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Cleanup Progress

Annual Report to the Oak Ridge Community




2013

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.

Message from the EM Manager Department of Energy Oak Ridge Office

Mark Whitney

To the Oak Ridge Community:

As the U.S. Department of Energy's Oak Ridge Office of Environmental Management (OREM) begins another year, we reflect on last year's progress and look forward to our goal of achieving a clean, modernized Oak Ridge Reservation. In pursuit of that goal, we realized a great number of successes last year. We continued to address mercury contamination at the Y-12 National Security Complex, demolished unneeded facilities at the East Tennessee Technology Park, and removed environmental and security risks from the Oak Ridge National Laboratory.

In my opinion, one of our greatest accomplishments is the emphasis we have placed on strategic planning and stakeholder involvement. In December, we finalized and released our Oak Ridge EM Program Plan—a document that lists our priorities and vision for the next decade. This plan establishes eight goals that direct our operations and keep our organization unified and focused. In addition, we hope that this document helps residents and stakeholders understand our goals and objectives that will guide us for the next ten years.

Another notable success is our progress on Recovery Act-funded work. We anticipate finishing our final projects in Fiscal Year 2014. The $755 million we received in Oak Ridge provided us the opportunity to address projects at all of our sites, and in most instances we accomplished them on-schedule and under-budget. Due to effective project management, we completed Recovery Act projects $110 million under original estimates, allowing us to conduct additional projects that further reduced risk and environmental liability.

Finally, we are close to finishing our work on the K-25 Building, the largest decommissioning and demolition project in the history of the Environmental Management program. Our employees and contractor partners have continued to be innovative in their approach to this project, and completing it in 2014 will be a notable achievement. The K-27 Building will then be the last of the large, contaminated former gaseous diffusion buildings at the East Tennessee Technology Park that will need to be addressed.

During my time as manager of Oak Ridge's EM program, I continue to be impressed by the level of stakeholder support and involvement. Your concern and awareness about your community is a tremendous asset to our program, and our interactions with you serve as a constant reminder about the purpose and impact of our work. Thank you for your time, interest, and shared commitment to protect and restore the environment. We are extremely grateful for your involvement and feedback concerning our ongoing operations, and it is our hope that this public participation continues as we strive to advance future missions in Oak Ridge.

EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

Contents

Introduction

The 33,500-acre U.S. Department of Energy (DOE) 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.

The Environmental Management Program is responsible for cleaning up this legacy contamination, and numerous cleanup projects are under way at the Reservation's three major facilities: East Tennessee Technology Park (ETTP), Oak Ridge National Laboratory (ORNL), and Y-12 National Security Complex.

The contaminated portions of the Reservation are on the U.S. Environmental Protection Agency's 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). Efforts are under way to delineate the contaminated areas of the Oak Ridge National Priorities List Site, which DOE is cleaning up under a Federal Facility Agreement with the Environmental Protection Agency and the State of Tennessee.

Much progress has been made in cleaning up the Oak Ridge Reservation, as detailed in this document.

East Tennessee Technology Park

The former K-25 Site 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, decommissioning and demolition of facilities, and disposition of wastes are the major activities at the site.

Last standing section of K-25 Building being demolished

Demolition continued at the end of FY 2013 on the last section standing of the K-25 Building at ETTP.

URS | CH2M Oak Ridge LLC (UCOR) workers started in September 2013 tearing down the final six units of the mile-long Manhattan Project-era gaseous diffusion building that once was the largest building under one roof in the world. The work, including waste disposal, is expected to be completed in 2014.

The original building was in the shape of a "U." The west wing was demolished using a previous contractor. In the first two years of its contract, UCOR demolished the north end and the east wing, except for six units that were presumed to be contaminated with technetium-99 (Tc-99) and required further deactivation. Tc-99 is a very mobile, slow-decaying radioactive material which presents unique challenges.

"Beginning this final stage of demolition marks the end of an era," said Steve Dahlgren, UCOR's Deactivation and Demolition manager. "This building served the nation well for over 60 years and played a role in ending World War II and the Cold War. Now it will soon be safely on the ground."

Getting the last six units to this point was a long, difficult road, said Dahlgren. When UCOR arrived at ETTP in August of 2011, they found unexpected challenges, including large sections of K-25 that were still deemed "crit credible"—meaning materials were still present that could theoretically cause a nuclear criticality to occur. Workers had to perform all the work necessary to declare the area "crit incredible," which meant finding ways to remove and dispose of a number of these challenging materials. Then the building had to be rendered "cold, dark and dry," which means all hazardous materials removed and all sources of energy cut off.

Years ago, during west wing demolition, materials for which a disposition path had not been determined were moved out and into other parts of the building so that demolition could continue. These

materials included a collection of surge tanks that had been part of the process and had been disconnected and placed in the east wing. In the north end, which has now been demolished, workers discovered items that had been removed from the west wing before demolition, including a collection of high-risk equipment (HRE) and items called monoliths—large blocks of uranium-containing components encased in concrete.

Also, components called NaF (sodium fluoride) traps, which were used during operations to separate uranium from intermediate gases in the process system, had to be addressed (see article on next page).

The HRE and monoliths had to be moved out of the building before that section could be deemed crit incredible. The concrete in the monoliths had to be chipped away and the uranium content mined out of the components in an on-site facility called the segmentation shop. The HRE had to be opened, mined, and repackaged to meet disposal criteria. Depending on the contents, they were either disposed of at the on-site Environmental Management Waste Management Facility (EMWMF) or shipped off-site for disposal.

Enclosures were built around the surge tanks where they stood. The uranium was mined out of the tanks and the hulls stayed in place to be disposed as part of the building demolition.

Previously, the prevailing thought was that because of the chemical characteristics of Tc-99—it is extremely mobile and travels quickly—the last Tc-99 section in its entirety would need to be packed up and shipped for off-site disposal. Through characterization, however, workers determined that most of the building structure and some of the process gas equipment could be disposed on site at EMWMF, saving significant dollars.

Under the previous approach, workers in the Tc-99 area would have spent weeks cutting out contaminated pipes that could not be disposed on site, then loading them for shipment. Under a new approach, they painted them with bright paint and left them in place. As the last six units are demolished, these bright components will be segregated and loaded by heavy equipment in the field for disposal.

Compressors and converters were previously an issue because they were taken into the non-destructive assay (NDA) shop, where NDA (surveying components without breaching or causing damage) was performed. Instead, as part of the deactivation and demolition of the Tc-99 units, these components are being decontaminated and sprayed with fixative in the demolition field. The NDA equipment was brought into the field, and a packaging, assay, and ship production line was established.

Workers load a converter from the east wing for shipment

NaF traps removed from K-25

Before beginning demolition of the K-25 Building's final section, UCOR removed five components known as NaF traps, some of the highest risk equipment in the building.

The NaF traps contain a material that was used to absorb uranium from the process system and were in the portion of the building being demolished at the end of FY 2013.

When K-25 was operational, the NaF traps were part of the final uranium removal process. Sodium fluoride pellets were used to trap the uranium, and these particular traps still contain uranium materials from when the facility was shut down decades ago. The NaF traps are each about the size of a household hot water heater and range in weight from 150 pounds to 800 pounds.

Extensive safeguards were in place during the removal because the vessels represent a significant danger in case they are dropped or if a fire occurs.

To remove the vessels, workers cut a hole in the roof of the building, and a crane lifted them out.

"It's a big accomplishment to remove these vessels," said Leo Sain, UCOR President and Project Manager. "They represented one of the highest risks remaining in the K-25 Building. Safely removing them gets us one step closer to project completion."

Workers are preparing to plasma cut the duct in the K-27 Building pipe gallery

Workers prepare a NaF trap for removal

K-27 Building being prepared for demolition

Predemolition work continued in the K-27 Building, one of the five gaseous diffusion buildings at ETTP. The building is in a severely deteriorated state, necessitating timely attention to ensure safe and efficient demolition. The K-27 Building is similar in structure to the K-25 Building and is approximately 900 feet long, 400 feet wide, and 58 feet in height.

In FY 2013, workers performed inventory management; characterized process equipment; and performed vent, purge, and drain operations on process equipment.

Six sodium fluoride (NaF) traps were also removed from the K-27 Building. When K-25 and K-27 were operational, the NaF traps were part of the final uranium removal process. Sodium fluoride pellets were used to trap the uranium, and these particular traps still contain uranium materials from when the facility was shut down decades ago. The NaF traps are each about the size of a household hot water heater and weigh up to 800 pounds each.

K-27 Building

Iconic ETTP Fire Water Tank demolished

One of the most iconic structures at ETTP—the checkerboard water tank that has dominated the site's skyline for 55 years—has been demolished.

UCOR, along with its subcontracting partners, brought down the 382-ft-tall tank in August 2013 through a controlled explosive demolition that sent the structure toppling into an empty field.

Officially called the K-1206-F Fire Water Tower, the 400,000-gallon structure was designed and built by the Chicago Bridge and Iron Company in 1958 to service the site's fire protection system. It operated until June 3, when the valves were turned off. It was drained, disconnected, and permanently taken out of service on July 15.

With the tank gone, the site will rely on pumping stations to provide the necessary pressure for its fire water system. The system will eventually be turned over to the city of Oak Ridge, another step in DOE's overall strategy of converting ETTP into a private sector industrial park.

Through the years, the tower had deteriorated. An engineering evaluation was conducted in 1994 to assess its overall condition. It was eventually added to the list of structures at ETTP that would be demolished. Although not originally scheduled to be demolished this year, UCOR and DOE accelerated the schedule for demolition because of the tower's continuing deterioration.

"Removing this water tower is a significant—and very visible—step in cleaning up ETTP," said Jim Kopotic, Oak Ridge Office of Environmental Management's Federal Project Director for the East Tennessee Technology Park. "Many people have worked countless hours to safely bring down this tower, which was one of the most visible and identifiable structures at the site. This demolition marks another major advancement in the transformation of ETTP."

The project was a team effort involving DOE, UCOR, and UCOR's subcontractors—Veterans Contracting Solutions Group LLC and Controlled Demolition Inc.

Water tower debris being shipped for disposal

Work continues to reduce environmental contamination at ETTP

Remediation activities to reduce ETTP soil contamination continued in FY 2013. The site is divided into two cleanup regions: Zone 1, which includes approximately 1,400 acres outside the main plant area, and Zone 2, which is the 800 acres that comprise the main plant area.

Zone 1

An interim Record of Decision, which documents the cleanup method for a site, has been completed for Zone 1. That Record of Decision required soil to be remediated to a depth of 10 feet (suitable for the protection of an industrial work force) and for sources of groundwater contamination to be removed.

Subsequent Records of Decision will address soil, groundwater, surface water, ecological protection, and final land use controls. In FY 2013, The Environmental Protection Agency and the Tennessee Department of Environment and Conservation provided comments on the Remedial Investigation/Feasibility Study (RI/FS), and an agreement was reached to initiate a Zone 1 Final Soils Record of Decision and defer Zone 1 surface water and groundwater to a future decision. Upcoming work will include preparing a Zone 1 Final Soils Proposed Plan, conducting a public meeting, and preparing the Zone 1 Final Soils Record of Decision.

Zone 2

Remediation of Zone 2 involves cleaning up the soil so that it is suitable for the protection of industrial workers, and removing sources of groundwater contamination. In FY 2013, the following work was completed:

- Remediation of the 32-acre footprint of Building K-33 was completed with excavation and disposal of the slab and associated soil.
- The Environmental Protection Agency and The Tennessee Department of Environment and Conservation approved the document that details the K-1070-B Burial Ground cleanup, called a phased construction completion report. The burial ground operated from the 1950s through the mid-1970s.
- Remediation of two subsurface sumps at the Toxic Substances Control Act (TSCA) Incinerator was completed. The phased construction completion report documenting completion of the remediation was prepared and submitted to The Environmental Protection Agency and The Tennessee Department of Environment and Conservation.
- Characterization of several subsurface facilities at the Central Neutralization Facility, a former wastewater treatment facility, was completed to determine if remediation is required prior to backfill. Based on the results, the subsurface facilities were backfilled to eliminate safety hazards and the management of storm water. The phased construction completion report documenting completion of this work was prepared.

Workers are filling a sump at the TSCA Incinerator

Removal of tie lines that connected K-33 to K-31 marks the completion of the K-33 Building cleanup work

Final K-33 Building cleanup work completed

Removal of process tie lines at the K-33 Building marks the final cleanup work associated with this facility. The tie lines connected the K-33 Building to the K-31 Building as uranium passed through the buildings during the enrichment process.

The K-33 Building, one of the major uranium enrichment facilities at ETTP, was previously demolished. The building was a partially decontaminated multi-story building that contained more than 1.4 million ft^2 of concrete and steel and spanned 32 acres. Constructed in 1954, the facility enriched uranium for defense and naval fleet purposes until 1985.

As part of a Reindustrialization effort in 1997, most of the building's decontamination was performed. BNFL Inc. was awarded a fixed-price contract to decontaminate Building K-33, along with two other uranium enrichment buildings: K-29 and K-31. The company dismantled, removed, and dispositioned more than 159,000 tons of material and equipment from the three buildings, which comprise more than 4.8 million ft^2 of floor space.

All three buildings were originally to be cleaned up and converted to usable facilities for private industrial tenants. However, DOE later determined that Buildings K-29 and K-33 were not suitable for reindustrialization. Building K-29 was demolished in 2006.

In 2010, DOE contracted with LATA/Sharp Remediation Services to demolish Building K-33. The demolition was completed, and the last waste was disposed ahead of schedule in September 2011. In FY 2012, LATA/Sharp Remediation Services removed the building's 32-acre slab, excavated contaminated soil, backfilled and seeded the area, and disposed the waste ahead of schedule.

LATA/Sharp Remediation Services performed the process tie line removal, which was completed in September 2013.

Efforts under way to commemorate the K-25 site

DOE and historic preservation agencies agreed upon commemorative measures that will preserve the historic contributions of Oak Ridge's K-25 site to the World War II Manhattan Project. Much was accomplished in FY 2013 toward achieving the commemorative measures.

The K-25 site contained more than 500 buildings and 12,000 workers at its peak. The project's enormous scale, which in 1945 included the world's largest building, was necessary to produce a few grams of uranium-235 that were used to build the atomic bomb that ended the war with Japan.

DOE will commemorate the site by implementing the following measures:

- Approximately 40 acres located inside the road that currently surrounds the original K-25 Building will be dedicated for commemoration and interpretation activities. The agreement calls for the construction of a four-story equipment building that will recreate a scale representation of the gaseous diffusion technology and contain authentic equipment used in the K-25 Building. The building will also house other Cold War-era equipment that was developed and/or used at the site. The project will include a viewing tower erected near the building's footprint (near the Oak Ridge Fire Station) and 12 wayside exhibits that will tell portions of the K-25 story.
- A K-25 History Center will be located on the second level of the Fire Station, owned by the City of Oak Ridge. The History Center will provide space to exhibit equipment, artifacts, oral histories, photographs, and video.
- DOE provided a grant of $500,000 to the East Tennessee Preservation Association to help preserve the Alexander Inn, a historic structure in Oak Ridge where visiting scientists and dignitaries stayed. The grant is being used to purchase the property and stabilize the structure until the Inn can be transferred to a private developer.

In FY 2013, a pre-qualification process was conducted that determined nine small business architectural/engineering and museum planning partnering teams could compete for the Professional Site Design Team and Museum Professional design subcontract. The Alexander Inn was also purchased by a local private developer in order to preserve the structure and rehabilitate for future use as an assisted living facility. Other activities included the following:

- Continued to retain the K-25 building slab, pending results of the Slab Feasibility Study (done in conjunction with the Zone 2 Record of Decision Survey).
- Retained bricks associated with the Powerhouse for potential use in the Professional Site Design Team's wayside exhibits designs.
- Published the Professional Site Design Team and Museum Professional Request for Proposal for the commemorative facilities at ETTP and conducted a pre-bid meeting and site orientation.

Workers remove sludge from the Central Neutralization Facility as part of the shutdown operations

Shutdown of Central Neutralization Facility completed

Shutdown and decommissioning of the Central Neutralization Facility, which was the main wastewater treatment plant at ETTP, was completed in FY 2013.

Activities that were completed included sludge removal and disposal; chemical removal and disposal; waste, material, media, and equipment removal and disposal; oil removal and disposal; equipment rinsing and pressure washing; and characterization and filling of some subsurface facilities.

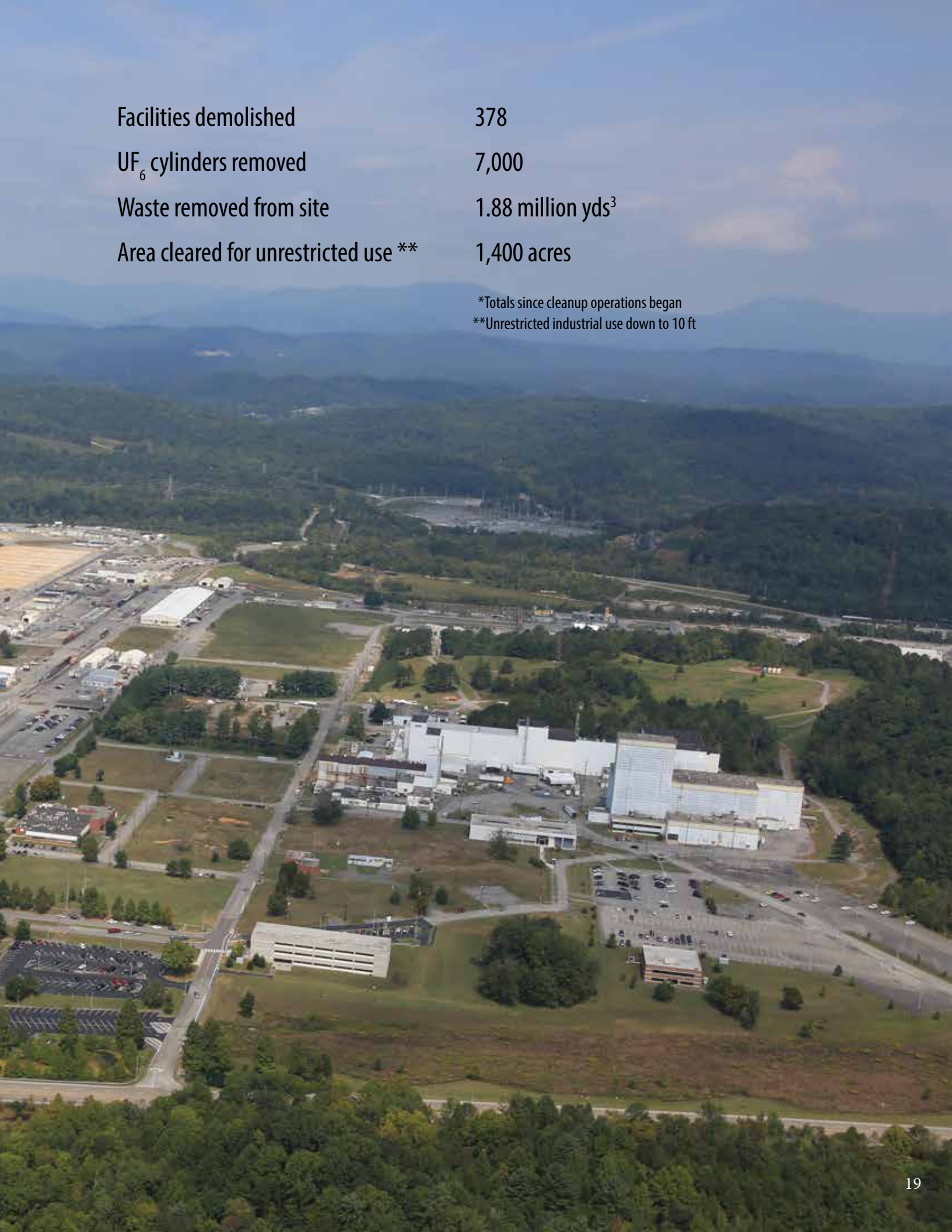
The Central Neutralization Facility Deactivation and Demolition Project includes approximately 49 buildings, structures, containment and storage tank facilities, and support trailers.

The Central Neutralization Facility treated wastewater to remove radioactive materials, metals, and suspended solids to meet required discharge criteria for effluent discharged to the Clinch River. The treatment process provided elementary neutralization, metals removal, organic oxidation/filtration, solids settling, solids removal, and filtration of contaminants present in the waste streams treated at the facility.

ETTP cleanup
at a glance*

Facilities demolished	378
UF_6 cylinders removed	7,000
Waste removed from site	1.88 million yds^3
Area cleared for unrestricted use **	1,400 acres

*Totals since cleanup operations began
**Unrestricted industrial use down to 10 ft



Reindustrialization Program continues

reshaping the ETTP site

The DOE Oak Ridge Reindustrialization Program continued the transformation of ETTP into a private sector business/industrial park in FY 2013.

Babcock Services, Inc., a private company that provides services to the nuclear industry, constructed a 13,000-square-foot building at ETTP. Babcock Services purchased 2.5 acres of industrial land from the Community Reuse Organization of East Tennessee (CROET) last year. Facility construction and equipment installation are complete, and operations recently began. This facility is used to manage, recover, and refurbish components from commercial nuclear power plants and could potentially bring more than 100 new jobs within three years of operation.

This facility is another recent success of the Reindustrialization program in Oak Ridge. The property, just east of the K-25 Building site, is on land where cleanup has been completed. It was transferred from DOE to CROET and then sold to Babcock Services. CROET will reinvest proceeds from the sale to further enhance the viability of ETTP as a private industrial park. When buildings at ETTP are demolished or transferred, many more private construction projects will take place as reindustrialization continues.

A new solar installation was dedicated in Spring 2013 at ETTP. This solar project is the second at the site and highlights the continued growth of the solar industry in Tennessee as well as the industrial park's suitability for renewable energy production. Vis Solis, LLC, based in Franklin, Tenn., is leading the project, partnering with the Tennessee Valley Authority, the German Energy Agency, DEGERenergie (Germany's leading solar manufacturer), and CROET.

The system consists of seven ground-mounted geo-trackers that rotate, following the sun to maximize the amount of collected light. Each rotating tracker holds 30 solar panels, and the 50-kilowatt photovoltaic system will produce enough power to serve about 15 homes. This project was sited in an area not suitable for traditional development and highlights DOE and CROET's commitment to efficient reuse of land assets at the former K-25 uranium enrichment plant.

Production has begun at the new state-of-the-art Carbon Fiber Technology Facility at the Horizon Center, an industrial park near ETTP located on former DOE property. This $35 million dollar pilot plant is working to commercialize the development of low-cost carbon fiber, an extremely strong and lightweight material that can be used in building structures and industrial products. Most notably, automobile manufacturers could potentially use these products to decrease weight and increase fuel efficiency in their vehicles.

This facility is using processes developed at ORNL to dramatically reduce the cost of carbon fiber by mass producing low cost precursor fibers used to manufacture the material. Several Fortune 500 companies have partnered to help with the technology development, including Ford, Dow Chemical, 3M, and Volkswagen.

DOE has completed the environmental regulatory documents needed to transfer an additional 98 acres to the public at land parcel ED-13 and is nearing completion for an additional 28 acres at ED-11 and ED-12, which will allow additional industrial development of the site to continue.

A ribbon-cutting ceremony for the new solar array at ETTP involved local elected officials, the German Consul General, and Vis Solis officials

Oak Ridge National Laboratory

Oak Ridge National Laboratory is becoming 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 research facilities, and Melton Valley includes reactors and waste management areas.

A concrete berm is being poured as part of the 3026 stabilization activities

3026 hot cells facility downgraded

and maintained in surveillance and maintenance mode

The 3026 hot cells facility at ORNL has been downgraded from a Hazard Category 3 nuclear facility to a radiological facility. Previously, three of the facility's five hot cells were demolished. However, due to unanticipated conditions, the remaining hot cells were downgraded and placed into surveillance and maintenance. This downgrade makes the facility less costly to maintain .

UCOR, at the request of DOE, took over the 3026 hot cells project as part of the Surveillance and Maintenance Program. UCOR conducted stabilization activities to achieve the downgrade, such as installing permanent electrical equipment, sealing all openings, reinforcing site boundaries, and containerizing residual waste and debris.

In FY 2011, the 3026-C "Counting Room" and "Tritium Lab" were decontaminated. In FY 2012, 3026-C "Cell Bank 1" and "Cell Bank 2" and 3026-D "Storage/Sorting Cell" were decontaminated. In FY 2012, 3026-C was demolished and the waste was disposed.

In FY 2013, preparation for demolition of 3026-D was halted because higher levels of contamination than anticipated were found. The available funding allowed 3026-D to be left in a safe configuration for surveillance and maintenance but did not allow for demolition. A report documenting work completed and work remaining was submitted to the Environmental Protection Agency and the Tennessee Department of Environment and Conservation.

Bethel Valley
groundwater monitored

Groundwater monitoring related to the Bethel Valley 7000 Area Groundwater Treatability Study continued in FY 2013.

The 7000 Area covers the maintenance facilities on the east end of ORNL. A treatability study was initiated earlier to determine the feasibility of using bacteria to eliminate trichloroethene (TCE) in groundwater. Previously, a dilute solution of emulsified vegetable oil was injected into the TCE plume through four existing groundwater monitoring wells. Groundwater monitoring continued, with a Treatability Study Report documenting the results.

The purpose of the injection was to provide a source of carbon to stimulate existing TCE-degrading microbes in the groundwater system. The post-injection monitoring indicated that anaerobic reductive dechlorination can be successfully implemented at full scale at this site for treating TCE in groundwater.

Sampling in the Bethel Valley help determine the effectiveness of treatment

Off-site
groundwater monitoring
shows no man-made contaminants

Groundwater monitoring was conducted in FY 2013 in off-site wells adjacent to Melton Valley to determine if any contaminant migration off the Reservation was occurring.

Signature man-made contaminants that have been detected in groundwater near former Melton Valley waste disposal areas on DOE property include the radionuclides tritium, strontium-90, and technetium-99 as well as chlorinated organic compounds, including TCE and its degradation products. None of these signature man-made contaminants were detected in the monitored off-site groundwater.

Upgrade of 4500 Area gaseous waste system completed

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.

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

Demolition, removal of existing equipment, and fabrication and installation of the replacement ventilation system for the 4501, 4505, and 4500N facilities were completed in January of 2013.

In September of 2013, characterization of the underground ductwork, stabilization of the underground ductwork, and cleanout of the 3106 and 4556 filter pits were completed.

Design, fabrication, installation, and operation of the local ventilation system for Building 4507 had previously been completed in FY 2012, along with stabilization of the 4507 hot cells.

A HEPA shield plug is being removed from a filter pit

Workers core bore a vent duct cover as part of the 4500 Area gaseous waste system upgrades

Building 3550 slab excavated

Building 3550 is one of 34 buildings recently demolished in the Central Campus area of ORNL. Since this slab is the largest in the area and the only one located along Central Avenue, it was selected for excavation. In FY 2013, the concrete slab was excavated, along with contaminated soil beneath the slab to a depth of up to two feet, and the area was graded and seeded with grass.

A completion report documenting the work performed was prepared and submitted to the Environmental Protection Agency and Tennessee Department of Environmental Conservation.

Removal of slab debris at Building 3550 site

Plans under way to dispose of uranium-233 inventory

Oak Ridge has a significant inventory of uranium-233 (U-233) stored in Building 3019A at ORNL. U-233 is a special nuclear material that requires strict safeguards and security controls to protect against access.

The U-233 Project was initiated to address safeguards and security requirements, eliminate safety and nuclear criticality concerns, and safely dispose of the material.

Treating 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 3019A to ensure safe storage of the inventory.

By the end of FY 2013, the project completed all of the preparations necessary for the shipment and disposal of material from the Consolidated Edison Uranium Solidification Project (CEUSP), a 1980s project that processed radioactive materials for storage. Shipment of the CEUSP material to the Nevada National Security Site (NNSS) has not been initiated pending resolution of issues with the state of Nevada.

The conceptual design for the processing campaign was initiated in FY 2013. The campaign will focus on processing and disposal of the remainder of the U-233 inventory. Several processing campaign planning documents are in review. Follow-on design activities in FY 2014 will be contingent on budget availability.

Building 3019A at ORNL

Waste removal, stabilization completed at Building 3038

A worker in 3038 uses a glove box to package and dispose of waste

Building 3038 is a 7,773-square-foot nuclear facility located in the ORNL Central Campus area. Building 3038 was used for packaging, inspecting, and shipping activities for radioisotopes. In 1994, all operations ceased.

In FY 2013, in order to prepare the building for future demolition, all waste was removed from the building and disposed; stabilization activities were completed; the local ventilation system was re-started; air-monitoring equipment was placed on-line; and a report documenting completion was submitted to the Environmental Protection Agency and the Tennessee Department of Environmental Conservation.

Work continues to remove flush and fuel salt at MSRE

The Molten Salt Reactor Experiment (MSRE) facility was a graphite-moderated, liquid-fueled reactor that operated from June 1965 through December 1969. Since reactor shutdown, several studies and removal actions have been performed to address the contaminated fuel and flush salts in the facility. In 1998, a Record of Decision for an interim action to remove fuel and flush salts was approved. The approved action included the following steps:

1. Melt and chemically treat the salts.
2. Fluorinate the salt to remove uranium.
3. Trap the uranium on cold traps and transfer the uranium to chemical traps.
4. Ship the uranium-loaded traps to ORNL Building 3019A for storage.
5. Transfer residual salts to shield canisters designed for transportation and storage.
6. Ship shielded salt canisters to ORNL Solid Waste Storage Area 5 for interim storage.

The first four steps were completed between 2004 and 2008. The remaining steps were deferred pending an engineering study to examine the approach for salt removal, which is addressed in the MSRE Remediation Strategy Plan prepared in FY 2012. The preferred alternative for the salt disposition is removal of the defueled salt by thermal means, transfer to shipping containers, and disposal at the Waste Isolation Pilot Plant in New Mexico.

In FY 2013, comments on the MSRE Remediation Strategy Plan were received from the Environmental Protection Agency and the Tennessee Department of Environment and Conservation, and a revised plan was prepared and submitted.

Also in FY 2013, additional waste from the defueling performed in 2006 was identified. An inventory of the waste and a waste disposition plan were prepared and submitted to the Environmental Protection Agency and the Tennessee Department of Environment and Conservation.

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.

Mercury remediation strategy

developed for Y-12, East Fork Poplar Creek

A draft Mercury Remediation Strategy Plan was developed to address cleanup of mercury contamination at Y-12 and in East Fork Poplar Creek. The document was submitted to the regulators for review in March 2013. DOE held a workshop with the Tennessee Department of Environment and Conservation and the Environmental Protection Agency in August 2013. Comments on the plan were discussed and the strategic approach refined.

A phased, adaptive management approach is proposed to first address mercury contamination in surface water. A key component is construction of a water treatment facility, the Outfall 200 Mercury Treatment Facility, to provide both current reductions of mercury in the creek and future capacity to treat water during the demolition and remediation of the West End Mercury Area at Y-12.

Other actions proposed in the plan will also advance cleanup of mercury at the site and in the creek, including diversion of water sources to avert contact with contaminated soils and sediments. Technology development efforts described in the plan will help support future cleanup on many levels; for example, by gaining an understanding of mercury bioaccumulation and movement in the environment that in turn can help refine and target methods for remediation, thus reducing cost and time investments.

Mercury source removal—building demolition and soil/sediment remediation—is planned to begin in 2021. Since the majority of the waste resulting from source remediation actions will be generated after the Environmental Management Waste Management Facility will reach capacity, the plan calls for disposal of the waste in a proposed future landfill.

Mercury recovered from a contaminated tank

Mercury Reduction Project work
continues at the Y-12 Complex

The Mercury Reduction Project was initiated to facilitate reduction and lower mobility of mercury at Y-12. Subprojects under the Mercury Reduction Project included Five Tanks Remediation, Outfall 200 Conceptual Design, Mercury Recovery Trap Installation, Mercury Soils Treatability Study, and Secondary Pathway Remediation. Field activities on the Mercury Reduction Project began in May 2012 and continued into FY 2013.

Workers load a mercury-contaminated tank onto an inspection saddle

Five Tanks Remediation Project

A tank removal project was initiated in FY 2012 to dispose of five tanks formerly used for mercury-related activities at Y-12. These tanks were removed from service in the 1980s. Characterization was completed along with the necessary documentation needed for disposal of these tanks.

The tank removal project was completed in FY 2013. Based on characterization results, two tanks were sent to the sanitary landfill at Y-12. Three tanks were transported to Materials and Energy Corporation for residual removal of tank contents and size reduction of the tanks. After size reduction, the tank residuals and debris were disposed. More than 800 pounds of mercury was removed and treated. A formal report documenting completion of the project was submitted to the Environmental Protection Agency and Tennessee Department of Environment and Conservation.

Outfall 200 Mercury Treatment Conceptual Design Project

An outfall is a discharge point of a waste stream into a body of water. Outfall 200 is the point at which the Y-12 storm drain system discharges to Upper East Fork Poplar Creek.

During FY 2012, a treatability study and conceptual design were initiated for a treatment plant to reduce the release of mercury from Outfall 200 into Upper East Fork Poplar Creek. Samples were collected from Outfall 200 A6, Outfall 169, Outfall 163, and Outfall 150. Collected samples of storm water effluent and grit from the bottom of the storm sewers were analyzed for constituents of concern and subjected to treatability analysis for removal of suspended solids and mercury. An alternatives analysis was performed for an Outfall 200 treatment system.

During FY 2013, the Remedial Design Work Plan for the Outfall 200 Mercury Treatment Facility was completed. The work plan described an interim remedial action to reduce the release of mercury into Upper East Fork Poplar Creek with a goal of restoring surface waters. The design of the treatment facility was summarized in the Conceptual Design Report for the Outfall 200 Mercury Treatment Facility.

Mercury Recovery Project

The Mercury Recovery Project designed and installed mercury recovery traps at locations upstream of Outfalls 150, 160, 163, and 169. The traps collect elemental mercury and mercury-contaminated sediment, and Y-12 personnel remove that mercury and sediment from the traps and other storm drain locations.

Y-12 began collecting mercury and sediments from storm drains in FY 2013. Ongoing collection and disposition of elemental mercury and associated contaminated sediments from the storm drain system from the traps will be summarized in the annual Remediation Effectiveness Report, which details the effectiveness of remediation activities.

In FY 2013, the Mercury Recovery Project installed a decanting facility to separate mercury from co-collected sediment and water, and potential amalgamation of collected elemental mercury for disposal purposes.

Trapping and removing elemental mercury from the storm drain system will be of benefit by removing some mercury before it reaches the Upper East Fork Poplar Creek at Outfall 200.

Mercury Contaminated Soils Treatability Study

A treatability study for mercury-contaminated Y-12 soils started in FY 2012. The treatability study was initiated to define treatment options and available disposal options for Y-12 soils contaminated with mercury.

In FY 2013, the Treatability Study Report for Y-12 Site Mercury Contaminated Soil was prepared, detailing the results of treatability studies and providing treatment and disposal options for the mercury contaminated soils.

Secondary Pathways

In FY 2013, actions to reduce or eliminate secondary mercury infiltration around Alpha 4 (9201-4) and Alpha 5 (9201-5), and identification and confirmation of open drains inside Alpha 5 and Beta 4 (9204-4) were completed. These massive facilities were involved with lithium isotope separation activities, which utilized large quantities of elemental mercury. These activities included modifying some roof drains and drainage systems, installing graded impervious surfaces to ensure rainwater runoff is routed to storm drains to reduce percolation through mercury-contaminated soils, and investigating potential mercury source points inside the facilities. The actions were documented in a completion report. All waste generated was disposed in FY 2013.

Workers are installing a new catch basin at Y-12 to improve drainage and reduce mercury infiltration

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 Environmental Management Waste Management Facility. Wastewater is treated at the Chromium Water Treatment System at ETTP and the Process Waste Treatment Complex at ORNL.

Oak Ridge Reservation landfills

handling most of wastes generated by cleanup

Much of the waste generated during FY 2013 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 7,096 truckloads of waste, accounting for 80,070 tons during FY 2013. This engineered landfill consists of six disposal cells and 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 2013. No contact water (water that comes in contact with waste but does not enter the leachate collection system) required treatment in FY 2013. An additional 16.7 million gallons of contact water was collected, analyzed, and released to the storm water retention basin after determining that it met the discharge standards. Operating practices also effectively controlled site erosion and sediment.

Projects that disposed of waste at EMWMF during FY 2013 include demolition of the K-25 Building; demolition of the K-33 to K-31 tie lines; and several ORNL demolition projects.

DOE also operates solid waste disposal facilities called the Oak Ridge Reservation Landfills, which are located near the Y-12 Complex. These landfills are engineered facilities used for the disposal of sanitary, industrial, construction, and demolition waste. In FY 2013, approximately 36,435 yd^3 of industrial wastes and construction/demolition debris were disposed in the landfill.

Operation of the Oak Ridge Reservation Landfills generated approximately 1.1 million gallons of leachate that was collected, monitored, and discharged into the Y-12 Complex sanitary sewer system. The Y-12 Complex sanitary sewer system discharges to the Oak Ridge sewer system under an industrial sewer user permit.

EMWMF

Efforts under way to identify

location for new on-site disposal facility

EMWMF, the existing on-site disposal facility for low-level, mixed, and classified waste, is predicted to reach capacity before all Oak Ridge Reservation cleanup waste has been generated and disposed. To evaluate alternatives for disposal of future cleanup waste, DOE issued a Remedial Investigation/Feasibility Study draft report in September 2012. A Remedial Investigation/Feasibility Study is used to collect and evaluate data in order to make cleanup decisions.

In FY 2013, comments received from the Environmental Protection Agency and the Tennessee Department of Environment and Conservation were incorporated into a second draft report that was submitted to the regulators on June 20, 2013. A workshop was held in August 2013 to evaluate current and future on-site disposal on the Oak Ridge Reservation.

Following regulator review and approval, the final Remedial Investigation/Feasibility Study will serve as the initial document supporting selection of a preferred alternative for waste disposal post-EMWMF. The document analyzes three alternatives:

- The no action alternative provides a benchmark for comparison with the action alternatives. Under the no action alternative, no coordinated Oak Ridge Reservation-wide strategy to manage wastes generated by future CERCLA actions would be implemented.
- The on-site disposal alternative would provide consolidated disposal of future-generated CERCLA waste in a newly constructed, engineered facility referred to as the Environmental Management Disposal Facility (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 RI/FS concludes that both the on-site and off-site disposal alternatives would be protective of human health and the environment long-term by disposing of waste in a landfill designed for site-specific conditions.

The off-site disposal alternative has the potential to isolate the wastes more effectively if located in an arid climate and possibly at facilities in western states.

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

Site evaluations are under way for additional on-site disposal capacity to handle waste generated from cleanup operations

Transuranic Waste Processing Center

processing, shipping waste for disposal

Transuranic radioactive waste, or TRU, is one of several types of waste handled on the Oak Ridge Reservation. TRU waste contains man-made elements heavier than uranium, such as plutonium, hence the name "trans," or "beyond," uranium.

TRU waste material is generally associated with the human manipulation of fissionable material dating back to the Manhattan Project and primarily consists of clothing, tools, rags, residues, soil, and debris.

The TRU Waste Processing Center's (TWPC) function is to characterize and package TRU waste for transportation and disposition at DOE's Waste Isolation Pilot Plant in New Mexico, which provides permanent isolation and disposal in underground salt caverns. Any mixed low-level waste or low-level waste processed from the TRU waste inventory is prepared for compliant disposal elsewhere.

Two waste streams, contact-handled (CH) TRU solids and remote-handled (RH) TRU solids, are being processed at the TWPC. During FY 2013, the TWPC processed 109 m^3 of the RH-TRU waste, reaching a total of 302 m^3 of processed RH waste. The TWPC also processed 113 m^3 of CH-TRU waste, reaching a total of 1,370 m^3 of processed CH waste. During FY 2013, the TWPC shipped a total of 59 m^3 of original RH-TRU inventory, reaching a total of 110 m^3 disposed. The TWPC also shipped 94 m^3 of original CH-TRU waste inventory to disposal facilities in FY 2013, reaching a total of 970 m^3 disposed.

A TWPC worker removes a supercompacted waste puck from 55-gallon waste drum

Work under way to remove remote-handled sludge from ORNL

The Remote-Handled (RH) Sludge Project's mission is to process and treat RH-TRU tank waste at ORNL. This processing includes RH sludge and supernate waste, with the packaging of the waste and shipment operations to be performed at the TWPC.

The selected treatment alternative—stabilization and solidification—is projected to result in a low-level waste that can be disposed of at an off-site location.

In FY 2013, the RH Sludge Project made progress in defining the nuclear safety design strategy, verification of technology selection for waste treatment, continuation of the RH Sludge Test Program to mature and demonstrate the selected technology, the RH Sludge Test Area design, and the procurement of long lead items for the RH Sludge Test Area. Additionally, the sludge project issued a Sludge Processing Waste Characterization and Certification Strategy document that describes the innovative waste characterization process control program that is planned for use in place of final form sampling, which was accepted by the Nevada Nuclear Security Site, the planned disposal site. The TWPC National Environmental Policy Act document—Environmental Impact Statement Supplement Analysis—was revised to bring it up to date with the latest conceptual design and to reflect the 2010 U.S. Census data used in radiation exposure calculations. The document was submitted to DOE Headquarters for review, approval, and subsequent modification to the TWPC Record of Decision.

Solidification testing to verify process production rates and the heat-up characteristics of the grout recipe (i.e. verify maximum temperature during curing) was completed in August 2013.

The RH Sludge Test Area design was 75% complete at the end of FY 2013.

Procurement activities and build-out of the Sludge Test Area were initiated. All major procurement packages with one exception were completed and ready for award to the selected contractor or for issuance as a Request for Proposal. On-site conversion of a 40-ft storage container into a mobile non-radiological laboratory was 65% complete.

The TWPC east gate was relocated to support the buildout of the Sludge Test Area. After initial clearing and grubbing in the Sludge Test Area, an area that appeared to have a large amount of non-native soil was observed. Therefore, a test pit was opened to determine the depth and extent of non-native soils that would need to be removed. Material was discovered which was not radiologically contaminated during the digging of the test pit. Therefore, precautionary contamination controls were put in place, and excavation to native soils that exhibit acceptable compressibility characteristics was resumed.

Later, more material was found—some of which was determined to be radiologically contaminated. Work was paused, and a time-critical CERCLA removal action was initiated to remove and dispose of the contaminated soil and debris from the Sludge Test Area so build-out activities could resume. The CERCLA activity was commenced and continued into FY 2014.

TWPC workers excavate soil for preparation of the sludge test area site

Millions of gallons of wastewater treated

on the Oak Ridge Reservation

At ORNL, approximately 126,102,000 gallons of wastewater were treated and released at the Process Waste Treatment Complex. In addition, the liquid low-level waste evaporator at ORNL treated 218,900 gallons of such waste. The ORNL 3039 Stack Facility has treated a total of 2.2 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 during FY 2013.

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 116,319,588 gallons of wastewater were provided at various facilities in FY 2013. Totals for each facility are listed below:

Facilities primarily serving National Nuclear Security Administration operations:

- West End Treatment Facility treated 470,00 gallons of process waters contaminated with chemical and radiological materials
- Central Pollution Control Facility treated 45,927 gallons of concentrated process waters contaminated with oil, chemical and radiological materials

Facilities serving environmental cleanup activities:

- Big Spring Waste Treatment System and the East End Mercury Treatment System treated 100,473,040 gallons of mercury contaminated groundwater.
- Liquid Storage Facility and Groundwater Treatment Facility treated 2,104,902 gallons of leachate from burial grounds and well purge waters from remediation areas.
- East End Volatile Organic Compound Treatment System treated 11,041,072 gallons of VOC-contaminated groundwater.
- Central Mercury Treatment System treated 2,184,647 gallons of mercury-contaminated sump waters from the Alpha 4 building.

Chromium Water Treatment System

Operation of the Chromium Water Treatment System at ETTP began in FY 2012 and continued through FY 2013.

This system provides a long-term solution for hexavalent chromium being released into Mitchell Branch. The source of this contamination has not been identified. These releases affected the ambient water quality in Mitchell Branch, potentially affecting the water quality in Poplar Creek.

Since operation of the treatment system, the concentration of chromium in Mitchell Branch has been reduced to compliant levels.

Chromium Waste Treatment System

Oak Rige 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.

Uncontaminated Reservation sites

identified for "No Further Investigation"

The DOE Oak Ridge Reservation, which includes ETTP, the Y-12 Complex, and ORNL, is surrounded by approximately 20,100 acres of mostly wooded parcels. These buffer parcels have little-to-no process-related history and are considered uncontaminated. However, with the listing of the Reservation on the National Priorities List (a listing of the country's most contaminated sites) in 1989, the natural assumption was that all the property was contaminated. The U.S. Environmental Protection Agency has since clarified that NPL sites are not based on property boundaries, but rather the areas of contamination.

Beginning in 2008, the DOE Oak Ridge Office initiated a process to achieve Federal Facility Agreement (FFA) party consensus that the buffer parcels require no further investigation (meaning that they are not contaminated and no further investigation is needed into determining that fact) and to modify the FFA appendices to better represent the known contaminated areas constituting the NPL site. Oak Ridge Associated Universities was contracted to complete the verification activities, including review of historical documents, sampling and analysis, risk analysis, and reporting of study results, with recommendations for no further investigation where appropriate.

The first report addressing five parcels around ETTP (approximately 4,600 acres) was submitted as final to the FFA parties in December 2011 and approved by regulators in March 2012.

The second report addressing 14 parcels around ORNL and the Y-12 Complex (approximately 15,500 acres) was submitted as final to the FFA parties in September 2013. Since then, DOE has received formal approval from all FFA parties. This report recommended no further investigation for most (14,300 acres) but not all of the investigation area. Portions of Melton Valley between Haw Ridge and Copper Ridge extending from State Highway 95 to the Clinch River, and the area within the fenced boundary of the Central Training Facility firing range on West Chestnut Ridge, were not recommended for a no-further investigation determination. Based on the recommendations included in these reports, a total of 18,900 acres were approved for no further investigation.

Remediation Effectiveness Report submitted

The 2013 Remediation Effectiveness Report for the Oak Ridge Reservation was submitted to the Environmental Protection Agency and Tennessee Department of Environment and Conservation, and comments were received and incorporated into a revised version of the report.

The Water Resources Restoration Program coordinates watershed monitoring to include data interpretation and final reporting in the annual Remediation Effectiveness Report for the Oak Ridge Reservation. The scope of work includes groundwater, surface water, sediments, and biological monitoring. The program's primary technical objective is to provide data and technical analysis necessary to support groundwater and surface water management decisions, gauge the effectiveness of past and future remedial actions, and to ensure compliance with all CERCLA-mandated requirements pertaining to environmental monitoring.

Strategy developed for addressing

Oak Ridge Reservation groundwater

An Oak Ridge Reservation Groundwater Strategy was completed in September 2013 to document a path forward for managing legacy groundwater challenges. Issuing the Oak Ridge Reservation Groundwater Strategy document for regulator review completed a year-long project to develop an interagency approach for addressing Oak Ridge Reservation groundwater contamination.

Six workshops with representatives from the Environmental Protection Agency, Tennessee Department of Environment and Conservation, DOE, contractor representatives, and a representative from the U.S. Geological Survey were held in FY 2013:

- Three workshops to review conceptual site models for each Oak Ridge Reservation watershed, identify plumes and related data gaps, and identify potential groundwater projects.
- Two workshops to combine and rank the plumes, combine and rank projects, and select an early action project.
- A final workshop to review groundwater use restrictions and policies and alternatives to engineered groundwater restoration.

Consensus was reached on a number of key groundwater issues, including:

- Additional near-term, off-site monitoring measures are needed to assess potential off-site risks. This need guided selection of an early action project, Off-site Groundwater Quality Assessment, to perform additional sampling and analysis of off-site groundwater.
- No immediate off-site groundwater use controls (beyond those controls already in place) are needed at this time. This assessment could change based on characterization results of the Off-site Groundwater Quality Assessment project.
- An ongoing Oak Ridge Reservation Groundwater Program to systematically prioritize and investigate groundwater plumes and data gaps is needed. The program will provide flexibility to adapt project sequencing and scopes based on plume characterization findings, cleanup progress, and changing priorities and budgets.

Plans for FY 2014 include initiating the Off-Site Groundwater Quality Assessment as a tri-party effort and setting up an Oak Ridge Reservation Groundwater Program that will be based in the established Water Resources Restoration Program.

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 monthly Public Involvement News newsletter, and other publications. .

A timeline display showing EM's accomplishments through the years was a key feature of the celebration event

EM celebrates cleanup successes at special event

Local elected officials, DOE and contractor personnel, members of the public, and others attended an Oak Ridge cleanup celebration event, held May 2, 2013, at Pollard Auditorium in Oak Ridge. The event featured a series of timeline posters showing cleanup progress throughout the years, as well as a video featuring accounts of cleanup successes. The event was open to the public. Rep. Chuck Fleischmann was among the dignitaries attending the event.

Three former DOE managers—Jim Hall, Joe LaGrone, and Gerald Boyd—receive framed copies of a DVD shown at the cleanup celebration. The three men appear in the DVD

ORSSAB's advice helps DOE make cleanup decisions

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 Environmental Management (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 2013. All of ORSSAB's activities can be viewed by accessing the board's website at www.oakridge.doe.gov/em/ssab/.

Community Outreach

In FY 2013 ORSSAB continued efforts to keep the public informed of its activities to provide opportunities for dialogue between EM and the surrounding communities.

Each monthly 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 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.

ORSSAB Tours Transuranic Waste Processing Center

A number of board members had the opportunity to see where and how transuranic (TRU) waste from the Oak Ridge Reservation is packaged and prepared for shipment.

They were shown how both contact-handled and remote-handled TRU waste is prepared for shipping at the Transuranic Waste Processing Center near Oak Ridge National Lab. After packaging and certification, TRU waste will be sent in 2014 to the Waste Isolation Pilot Plant in New Mexico, where it will be permanently disposed in salt caverns 2,100 feet below the surface.

ORSSAB members tour the Transuranic Waste Processing Center

Recommendations

ORSSAB's primary function is to provide advice and recommendations to DOE on its environmental cleanup of the Oak Ridge Reservation. ORSSAB submitted five recommendations to DOE for consideration in FY 2013.

Complete text of all ORSSAB recommendations can be found on the ORSSAB website at www.oakridge.doe.gov/em/ssab/recc.htm.

Recommendation on Availability of DOE Environmental Management Documents

ORSSAB recommended to DOE that it improve the system of

finding documents in the DOE Information Center's online search catalog.

Some members of the board's EM Committee had expressed frustration at trying to find documents online, saying the basic search function often yields many pages of documents not relevant to the search and that the advanced search function is only usable if details of the document are already known.

The recommendation suggested several actions to expedite finding documents online.

DOE responded saying it was working to improve search capabilities and had included a 'search tips' function on the website. DOE also advised researchers to contact directly personnel at the DOE Information Center to assist with document searches.

Recommendation on Remaining Legacy Materials on the Oak Ridge Reservation

DOE Oak Ridge EM has a collection of legacy materials stored at various locations around the Oak Ridge Reservation. Some of this material is considered waste and is best suited for permanent disposal, while some is non-waste that has potential for re-use. Most of it is under some type of regulatory requirement and must be dealt with eventually.

This legacy material includes sodium shields stored at East Tennessee Technology Park and at Oak Ridge National Lab, shielded transfer tanks in Melton Valley, Disposal Area Remedial Action Soils in Bear Creek Valley, and 28 vaults of low-level radioactive waste on a concrete pad at the lab.

While these legacy materials are considered to be in safe storage, they are a cost liability to keep.

After presentations on the legacy materials at both a full ORSSAB meeting and at an ORSSAB EM Committee meeting, a recommendation was developed and submitted to DOE. The recommendation included a number of suggestions DOE could take in dealing with remaining legacy materials.

DOE's response was that it had developed a comprehensive inventory of all waste/materials stored on the reservation and has prioritized the inventory for disposition, with the highest priority to address hazardous and/or radioactive waste that may pose a threat to the environment or could result in a violation of federal or state laws. DOE also said it had established a hierarchy for dispositioning the inventory to minimize disposition costs.

Recommendations on the FY 2015 DOE Oak Ridge EM Budget Request

Each year the DOE EM Program develops its budget request for the fiscal year and two years beyond the current fiscal year. DOE also asks for input from the public on its proposed request.

In February 2013, DOE briefed ORSSAB on the current budget picture and described near-term, mid-term, and long-term priorities.

In developing the recommendation on DOE's budget request, ORSSAB generally agreed with DOE's current strategy for cleanup and endorsed its 2015 budget request.

ORSSAB's endorsement, however, didn't come without some reservations. It noted that delays in cleanup generally increase life-

The ORSSAB held its annual planning meeting in October 2013 to discuss FY 2013 work topics. Below, DOE's Dave Adler, ORSSAB's Alternate Deputy Designated Federal Officer, leads the discussion on topics that DOE, the Environmental Protection Agency, and the Tennessee Department of Environment and Conservation suggested the board focus its attention on in FY 2014.

Representing ORSSAB at the EM SSAB Chairs' spring 2013 meeting webinar were Vice Chair Dave Hemelright, left, and Chair David Martin

cycle costs and human risk. When programs are delayed, financial costs and environmental and safety risks escalate.

DOE Oak Ridge EM forwarded ORSSAB's comments with its budget request to DOE Headquarters.

Recommendation to Develop a Fact Sheet on Site Transition at Ongoing Mission Sites

In June 2011, ORSSAB recommended to the DOE Assistant Secretary for EM that DOE develop a fact sheet similar to one used by the Office of Legacy Management that describes a site transition process upon completion of cleanup at remediated DOE sites. DOE developed a document called "Site Transition: Cleanup Completion to Long-term Stewardship at DOE On-going Mission Sites (September 2011).

ORSSAB's Stewardship Committee provided comments on the fact sheet and in February 2012, DOE issued another document that reflected input provided by ORSSAB and other site specific advisory boards.

The Stewardship Committee reviewed the revised document and concluded that, while the revision is useful and provides much good information related to turning remediated areas back to original landlords when work is completed at an ongoing mission site, it still believes that the format used in the Office of Legacy Management fact sheet is more user-friendly and better suited for public use.

The recommendation re-stated ORSSAB's request to develop a fact sheet based on the Office of Legacy Management fact sheet. In September 2013 DOE provided a revised fact sheet based on ORSSAB's recommendation.

Recommendation on a Stewardship Point of Contact for the Oak Ridge Reservation

While all the standing ORSSAB committees have DOE Oak Ridge liaisons, the Stewardship Committee believed it was important that DOE Oak Ridge EM have a dedicated point of contact for stewardship that the board and the public can go to for stewardship-related issues on the Oak Ridge Reservation.

Dan Goode, U.S. Geological Survey, right, briefs ORSSAB EM Committee members on Groundwater Strategy Workshops conducted by DOE, the Environmental Protection Agency, and the Tennessee Department of Environment and Conservation. Goode acted as a liaison between ORSSAB and the workshop proceedings.

Dave Adler, ORSSAB's Alternate Deputy Designated Federal Officer, agreed to be the point of contact, but the committee recognized that changes occur over time, such as reorganizations, personnel changes, and re-assignments. The committee drafted a recommendation, which the board approved, that there will always be a permanent point of contact for the board for stewardship issues.

DOE accepted the recommendation saying that the DOE liaison to the new EM & Stewardship Committee will be the permanent point of contact for stewardship issues on the Oak Ridge Reservation.

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 web site 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.

DOE Information Center staff, from left, are Michelle McMillan, Wanda Joyce, and Eva Butler

Visit the DOE Information Center on the Web at www.oakridge.doe.gov/info_cntr

Phone: 865-241-4780

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

FY 2013 Stats

Average number of visitors per month	65
Number of public meetings held	97
Total citizen inquiries	794
Total number of documents at the center	46,653
Total number of documents on-line	44,676

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

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

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

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

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

Internet Sites

DOE Main Web Site	www.energy.gov
DOE-ORO Home Page	www.oakridge.doe.gov
DOE-ORO Environmental Management Program	www.oakridge.doe.gov/external (Click on "Programs," then select "Environmental Management")
Oak Ridge Site Specific Advisory Board	www.oakridge.doe.gov/em/ssab
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.oakridge.doe.gov/info_cntr
American Recovery and Reinvestment Act	www.recovery.gov www.energy.gov/recovery

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
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
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
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.