Advocate

A publication of the Oak Ridge Site Specific Advisory Board – a federally appointed citizens panel providing independent recommendations and advice to DOE's Environmental Management Program

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TWPC Continues Processing Transuranic Waste During Suspension of Repository Activities

The Transuranic Waste Processing Center (TWPC) continues to process some transuranic waste despite the suspension of activities at the repository where the waste is disposed.

At the May meeting of the Oak Ridge Site Specific Advisory Board (ORSSAB), Laura Wilkerson, the Department of Energy's (DOE) Oak Ridge Portfolio Federal Project Director, updated the board on the status of TWPC.

Since 2004, TWPC, located on Highway 95 near Melton Valley, has been processing transuranic (TRU) waste for disposal. "The TRU waste in Oak Ridge," said Wilkerson, "is associated with historic research and development and isotope production activities, much of which dates to the Manhattan Project." TRU waste consists of items like protective clothing, tools, lab debris, and soil that are contaminated with man-made elements with atomic weights heavier than uranium and have half-lives of more than 20 years.

Drums of CH TRU waste are stored at TWPC awaiting permanent disposal at a repository in New Mexico.

DOE's TRU Waste Program mission is to process, segregate, and repackage the waste for disposal at the Waste Isolation Pilot Plant (WIPP) near Carlsbad, N.M. Part of that mission was completed in 2004 with

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DOE Develops a Mercury Remediation Strategic Plan for Y-12

DOE is working to address problems with mercury at the Y-12 National Security Complex and the water that leaves the plant and flows through Oak Ridge.

Laura Wilkerson, Portfolio Federal Project Director for Y-12 Projects, briefed ORSSAB on the strategic plan for mercury remediation at the board's April meeting.

Mercury became an issue in the 1950s when more than 20 million pounds of mercury were used at Y-12 to separate lithium isotopes for weapons production. Over the years about 700,000 pounds of mercury are estimated to have been lost to the environment.

Much of that collected under several process buildings known as Alpha 4, Alpha 5, Beta 4, and, Alpha 2, which was the pilot facility for the process buildings. The area where the three former process buildings are located is known as the West End Mercury Area (WEMA), and all are within the protected area of Y-12. Mercury makes its way from under the buildings into storm sewer lines.

"The main issue we need to address is mercury in surface water because the storm sewer system that discharges water in the west end converges at Outfall 200. Outfall 200 is the headwaters of Upper East Fork Poplar Creek (UEFPC), which flows through the plant and exits at Station 17 (near the main entrance on Scarboro Road)," said Wilkerson. Past Station 17 the creek is known as East Fork Poplar Creek and flows through residential areas of Oak Ridge. It eventually empties into the Clinch River.

A draft mercury remediation strategy was submitted to the Environmental Protection Agency (EPA) and the Tennessee Department of Environment and Conservation (TDEC) for review

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TWPC Continues to Operate

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the disposition of about 1,610 cubic meters of supernate (liquid above a sediment or precipitate). Since then TWPC has processed about 1,425 cubic meters of contact-handled (CH) inventory and about 364 cubic meters of the remote-handled (RH) inventory, representing 95 and 65 percent of the TRU waste inventory, respectively.

"CH waste is associated with low doses of gamma radiation, so the operators can work in direct contact with the waste with some shielding, such as glove boxes," said Wilkerson. "RH waste must be handled remotely in hot cells, because it has higher levels of gamma radiation."

Wilkerson said of the CH inventory that has been processed, 68 percent (1,958 drums) has been sent to WIPP for permanent disposal; of the RH inventory, 21 percent (219 drums) has been disposed. Currently the TWPC has about 3,000 waste drums awaiting certification and shipment to WIPP.

But two incidents at WIPP earlier this year caused the suspension of activities. On February 5 a truck used to haul salt caught fire, and on February 14 there was a release of contamination in another part of the underground waste repository. Currently, WIPP has halted all waste shipments to the site and disposal operations.

CH TRU waste that has been processed for disposal is stored temporarily in the Marshaling Building at the TWPC.

DOE and TWPC's operator, Wastren Advantage, Inc., are evaluating WIPP's closure on the center's operations. "We're trying to be proactive and determine what impacts, if any, there will be on our operations," said Wilkerson. "Our preliminary plan is to maximize the continued processing of our waste because we have Site Treatment Plan milestones to meet. We are focusing on CH waste because we have the capability to store that material once we process it."

There is a last piece of the TRU waste inventory that will be handled when all of the CH and RH waste is gone. About 2,000 cubic meters of RH sludge and associated supernate must be processed, but that will require modification of TWPC. Wilkerson said the Sludge Facility Buildouts to handle the material are currently in the conceptual design stage.

The sludge is stored in eight 50,000 gallon tanks in an underground vault near TWPC.

DOE Works to Address Mercury at Y-12

(Continued from page 1)

in March 2013. That was followed by a workshop where discussions were held about mercury challenges and what can be done.

Wilkerson said the consensus was that the problem is complex and will require a number of near-term and long-term solutions. In January 2014 a revised version of the strategic plan was issued after EPA and TDEC supplied comments on the original. The revised plan includes additional actions to mitigate mercury challenges at Y-12.

Wilkerson said there are a number of cleanup objectives in the strategy:

- Reduce mercury leaving Y-12 and entering public waters,
- Remove or stabilize mercury sources,
- Remove excess facilities,
- Remediate land for future use.

Wilkerson said the strategy includes a number of near-term and long-term actions to address mercury, but noted the strategy will be flexible. "This is a living document. We will update it periodically as we learn more about mercury and how it behaves in the environment."

A number of actions have been taken over the years at Y-12 and in the creeks, but mercury continues to be a problem. While mercury in water leaving Y-12 at Station 17 has been reduced significantly since 1990, the concentrations still exceed acceptable levels. Mercury concentration in fish tissue is even more perplexing. Mercury in the water has gone down, but there has not been a corresponding reduction of mercury in fish; in fact it has risen slightly the last few years.

Development of the mercury strategy is the effort to resolve these and other issues with mercury in Y-12 and the related waterways.

A key near-term action is the building of a mercury treatment facility near Outfall 200. "Three thousand gallons of water per minute will be treated there," said Wilkerson. "It's also expected to provide a mechanism to control expected discharges when we begin the larger effort later in the west end of the plant with the demolition of buildings and the remediation of soils." Work in 2011 to remove mercury from storm sewers in WEMA resulted in a temporary increase on the levels of mercury leaving Y-12.

Building the treatment plant is a line item capital expense that must

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Reservation Update

DOE Transfers More Property to CROET at ETTP

DOE transferred its 12th property, approximately 25 acres at East Tennessee Technology Park (ETTP), to the Community Reuse Organization of East Tennessee (CROET). The site was officially signed over in May to CROET for private sector use.

Congressman Chuck Fleischmann and David Klaus, DOE's deputy undersecretary for management and performance, joined the group of area business leaders for the celebration.

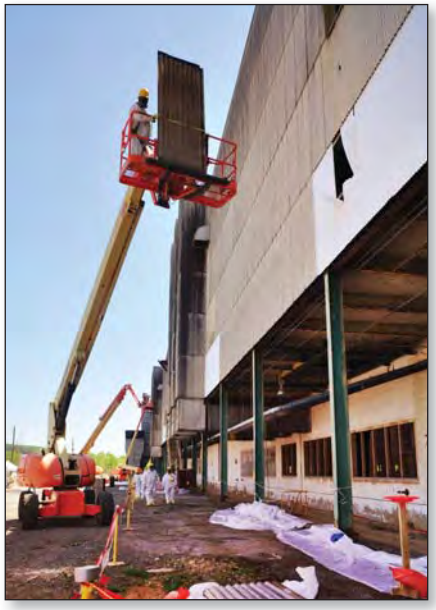
"The reindustrialization program in Oak Ridge has not only been an economic development catalyst for the region, it is saving taxpayers millions of dollars as the federal government transfers under-utilized assets to the private sector," said Rep. Fleischmann.

To date, eight of the properties transferred to CROET have been sold or optioned to private industry, saving DOE nearly $6.5 million while providing an increase of more than $60,000 in annual tax revenue to the City of Oak Ridge. Additionally, more than 200 acres of under-utilized DOE property has been transferred to CROET and re-developed with more than 100,000 square feet of new construction.

Lawrence Young, president and CEO of CROET, said that the site was essentially at a point where no property was readily available for development, so the transfer of a large, flat piece of land provides new opportunity for economic development.

UCOR Begins Panel Removal on K-31 at ETTP

Workers began removing transite paneling from the outside of the K-31 Building at ETTP in May. The 1.49 million square-foot building was once used to enrich uranium for defense and commercial purposes. It was permanently shut down in 1987.



Workers remove panels from the K-31 Building in preparation for demolition.

UCOR is preparing the building for demolition, which is scheduled for later this year. Approximately 10,000 transite panels are expected to be removed over the next several months.

The panels are removed ahead of demolition because they contain asbestos and must be handled and treated with separate hazard abatement crews.

Whitney Returns to Washington for EM Post

Mark Whitney, DOE's Oak Ridge cleanup manager for the past couple of years, has returned to Washington, D.C. as DOE's principal deputy assistant secretary for Environmental Management (EM).

Susan Cange has assumed leadership responsibilities as acting manager for the DOE Oak Ridge EM program.

Perma-Fix Awarded Contract to Treat and Dispose of Radioactive Waste

Perma-Fix Environmental Services, Inc., has been awarded a contract valued at $597,000 with a potential value of up to $1.2 million by UCOR to treat radioactive waste.

Perma-Fix will transport up to 100,000 gallons of waste contaminated with low levels of radioactive materials to Perma-Fix facilities in Richland, Wash. It will be thermally treated in bulk processing units so that it can be safely disposed at a commercial radioactive disposal facility in Clive, Utah, or other DOE-approved disposal site.

Oak Ridge Completes Field Work on Recovery Act Projects

DOE EM has finished all of the field work on the last Recovery Act-funded environmental cleanup projects. Since 2009, EM has used the $751 million in Recovery Act funds to complete 27 projects, many of which included multiple subcomponents and extensive scopes.

"This is a landmark milestone for our program locally," said Mark Whitney, former manager of the Oak Ridge Office of EM. "We are incredibly grateful for the opportunities these funds provided our program, and our management team did an excellent job of selecting meaningful projects that removed risks and created a significant impact for our region."

American Nuclear Society Honors K-25 Demolition

The American Nuclear Society has recognized the five-year, billion-dollar demolition of the World War II-era K-25 uranium enrichment facility at ETTP. The project was selected for the Project Excellence Award from the society's Decommissioning and Environmental Services Division.

The demolition work began in December 2008 by Bechtel Jacobs Co., and was completed early this year by UCOR, the current contractor managing the Oak Ridge environmental program.

The award was presented in June at the society's meeting in Reno, Nev.

EM SSAB Representatives Gather for Semiannual Meeting

The semiannual SSAB chairs' meetings provide representatives from the eight local SSABs across the DOE complex an opportunity to get updates from DOE-Headquarters on cleanup-related topics, share common issues of concern, and develop joint recommendations about those concerns.

The meetings rotate among the eight SSAB sites, and this spring the hosting duties were performed by the Hanford Advisory Board, which held the meeting on April 22-24 in Pasco, Wash.

Oak Ridge attendees included ORSSAB Chair Dave Hemelright and Vice Chair Bruce Hicks, who represented ORSSAB during most of the meeting discussions; ORSSAB members Alfreda Cook, Bob Hatcher, and Corkie Staley; and Dave Adler, ORSSAB's Alternate Deputy Designated Federal Officer.

Attending his first chairs' meeting as the EM SSAB Designated Federal Officer was Dave Borak, who replaced the recently retired Cate Brennan.

The first day of the meeting featured presentations by DOE-Headquarters EM personnel Jack Craig and Frank Marcinowski; a round table discussion focused on attracting more people to SSAB meetings; a round robin presentation of the eight SSABs' top issues, achievements, and activities; a round robin on cross-complex issues; and a discussion of potential chairs' recommendations.

Of particular significance to Oak Ridge was Frank Marcinowski's overview of recent events at the Waste Isolation Pilot Plant (WIPP) focusing on the February fire and the radiation release event a couple of weeks later.

The fire was evidently caused by engine fluids that somehow ignited from one of the salt-removal trucks.

The ORSSAB delegation, standing, (left to right) Dave Adler, DOE Oak Ridge, and ORSSAB members Corkie Staley, Alfreda Cook, and Bob Hatcher; seated (left to right) are Dave Hemelright, Chair, and Bruce Hicks, Vice Chair.

The cause of the radiation release is still undetermined despite initial forays into the mine by special teams brought in to investigate the incident. It will be months and perhaps a year before WIPP can become operational again.

Daily updates on the status of WIPP are available on the WIPP website, as is DOE's recently released WIPP Radiological Release Investigation Report.

The roundtable on public participation at SSAB meetings generated a number of ideas for the SSABs to take home to their boards, as each chair discussed outreach practices at their sites.

For example, Northern New Mexico has stepped up its Facebook presence, Nevada is experimenting with billboards, and Savannah River often holds meetings at downstream communities to bolster participation. Discussion ended with a charge that each SSAB try at least one suggestion that was made at the meeting and then report on how it went when the chairs meet again in the fall.

Two recommendations resulted from the meeting: one on budget and one written by ORSSAB's Vice Chair Bruce Hicks about capitalizing on EM successes. The recommendations must now be approved by each SSAB's membership before the local SSAB chair can sign them.

ORSSAB Chair Dave Hemelright thought one should be written on the lack of a contingency plan for funding WIPP emergencies, such as the one it faces now. The decision was made, though, to wait until the chairs see the remedial action plan that results from the investigation and then discuss it at the fall chairs' meeting. That meeting will be hosted by the Idaho National Laboratory Citizens Advisory Board in September.

Snapshot in History

March–June 1943

Design changes are made to the Y-12 electromagnetic process as estimates for fissionable material bomb requirements increase by a factor of three. The Oak Ridge electromagnetic complex of Alpha and Beta facilities doubles in size.

In June, preparation begins on a 5,000 acre site for the K-25 Power Plant, which would become the world's largest steam electric generating plant.

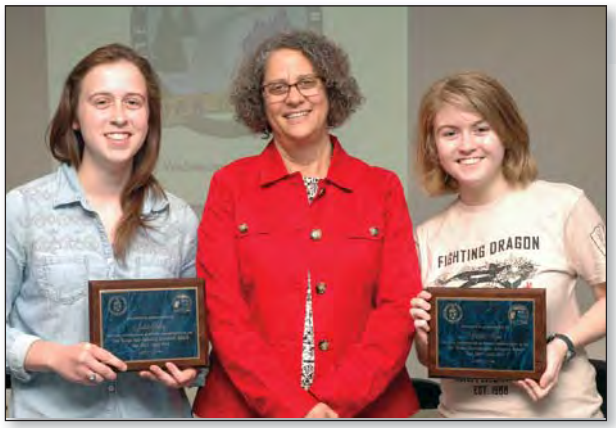
ORSSAB and DOE Say Farewell to Outgoing Student Representatives...

ORSSAB and DOE offered best wishes to outgoing student representatives Gracie Hall and Julia Riley at the April board meeting.

"We appreciate the insight the student representatives provide during their tenure on the ORSSAB," said Susan Cange, acting manager for the DOE Oak Ridge EM Program and the board's Deputy Designated Federal Officer. "We are thankful to them for dedicating time during their busy senior year of high school to help provide valuable input in support of environmental cleanup in Oak Ridge."

Gracie graduated from Oak Ridge High School in May. She will attend the University of Tennessee Knoxville this fall in the honors program.

Julia graduated from Hardin Valley Academy in May. She will attend Clemson University this fall in the honors program as well.



Susan Cange, DOE, presented plaques to outgoing ORSSAB student representatives Julia Riley, left, and Gracie Hall.

and Welcome New Students in May

Aditya Chourey and Claire Rowcliffe are the ORSSAB student representatives for FY 2014-15.

Aditya Chourey, from Oak Ridge High School, and Claire Rowcliffe, Hardin Valley Academy will serve as the board's student representatives through April 2015.

Aditya serves as treasurer of the International Relations Club/Model United Nations, and he leads the Oak Ridge High School chess club. He also serves as a school representative for the Oak Ridge Environmental Quality Advisory Board.

Claire is the captain of her school's swim team, and she is a mentor in the HVA Talons, a group of students that mentor incoming 8th graders. She is a member of the National Honor Society and is involved with Project U, a club that stands against bullying.

"I welcome you to the board," said ORSSAB Chair Dave Hemelright as Aditya and Claire were introduced at the May meeting. "I hope you have as rewarding experience as so many of our previous students have."

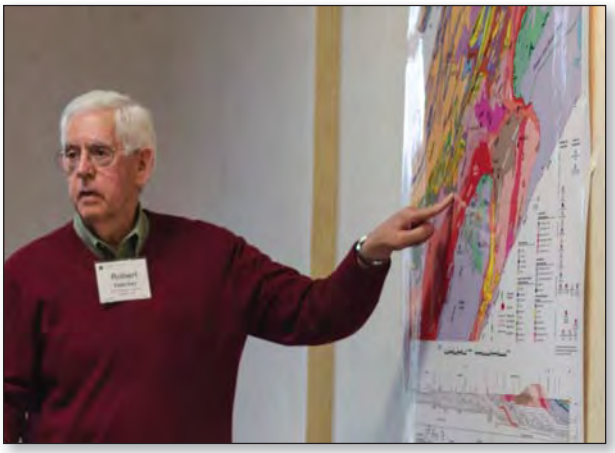
ORSSAB Member Bob Hatcher Honored for Achievements

ORSSAB member Bob Hatcher, Distinguished Scientist at the University of Tennessee, Knoxville, has been awarded the 2014 Marcus Milling Legendary Geoscientist Medal. The award makes him the only recipient of the three most prestigious medals in his field. He is also the recipient of the American Geosciences Institute's 2006 Ian Campbell Medal and the Geological Society of America's (GSA) 2006 Penrose Medal.

The Milling award from the American Geosciences Institute is presented to a geoscientist who has demonstrated a long history of scientific achievement and exceptional service to the geoscience profession.

The award, presented in April, came just a few days after the conclusion of a GSA Penrose Conference held in Asheville, N.C., named in honor of Bob's achievements: "Linkages and Feedbacks in Orogenic Processes: A Conference Honoring the Career of Robert D. Hatcher Jr."

The award comes less than six months after the Robert D. Hatcher Endowment and Award Fund was established by his colleagues and former students.



ORSSAB member Bob Hatcher explains a point related to a geologic map during the welcoming reception of a recent GSA conference named in his honor in Asheville, N.C.

Board Member Mary Smalling Reports on Environmental Justice and Training Conference

In March I attended the Environmental Justice and Training Conference in Washington, D.C. to learn more about environmental justice from different agencies, communities and educational institutions.

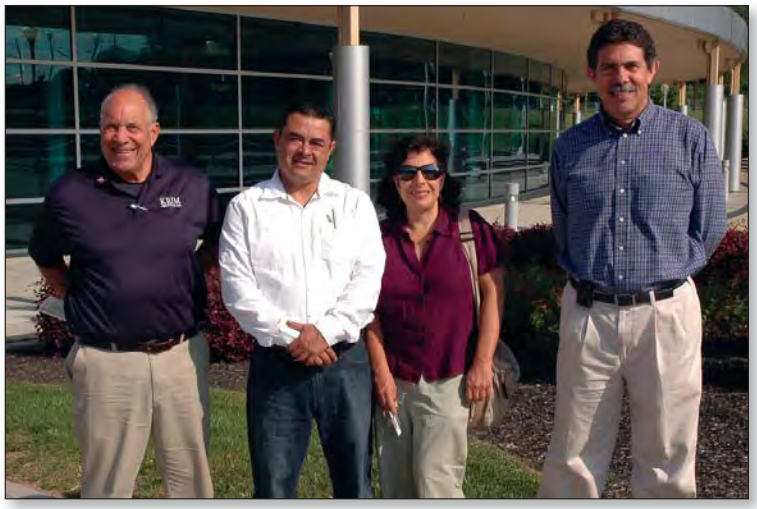
Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

The presentations that stood out the most to me were on safe water in Los Angeles County where there is a direct correlation between ethnicity and race and substandard drinking water. The poorest neighborhoods had the highest concentrations of pollutants such as arsenic, and many unregulated chemicals include the rocket fuel component perchlorate, the weed killer metolachlor, the refrigerant Freon, and radon, a highly radioactive gas.

Another presentation dealt with an oil spill from the Pegasus pipeline. The Pegasus pipeline runs 850 miles through several states. On March 29, 2013, 5,000 to 7,000 gallons of crude oil leaked out of the line in a spill in Arkansas that affected at least 22 homes, storm drains, and possibly reached a nearby lake. Not only did the spill affect water and land quality, it affected air quality as well. Testing at the contamination site revealed no contamination to land or humans according to Exxon, but it is believed by some that the results are erroneous because the safe level standards are set too high.

Some recommendations that I found to be important would be a multi-agency independent task force to investigate suspected contaminated sites and more transparency from government and companies by assessing damage through independent agencies.

I also found information on why public outreach is important in communities that can improve relationships by educating the public across language barriers and ethnicity. Providing support services that could help single parents attend meetings and scheduling informational meetings at different times to accommodate different shifts would also allow better public awareness and involvement.



ORSSAB hosted two members of the Northern New Mexico Citizens' Advisory Board in May. Shown above are NNM CAB Chair Carlos Valdez and CAB member Nona Girardi, center, with ORSSAB Chair Dave Hemelright, left, and Dave Adler, ORSSAB's Alternate Deputy Designated Federal Officer, prior to a tour of the ORR. They also attended the board's May meeting.

Clarification

In the April edition of the *Advocate,* a column on the 2014 Waste Management Symposia stated that a panel discussion on the DOE Office of Legacy Management (LM) was relevant to Oak Ridge because when environmental cleanup is completed LM would be responsible for long-term stewardship (LTS).

While it is true that LM has responsibility for LTS for sites that no longer have operations and are closed, Oak Ridge will have ongoing missions at Y-12 and Oak Ridge National Lab when remediation work is completed by the DOE Office of EM. At that time, LTS will be the responsibility of the Landlord Program Secretarial Office for the National Nuclear Security Administration at Y-12 and the Office of Science for the remainder of the Oak Ridge Reservation (ORR).

In 2011 ORSSAB recommended that DOE EM develop a fact sheet explaining the process for transferring sites from EM's responsibility, including stewardship requirements, upon completion of remediation to the DOE programs with ongoing missions.

DOE accepted the recommendation and developed the Site Transition Process upon Completion of the Cleanup Mission: Fact Sheet. The fact sheet is available online. For quick access type 'Site Transition upon Completion of the Cleanup Mission: Fact Sheet' into an internet browser.

Recent Recommendations

Complete text of the following recommendations can be found on the ORSSAB website at energy.gov/orssab.

Recommendation on Additional Off-site Groundwater Migration Studies

A series of groundwater strategy workshops was held during 2013 to build consensus around a path forward for managing groundwater challenges on the ORR.

The workshops included representatives of DOE, EPA, TDEC, and an independent observer from the U.S. Geological Survey, who acted as a technical advisor for ORSSAB.

In September 2013, a groundwater strategy document for the ORR was issued. After reviewing the report and hearing a summary from the independent advisor, ORSSAB recommended that DOE conduct additional groundwater studies to address potential off-site migration of chemical species and radioisotopes. The board hopes the result will be a better understanding of potential impact on groundwater contamination and related mitigation of risks, groundwater remediation, and long-term stewardship.

Recommendations on Additional Waste Disposal Capacity on the ORR

In formal presentations made to ORSSAB in January and February, DOE identified the need for additional contaminated waste disposal capacity on the ORR. Disposal capacity in the existing Environmental Management Waste Management Facility is predicted to be exhausted by 2023.

Development of a new disposal area, named the Environmental Management Disposal Facility (EMDF), has been proposed to EPA and TDEC, and a remedial investigation/feasibility study has been compiled to "develop, screen, and evaluate alternatives for waste disposal, including off-site disposal options.

Based on information provided by DOE that identified the need for additional waste disposal, ORSSAB made a number of recommendations to DOE:

- Continue planning for additional on-site disposal capacity for low-level radioactive and chemically hazardous contaminated waste, and continue ongoing efforts to minimize the need for additional on-site capacity;
- Ensure that the proposed new disposal facility will have sufficient capacity to accept future generated waste from DOE activities through cleanup of the ORR;
- Ensure the proposed disposal facility is engineered to operate safely and block migration of contaminants into adjacent groundwater, soil, and air;
- Locate the proposed facility in proximity to existing waste burial grounds, if technically feasible, such that contaminated areas are consolidated on the ORR;
- Ensure that a trust fund for long-term stewardship is established for any new disposal facility.

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 ORR. 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.

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

Advocate
Oak Ridge Site Specific Advisory Board
July 2014

Mercury Strategy

be approved by Congress. The money appropriated cannot be used for anything else. If approved, construction would begin in 2017 and the facility would begin operation in 2020. Wilkerson cautioned that the schedule is based on funding assumptions that may not be realized depending on what Congress appropriates.

Other near-term actions are planned that could help mitigate mercury challenges. One is the elimination of flow augmentation of UEFPC. Beginning in 1996, 4.6 million gallons of water per day were diverted to the creek to increase flow, but that has exacerbated the problem because it re-suspends mercury in the sediment.

Oak Ridge National Lab is conducting field and laboratory studies in EFPC to document mercury trends in fish and how mercury uptake in fish becomes methyl mercury, the most hazardous form of mercury to humans.

ORNL is also studying mercury sources in Lower EFPC through bank erosion studies and sediment characterization. Bioaccumulation studies of mercury in spiders in the creek's floodplain are being conducted.

DOE proposes building a mercury treatment facility at Outfall 200 at Y-12, the headwaters of Upper East Fork Poplar Creek.

Proposed near-term studies include establishment of a field research center; consideration of ecological enhancement of the creeks and water chemistry manipulation; sediment stabilization or removal in Upper and Lower EFPC.

The long-term mercury remediation strategy includes demolition of the four mercury process buildings; remediation of the soil underneath the buildings; and remediation of the sediments in UEFPC and Lake Reality on the east end of Y-12.

Location of the four buildings could present some challenges. "The buildings are in the protected area of Y-12," said Wilkerson. "We're working with Y-12 and the National Nuclear Security Administration to get at least a couple of them outside of the protected area. If that can't be done that complicates the cleanup process and increases costs."

The long-term goals of the strategy are several years away and even longer in duration. The timeline Wilkerson presented showed demolition beginning in 2020 and continuing to about 2040.

Oak Ridge Site Specific Advisory Board
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ABBREVIATIONS

DOE — Department of Energy
EM — Environmental Management
EPA — Environmental Protection Agency
ORR — Oak Ridge Reservation
ORSSAB — Oak Ridge Site Specific Advisory Board
TDEC — Tennessee Department of Environment and Conservation
Y-12 — Y-12 National Security Complex

UPCOMING MEETINGS

All meetings are held at the DOE Information Center, 1 Science.gov Way, Oak Ridge, Tenn.

ORSSAB annual planning meeting
August 16, 8 a.m.

ORSSAB Board meeting
September 10, 6 p.m.

Committee Meetings
EM & Stewardship — July 16, 6 p.m., topic:
Update on Legacy Waste Disposition on the ORR.

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