of the waste efficiently and effectively. Legacy waste is managed and disposed on a timetable that is consistent with regulatory requirements, programmatic priorities and funding availability.

Legacy waste is actively managed by tracking, labeling, posting, and performing routine inspections. Legacy waste is prioritized for disposal based on its risk or an economy of scale associated with volumes, and it is disposed as funding is made available.

***More than 60 storage containers that had degraded were removed from ETTP.***

# Oak Ridge Reservation

The DOE Oak Ridge Reservation is home to ETTP, ORNL, and the Y-12 Complex. It contains approximately 33,500 acres, which is mostly wooded. In addition to cleanup projects at the three facilities on the Reservation, DOE is taking measures to address Reservation-wide issues.

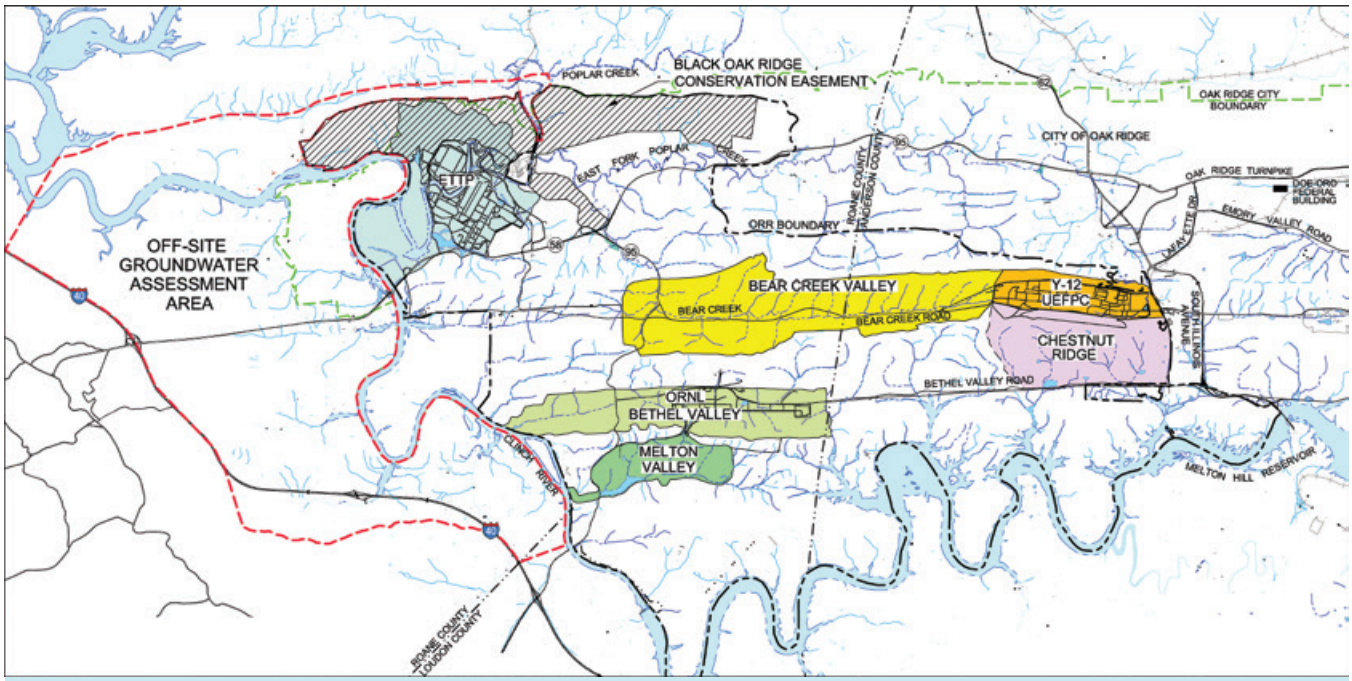
# Reservation groundwater strategy

## document details efforts to evaluate off-site movement

In 2014, an ORR Groundwater Strategy report was approved, documenting efforts and recommendations by a team of DOE, EPA, and TDEC representatives. The current work builds on 2013 achievements when the same team conducted a series of workshops about Oak Ridge Reservation groundwater to identify and prioritize groundwater issues and projects across the ORR. The team included a U.S. Geological Survey representative who serves as an interface with the Oak Ridge Site Specific Advisory Board.

Key strategy recommendations from the report are already under way and include the following:

- DOE establishment of an ORR Groundwater Program to systematically prioritize and investigate groundwater plumes and data gaps.
- Data Quality Objectives workshops to define the type, quality, and quantity of data needed to evaluate off-site groundwater quality and movement. DOE is not aware of any adverse health effects from off-site groundwater. The approximate investigation area is located west and north of the Clinch River at the western boundary of the ORR (see map below). Sampling will be performed in 2015 in accordance with an approved work plan. After sampling and laboratory analysis are complete, results will be evaluated to determine if any follow-on actions are necessary.
- Initiating development of an ORR-wide regional flow model. The model will serve as an underlying framework to support future cleanup decisions and actions.




***An off-site groundwater assessment will be conducted to evaluate off-site groundwater quality and movement. DOE is not aware of any adverse health effects from off-site groundwater.***

# Remediation Effectiveness Report

## submitted

The 2014 Remediation Effectiveness Report for the ORR, which assesses progress of remedial actions toward cleanup goals and compliance with long-term stewardship requirements, was finalized. The areas evaluated in the report are shown on the map on the next page.

During the year, the Water Resources Restoration Program continued its role of coordinating watershed monitoring. This included data interpretation and final reporting that is submitted and used in the Remediation Effectiveness Report for the Oak Ridge Site. Additionally, the program documents the condition of certain controls activities including fences, patrols and signs, which are required at selected sites.

These activities are necessary to protect human health and the environment following cleanup in these locations. As reported in the report, stewardship controls were in place and working effectively.

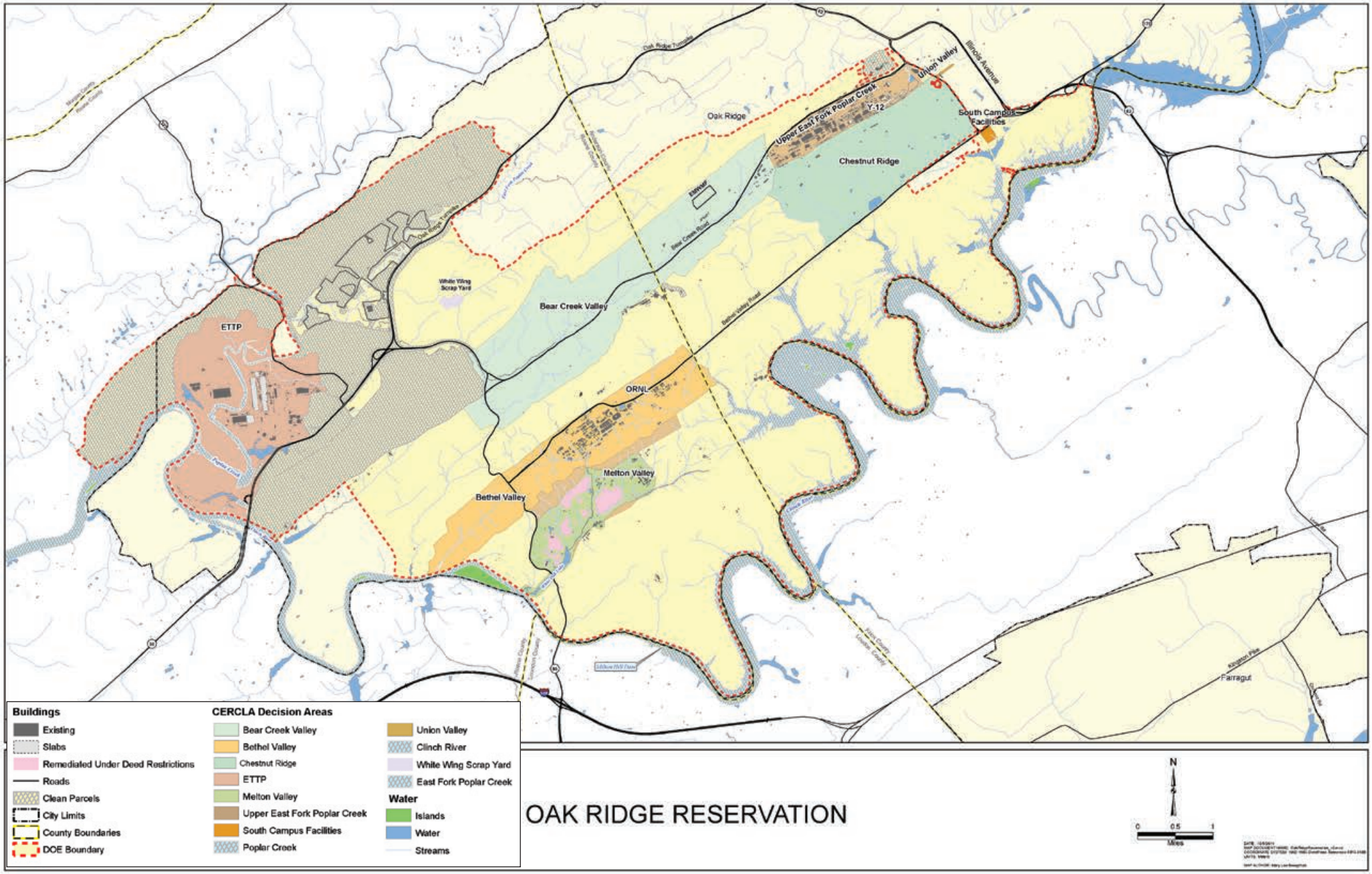
***Groundwater sampling at Mitchell Branch***

# Monitoring shows no man-made contaminants

The potential for threats to groundwater is a constant focus of environmental protection and safety activities around nuclear facilities.

In 2014, EM conducted groundwater monitoring in off-site wells adjacent to Melton Valley to determine if any contaminant migration was occurring off the ORR.

Through its extensive groundwater monitoring efforts, EM has detected certain signature man-made contaminants near former Melton Valley waste disposal areas on DOE property. These contaminants include tritium, strontium-90, and technetium-99 and chlorinated organic compounds, including Trichloroethylene (TCE), an industrial solvent, and its degradation products. However, despite a growing network of sample locations, none of these signature man-made contaminants were detected in any of the monitored off-site groundwater wells.




*Oak Ridge Reservation CERCLA Decision Areas evaluated in the Remediation Effectiveness Report*

# Public Involvement

The public is involved in all cleanup decisions made by DOE. To keep the public informed, DOE provides information through a variety of outlets, including meetings, fact sheets, public notices, the Internet, and various publications.

# Stakeholder event held

## to celebrate completion of K-25 demolition

Local elected officials, business leaders, DOE personnel, and project staff joined Daniel Poneman, Deputy Secretary of Energy, at a special event to celebrate completion of the K-25 demolition project. K-25 is the largest facility to be demolished in the DOE complex.

"Today marks a tremendous accomplishment for the American people – advancing our commitment to the safe and complete cleanup of former Manhattan Project sites." said Deputy Secretary of Energy Daniel Poneman. "While there is still important cleanup work to do, completing the demolition of the K-25 gaseous diffusion building and doing so ahead of schedule and under budget is a testament to the outstanding Oak Ridge workforce."

The event was held Dec. 19, 2013, at the Oak Ridge Fire Station, which sits adjacent to the K-25 demolition site.

***Poneman speaks at the K-25 demolition completion ceremony***

# Advisory board provides input

## on DOE cleanup activities

The Oak Ridge Site Specific Advisory Board (ORSSAB) is a federally appointed citizens' panel that provides independent advice and recommendations to the U.S. Department of Energy's Oak Ridge Office of EM. The board is composed of up to 22 members, who are chosen to reflect the diverse occupations, perspectives, and interests of people living near the Oak Ridge Reservation.

Since 1995, ORSSAB has actively provided input to the DOE Oak Ridge EM Program on cleanup operations and stewardship of remediated areas and permanent waste disposal sites. The board continued that tradition in FY 2014. All of ORSSAB's activities can be viewed by accessing the board's website at www.energy.gov/orssab.

Following are some of the board's major contributions and activities for FY 2014.

### Community Outreach

In FY 2014, ORSSAB continued efforts to keep the public informed of its activities to provide opportunities for dialogue between EM and the surrounding communities.

Each board meeting is video recorded, and the presentation portion is broadcast on cable television stations in Anderson, Knox, and Loudon counties. The videos are also on the board's YouTube channel. ORSSAB's website and Facebook site have links to the YouTube postings.

The board also reaches out through its quarterly Advocate newsletter, news releases, and postings on the board's website and Facebook page. The board's permanent exhibit at the American Museum of Science and Energy in Oak Ridge features a variety of touch-screen kiosks and displays on waste management activities, long-term stewardship, history, and other aspects of DOE's cleanup program. In 2014, the board expanded the coverage of the Advocate by making copies available to 25 public libraries in the nine-county area around Oak Ridge.

## Environmental Management & Stewardship Committee

The Environmental Management & Stewardship Committee is the board's primary committee for studying planned and current cleanup activities on the Oak Ridge Reservation and drafting recommendations for the full board to consider concerning those activities.

The committee also follows stewardship requirements for areas of the Reservation that have residual waste remediated in place and ensures that those requirements, such as land use controls, institutional controls, and other methods of protecting human health and the environment, are being enforced.

Topics that the committee followed in FY 2014 included:

- Long-term groundwater strategy development
- Additional waste disposal capacity on the Oak Ridge Reservation
- Acquisition, storage, and retention of environmental management data for future use
- The annual Remediation Effectiveness Report
- The DOE geographical information system and the Land Use Manager for following stewardship efforts
- Long-term stewardship of contaminated groundwater at Y-12 National Security Complex
- Legacy waste disposition

## Recommendations

ORSSAB's primary function is to provide advice and recommendations to DOE on its environmental cleanup of the Oak Ridge Reservation. ORSSAB submitted four recommendations to DOE for consideration in FY 2014.

Complete text of all ORSSAB recommendations can be found on the ORSSAB website at http://www.energy.gov/orem/listings/orssab-recommendations-responses.

***Recommendation on the FY 2016 DOE Oak Ridge EM Budget Request***

Each year DOE EM develops its budget request for the fiscal year two years beyond the current fiscal year. It uses budget requests from the various DOE field offices in developing the EM Program budget request to the President.

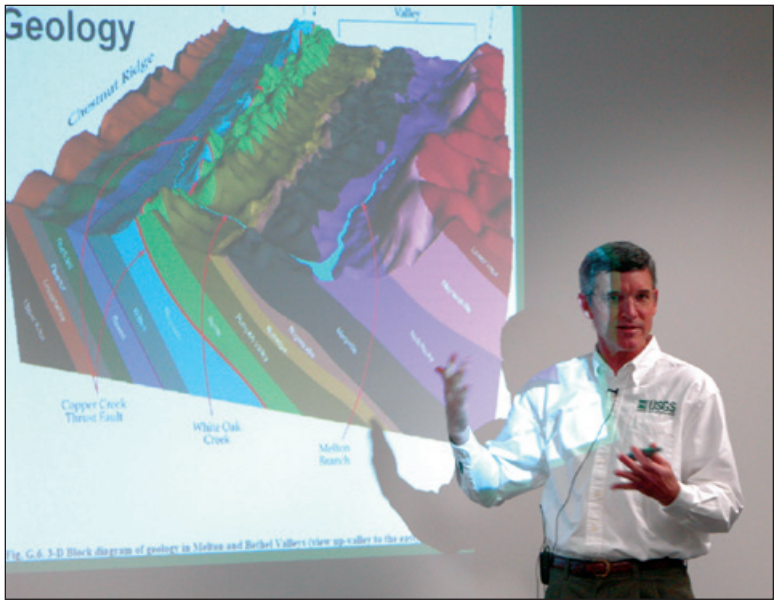
In March 2014, DOE briefed ORSSAB on the current budget picture and described near-term (2014-2016), mid-term (2017-2026), and long-term (2027-2043) priorities for cleanup of the Oak Ridge Reservation. In March 2014, the ORSSAB EM & Stewardship and Budget & Process committees met with DOE representatives for a more in-depth discussion and explanation of the reasoning behind setting the priorities. The committees drafted a recommendation, which the board approved, on the DOE Oak Ridge EM budget request for FY 2016.

In its recommendation, ORSSAB agreed with DOE's near-term, mid-term, and long-term priorities and strongly encouraged DOE EM to request funding sufficient to adequately address those projects. In particular, the board recommended aggressive implementation of projects which will reduce the "base" costs of the Oak Ridge cleanup program and allow accelerated investment in remaining cleanup work.

DOE EM Oak Ridge sent the recommendation along with its budget request to DOE Headquarters.

***Recommendation on Additional Off-site Groundwater Migration Studies***

In 2013, DOE, EPA, and TDEC held a series of workshops to prioritize groundwater pathways on the Oak Ridge Reservation. The agencies created a groundwater strategy document that describes the potential for releases from waste disposal sites and storage areas. The document also prioritized known groundwater plumes, contaminants of concern, concentration of contaminants, and potential health risks.




***Dan Goode, U.S. Geological Survey, explains the geology around the ORR during a presentation to ORSSAB about groundwater on the ORR. His presentation was related to the Groundwater Strategy Workshops held by DOE, EPA, and TDEC.***

In May, ORSSAB recommended that DOE conduct additional groundwater studies to address any potential off-site migration of chemicals or radioisotopes from the Oak Ridge Reservation. The recommendation focused on developing information that fosters a better understanding of potential impacts of groundwater contamination related to risk mitigation, groundwater remediation, and long-term stewardship.

In its response, DOE said it has proceeded with the off-site groundwater migration studies working in cooperation with EPA and TDEC.

ORSSAB had recommended additional baseline funding to perform interpretive analysis to better understand potential plume migration and effects on off-site receptors. DOE said it has planned budgets for three years for the project studies, and it has planned budgets for follow-on years for additional activities that may result from the studies.

ORSSAB members believed the plume rankings were subjective and suggested the development of process knowledge documents for each plume. The board continued that the ranking methods should be reviewed to confirm or revise the rankings. DOE acknowledged the plume rankings may be subjective, but said they were agreed to by the three agencies and will remain in place unless conclusions from the additional studies warrant revision of the rankings.

***ORSSAB hosted two members of the Northern New Mexico Citizens' Advisory Board in May 2014. Shown are NNM CAB Chair Carlos Valdez and CAB member Nona Girardi, center. They are flanked by Dave Hemelright, ORSSAB Chair, left, and Dave Adler, ORSSAB's Alternate Deputy Designated Federal Officer. The guests toured the ORR and attended the May ORSSAB meeting.***

### *Recommendations on Additional Waste Disposal Capacity on the Oak Ridge Reservation*

Also in May, ORSSAB recommended that DOE continue to plan for additional on-site waste disposal capacity on the Oak Ridge Reservation for low-level radioactive and chemically hazardous waste.

DOE currently operates the Environmental Management Waste Management Facility (EMWMF), a low-level radioactive waste disposal facility in Bear Creek Valley near Y-12. When the facility began accepting waste in 2002, it was expected to handle all projected low-level waste from cleanup operations on the Oak Ridge Reservation. However, EM's scope of work has increased over the years and additional disposal capacity on-site is needed.

DOE has conducted a study to develop, screen, and evaluate alternatives for an additional waste disposal facility with a working name of EM Disposal Facility (EMDF). ORSSAB's recommendation asked DOE to continue working toward adding disposal capacity and proposed recommendations for a new facility.

ORSSAB encouraged DOE to minimize the need for additional on-site capacity when possible. In its response, DOE said it was examining the final cover design of the EMWMF to allow for extended capacity. The waste acceptance criteria for other so-called 'sanitary landfills' on Chestnut Ridge are being evaluated for possible modifications to allow a wider variety of waste. DOE also said it has practices in place to minimize disposal volumes. The agency uses a hierarchy for dispositioning waste that includes reusing or recycling where possible, followed by the use of the sanitary landfills, the EMWMF, and off-site disposal facilities.

ORSSAB also recommended that the EMDF have sufficient capacity to accept all future waste generated by DOE cleanup of the Oak Ridge Reservation. DOE's planning for the EMDF includes projected future remediation waste, plus an additional 25 percent contingency for any uncertainties in volume projections.

The board recommended that the proposed disposal area be engineered to operate safely and block migration of contaminants into adjacent groundwater, soil, and air. DOE said the facility design will undergo modeling and third-party review to demonstrate regulatory compliance and provide the necessary protection of the environment and human health.

ORSSAB asked that the facility be located in proximity to existing waste burial sites. DOE said the proposed site is near EMWMF and other waste burial grounds. It said locating the EMDF near other disposal areas consolidates the burial sites for long-term stewardship purposes, improves cost benefits, and

maintains current greenfield land for unrestricted use.

Finally, the board requested that DOE establish a trust fund for the EMDF similar to one in place for EMWMF. DOE said the expense of a trust fund for long-term stewardship is incorporated in the feasibility study for the facility's life-cycle. The continuation of the trust fund concept is contingent on TDEC accepting such an agreement, but DOE will be responsible for the long-term stewardship of EMDF either through a trust fund or independently by DOE.

***Recommendation on DOE Oak Ridge GIS Fact Sheets***

In May, DOE briefed the EM & Stewardship Committee on the Oak Ridge EM Geographic Information System (GIS). This is a public resource available at https://emgis.oro.doe.gov/.

Website visitors can access maps of the Oak Ridge Site and obtain information about specific sites and areas, including their contamination/cleanup status. For each decision area there is a fact sheet that provides a concise answer to the question "Is it safe?" followed by short summaries of the site history, Record of Decision (ROD), remedial measures, and current status. The fact sheets also provide links to relevant documents, such as other RODs and the Remediation Effectiveness Report.

It was noted, though, that not all fact sheets describe future decisions and actions. To keep the public fully informed, ORSSAB recommended that all fact sheets identify future actions expected or planned. In particular, fact sheets for units with interim action RODs should indicate that additional evaluations will be done in the future before final decisions are made. DOE agreed with the recommendation and said it is important for the public to have appropriate information on residual contamination located on the ORR. DOE will update the current GIS fact sheets to capture current and anticipated future status of all interim cleanup actions.

***ORSSAB member Bob Hatcher, Distinguished Scientist at the University of Tennessee – Knoxville, was awarded the Marcus Milling Legendary Geoscientist Medal in 2014. The award made him the only recipient of three most prestigious medals in the field of geology.***

***The Oak Ridge Site Specific Advisory Board meets the second Wednesday of the month at the DOE Information Center in Oak Ridge. The public is always invited to attend.***

# DOE Information Center

The DOE Information Center is a one-stop information facility that maintains a collection of more than 46,000 documents involving environmental activities in Oak Ridge.

The Center hosts various meetings, including the ORSSAB meetings, relevant to cleanup activities in Oak Ridge. Staff are available Monday through Friday, 8 a.m. to 5 p.m., to assist with your information needs. A website is available for users to search for information at the Center. Go to www.oakridge.doe.gov and click on "Public Activities." Select the "Online Catalog" to begin the search.

## FY 2014 Stats

| | |
|---|---|
| Average number of visitors per month | 57 |
| Number of public meetings held | 65 |
| Total citizen inquiries | 590 |
| Total number of documents at the center | 47,083 |
| Total number of documents on-line | 14,600 |

***DOE Information Center staff, from left, are Trilla Hutchins, Eva Butler, and Wanda Joyce***

Visit the DOE Information Center on the Web at www.energy.gov/orem/services/community-engagement/doe-information-center
Phone: 865-241-4780

The DOE Information Center is located at the Office of Scientific and Technical Information, Building 1916 – T1, 1 Science.Gov Way, Oak Ridge, Tennessee

# Information Resources

DOE Information Center
Office of Scientific and Technical Information
Building 1916 – T1, 1 Science.Gov Way
Oak Ridge, Tennessee 37830
Phone: (865) 241-4780
Fax: (865) 574-3521
E-mail: DOEIC@oro.doe.gov
Hours 8 a.m. to 5 p.m., Monday – Friday

DOE Public Affairs Office
(865) 576-0885

DOE-ORO Public Information Line
1-800-382-6938

DOE Oak Ridge Office of EM
(865) 576-0742

Oak Ridge Site Specific Advisory Board
(865) 241-4583, (865) 241-4584
1-800-382-6938

Tennessee Department of Environment
and Conservation - DOE Oversight Office
(865) 481-0995

U.S. Environmental Protection Agency
Region 4
1-800-241-1754

Agency for Toxic Substances and
Disease Registry
1-888-422-8737

# Internet Sites

| | |
|---|---|
| DOE-ORO Environmental Management Program | www.energy.gov/orem |
| DOE Main Web Site | www.energy.gov |
| DOE-ORO Home Page | www.oakridge.doe.gov |
| Oak Ridge Site Specific Advisory Board | www.energy.gov/orssab |
| Agency for Toxic Substances and Disease Registry | www.atsdr.cdc.gov |
| U.S. Environmental Protection Agency | www.epa.gov/region4/ |
| Tennessee Department of Environment and Conservation | www.state.tn.us/environment/ |
| DOE Information Center | www.energy.gov/orem/services/community-engagement/doe-information-center |

# Commonly Used Abbreviations

| | |
|---|---|
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act of 1980 |
| CEUSP | Consolidated Edison Uranium Solidification Project |
| CH | Contact-handled |
| CROET | Community Reuse Organization of East Tennessee |
| DOE | U.S. Department of Energy |
| EM | Environmental Management |
| EMDF | Environmental Management Disposal Facility |
| EMWMF | Environmental Management Waste Management Facility |
| EPA | U.S. Environmental Protection Agency |
| ETTP | East Tennessee Technology Park |
| FFA | Federal Facility Agreement |
| FY | Fiscal year |
| MSRE | Molten Salt Reactor Experiment |
| NNSA | National Nuclear Security Administration |
| NNSS | Nevada National Security Site |
| NPL | National Priorities List |
| ORNL | Oak Ridge National Laboratory |
| ORSSAB | Oak Ridge Site Specific Advisory Board |
| RH | Remote-handled |
| RI/FS | Remedial Investigation/Feasibility Study |
| ROD | Record of Decision |
| TRU | Transuranic |
| TSCA | Toxic Substances Control Act |
| TWPC | Transuranic Waste Processing Center |
| UEFPC | Upper East Fork Poplar Creek |
| VOC | Volatile organic compound |

# Commonly Used Terms

CERCLA: The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 established prohibitions and requirements concerning closed and abandoned hazardous waste sites, provided for liability of persons responsible for hazardous waste releases at these sites, and established a trust fund to provide cleanup when no responsible party could be identified. The law authorizes two kinds of response actions: short-term removals, where actions may be taken to address releases or threatened releases requiring prompt response, and long-term remedial actions, which permanently and significantly reduce the dangers associated with releases or threats of releases. Long-term actions can be conducted at sites on the Environmental Protection Agency's National Priorities List, a listing of the nation's most hazardous waste sites. The Oak Ridge Reservation was added to that list in 1989.

Environmental Management Waste Management Facility: The Record of Decision for the Disposal of Oak Ridge Reservation Comprehensive Environmental Response, Compensation, and Liability Act of 1980 Waste, Oak Ridge, Tennessee was issued in 1999 to construct a dedicated disposal facility on the Reservation to receive low-level radioactive waste, Resource Conservation and Recovery Act hazardous waste, Toxic Substances Control Act waste, and mixed wastes generated from cleanup programs conducted under CERCLA. While the Record of Decision did not establish a formal name for this facility, it has been designated as the Environmental Management Waste Management Facility.

Federal Facility Agreement: Cleanup activities are performed in accordance with state and federal laws, and CERCLA requires an interagency agreement to facilitate the interaction between state and federal entities (for the DOE Oak Ridge Office, that would be DOE, the Environmental Protection Agency, and the Tennessee Department of Environment and Conservation). The Federal Facility Agreement for Oak Ridge was initiated in January 1992 to satisfy the interagency agreement requirement.

Record of Decision: Under the CERCLA process, a Record of Decision formally documents the selection of a preferred cleanup method at Superfund sites after a series of steps, including a Remedial Investigation/Feasibility Study. After a preferred cleanup alternative is selected, it is presented to the public for comment in a Proposed Plan. The Environmental Protection Agency, the state, and the lead agency then select a remedy and document it in the Record of Decision.

Removal Actions: Some cleanup activities on the Oak Ridge Reservation are conducted as Removal Actions under CERCLA. These actions provide an important method for moving sites more quickly through the CERCLA process. When a site presents a relatively time-sensitive, non-complex problem that can and should be addressed, a Removal Action would be warranted.

For more information, please contact the DOE Public Affairs Office
at (865) 576-0885 or 1-800-382-6938.