Oak Ridge Site Specific Advisory Board

New Member Orientation

What is ORSSAB?

ORSSAB is a volunteer citizens panel that provides independent advice and recommendations to the U.S. Department of Energy's Oak Ridge Environmental Management (EM) Program.

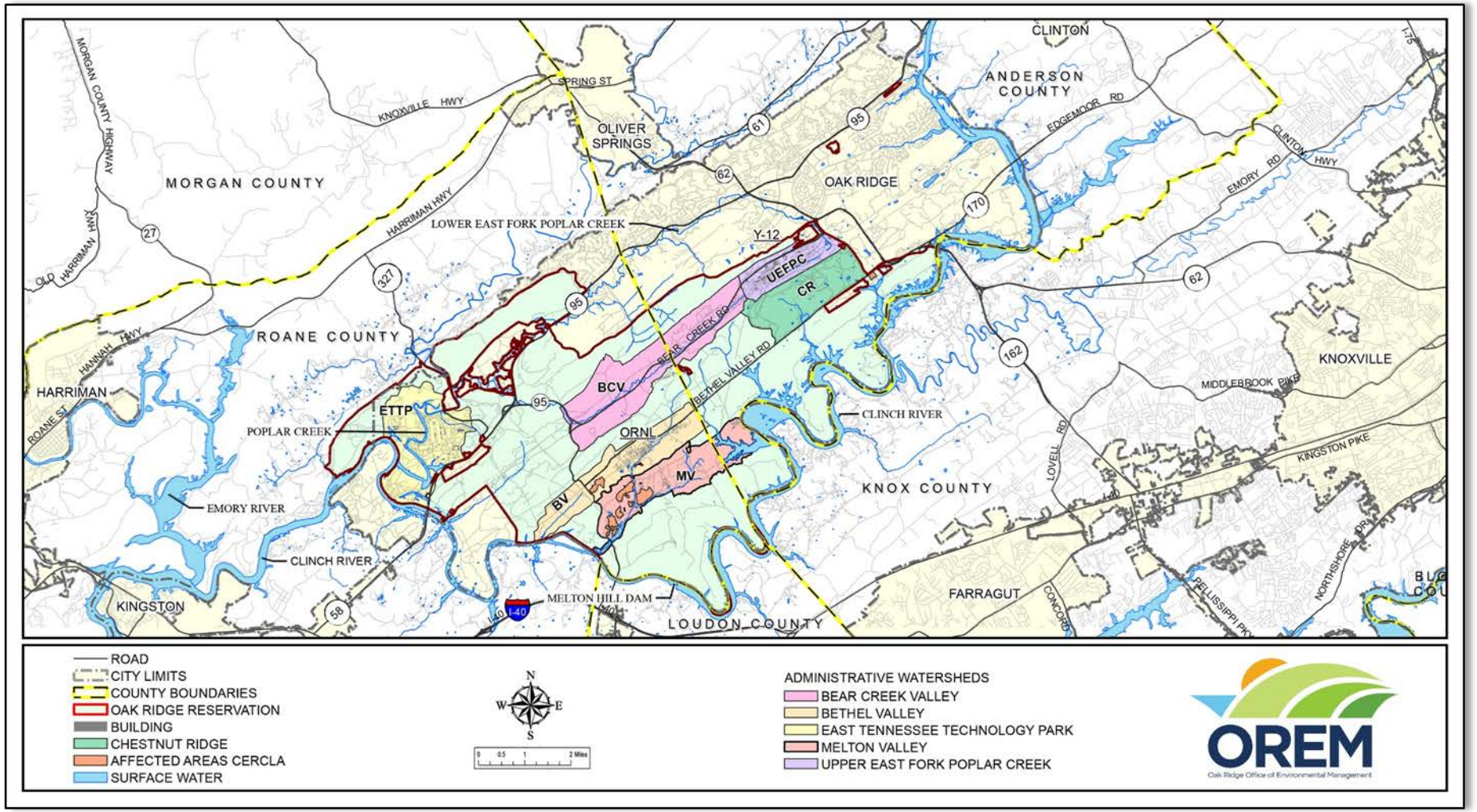
The EM Program is responsible for cleaning up areas of the Oak Ridge Reservation that have been contaminated with radioactive or hazardous waste.

Mission

The mission of the Oak Ridge SSAB is to provide informed advice and recommendations concerning site specific issues related to the DOE Environmental Management Program at the Oak Ridge Reservation.

In order to provide unbiased evaluation and recommendations on the cleanup efforts related to the Oak Ridge site, the Board seeks opportunities for input through collaborative dialogue with the communities surrounding the Oak Ridge Reservation, governmental regulators, and other stakeholders.

Oak Ridge Reservation



ORSSAB is Part of the National EMSSAB

The Eight Local Boards

Each SSAB has its own bylaws and work plan. They meet to discuss common issues during the semiannual chairs meetings.

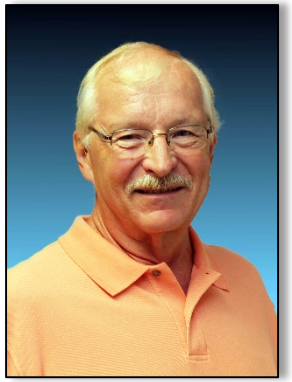
Membership

ORSSAB can have up to 22 members, selected to reflect a diversity of interests, gender, race, and other criteria

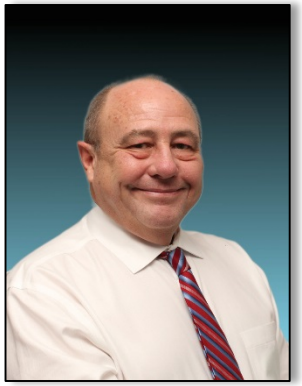
FY 2017 Oak Ridge Site Specific Advisory Board

Officers

Belinda Price
Vice Chair



Dennis Wilson
Chair



Richard Burroughs
Secretary

Fred Swindler
EM/Stewardship
Committee Chair

Liaisons

Jay Mullis
DDFO

Dave Adler
Alternate DDFO

Melyssa Noe
Alternate DDFO

Connie Jones
EPA Liaison

Kristof Czartoryski
TDEC Liaison

Staff

Shelley Kimel

- General direction for SSAB support office
- Executive Committee support
- HQ coordination
- Membership
- Travel
- Special events (chairs meetings, SSAB annual meeting)

Sara McManamy-Johnson

- Monthly board meetings & notebooks
- EM/Stewardship Committee support
- Publications & website
- News & correspondence files
- Student representatives
- Tours

How Recommendations Are Made

- The board can make recommendations whenever desired, and DOE can also request a recommendation
- Recommendations are usually the result of a presentation to the board about a cleanup project
- Writing a recommendation is usually done by an issue group: volunteers interested in the topic who start drafting the recommendation based on discussion at the EM/Stewardship Committee level

How Recommendations Are Made

- The draft recommendation is reviewed by the committee, where revisions may be made
- The recommendation goes to the Executive Committee for review and is then presented to the board for approval
- If it is approved and sent to DOE, DOE can either accept the recommendation or decline
- The response is reviewed by the EM/Stewardship Committee to determine if the response is adequate or if follow-up is needed

The Work Plan

The board meets annually to select topics to address in the coming year

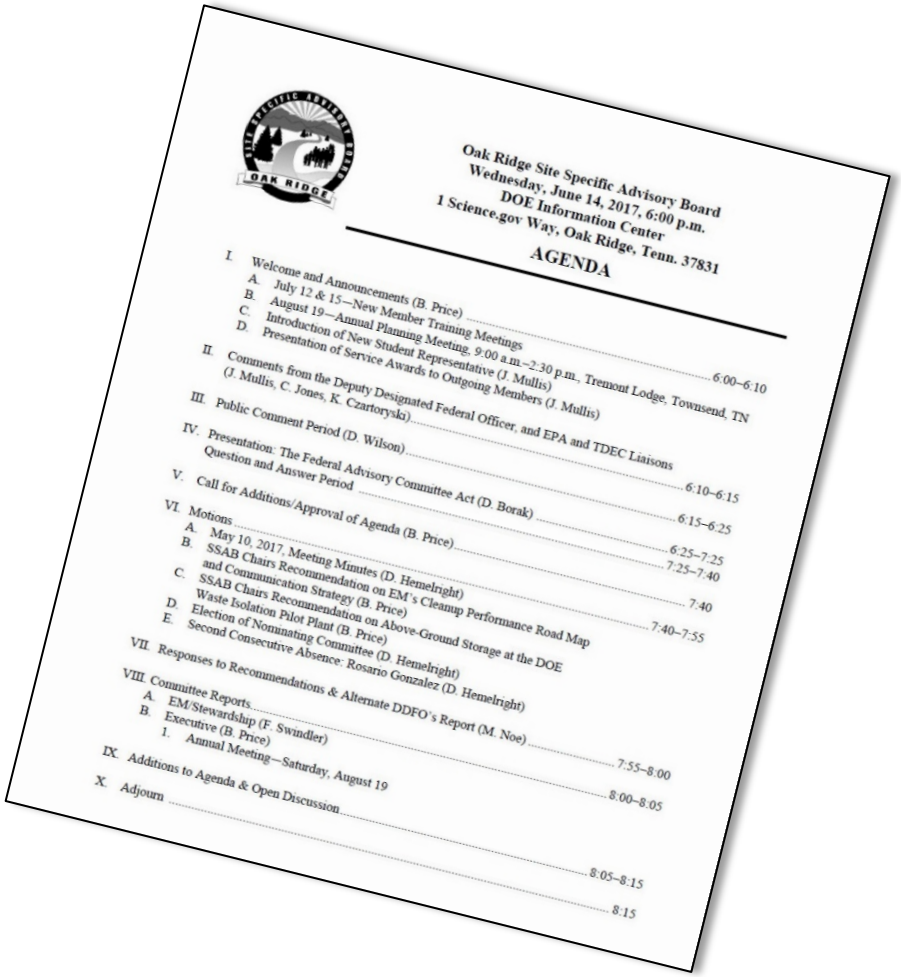
Monthly Meetings

Board meeting

- 2nd Wednesday, 6 p.m.
- Notebook materials
- Agenda
- Name tent

Committee meeting

- 4th Wednesday, 6 p.m.
- Agenda
- Name tent



Oak Ridge Site Specific Advisory Board
Wednesday, June 14, 2017, 6:00 p.m.
DOE Information Center
1 Science.gov Way, Oak Ridge, Tenn. 37831

AGENDA

I. Welcome and Announcements (B. Price) 6:00–6:10
A. July 12 & 15—New Member Training Meetings
B. August 19—Annual Planning Meeting, 9:00 a.m.–2:30 p.m., Tremont Lodge, Townsend, TN
C. Introduction of New Student Representative (J. Mullis)
D. Presentation of Service Awards to Outgoing Members (J. Mullis)

II. Comments from the Deputy Designated Federal Officer, and EPA and TDEC Liaisons (J. Mullis, C. Jones, K. Czartoryski) 6:10–6:15

III. Public Comment Period (D. Wilson) 6:15–6:25

IV. Presentation: The Federal Advisory Committee Act (D. Borak) 6:25–7:25
Question and Answer Period 7:25–7:40

V. Call for Additions/Approval of Agenda (B. Price) 7:40

VI. Motions 7:40–7:55
A. May 10, 2017, Meeting Minutes (D. Hemelright)
B. SSAB Chairs Recommendation on EM's Cleanup Performance Road Map and Communication Strategy (B. Price)
C. SSAB Chairs Recommendation on Above-Ground Storage at the DOE Waste Isolation Pilot Plant (B. Price)
D. Election of Nominating Committee (D. Hemelright)
E. Second Consecutive Absence: Rosario Gonzalez (D. Hemelright)

VII. Responses to Recommendations & Alternate DDFO's Report (M. Noe) 7:55–8:00

VIII. Committee Reports 8:00–8:05
A. EM/Stewardship (F. Swindler)
B. Executive (B. Price)
1. Annual Meeting—Saturday, August 19

IX. Additions to Agenda & Open Discussion 8:05–8:15

X. Adjourn 8:15

Member Responsibilities

- Attendance at monthly board and committee meetings
  - Ask questions
- Take advantage of tours, training sessions, and workshops
  - Tours on a topic are generally scheduled between the board and EM & Stewardship Committee meetings
- Standards of conduct
  - Ethics / Conflicts of interest

Member Responsibilities

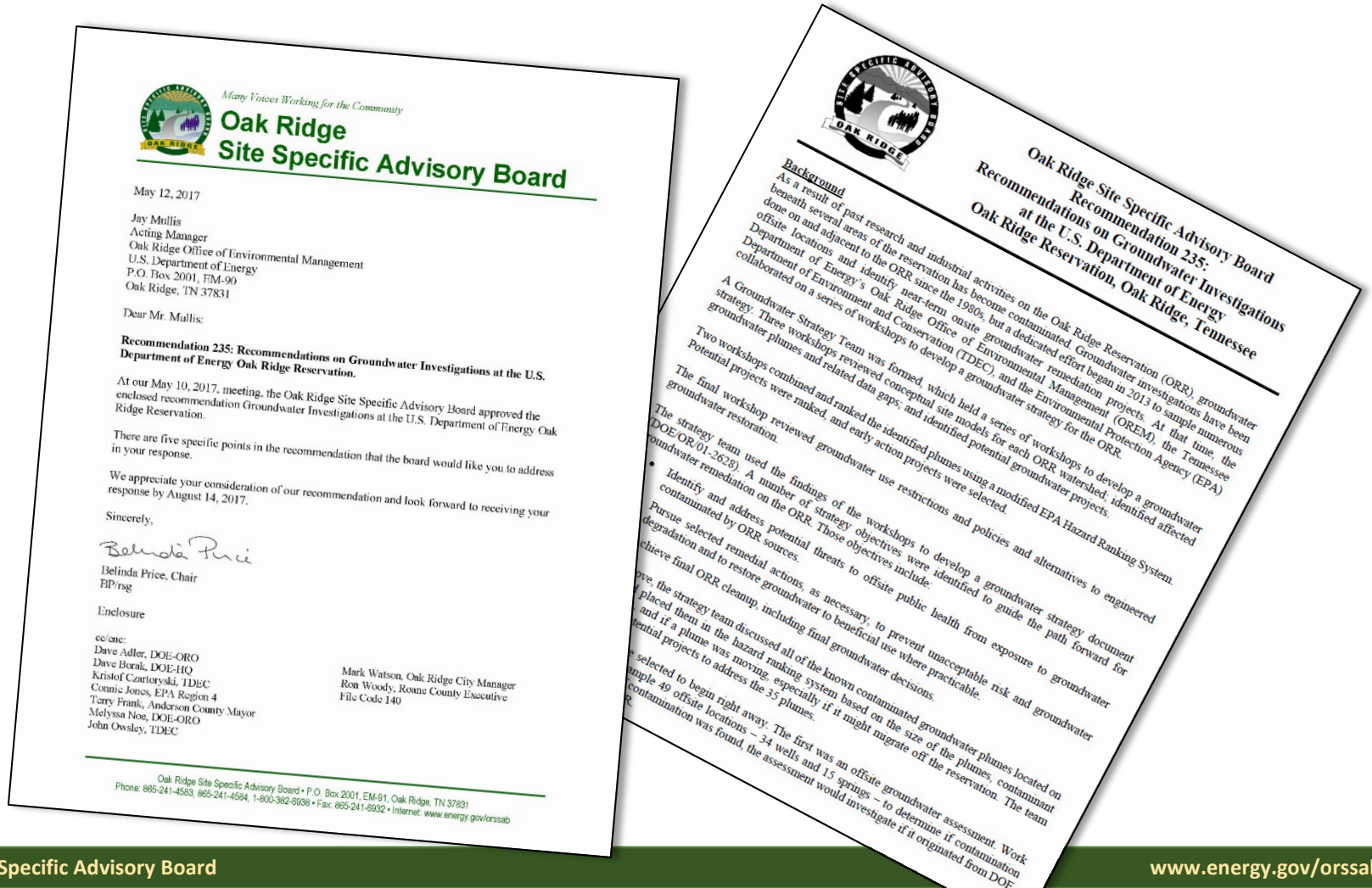
1. Attend meetings and participate fully in the affairs of the board.
2. Serve on the EM/Stewardship Committee.
3. Review materials and help with recommendations.
4. Be available for committee work between meetings.
5. Work collaboratively and respectfully with other members and liaisons.
6. Accurately represent all matters before the board.
7. Handle information and materials in a responsible manner.
8. Share any written/emailed communication about or for board activities with the board and the DDFO.
9. Abide by the terms and conditions of the SSAB Charter and Bylaws.

Training & Travel

- Tour
- Informal mentoring
- Orientation manual
- Travel

How ORSSAB Makes a Difference

More than 230 recommendations to DOE



Many Voices Working for the Community

Oak Ridge Site Specific Advisory Board

May 12, 2017

Jay Mullis
Acting Manager
Oak Ridge Office of Environmental Management
U.S. Department of Energy
P.O. Box 2001, EM-90
Oak Ridge, TN 37831

Dear Mr. Mullis:

Recommendation 235: Recommendations on Groundwater Investigations at the U.S. Department of Energy Oak Ridge Reservation.

At our May 10, 2017, meeting, the Oak Ridge Site Specific Advisory Board approved the enclosed recommendation Groundwater Investigations at the U.S. Department of Energy Oak Ridge Reservation.

There are five specific points in the recommendation that the board would like you to address in your response.

We appreciate your consideration of our recommendation and look forward to receiving your response by August 14, 2017.

Sincerely,

Belinda Price

Belinda Price, Chair
BP/rsg

Enclosure

cc/enc:
Dave Adler, DOE-ORO
Dave Borak, DOE-HQ
Kristof Czartoryski, TDEC
Connie Jones, EPA Region 4
Terry Frank, Anderson County Mayor
Melyssa Noe, DOE-ORO
John Owsley, TDEC
Mark Watson, Oak Ridge City Manager
Ron Woody, Roane County Executive
File Code 140

Oak Ridge Site Specific Advisory Board • P.O. Box 2001, EM-91, Oak Ridge, TN 37831
Phone: 865-241-4583, 865-241-4584, 1-800-382-6938 • Fax: 865-241-6932 • Internet: www.energy.gov/orssab

Oak Ridge Site Specific Advisory Board Recommendation 235: Recommendations on Groundwater Investigations at the U.S. Department of Energy Oak Ridge Reservation, Oak Ridge, Tennessee

Background

As a result of past research and industrial activities on the Oak Ridge Reservation (ORR), groundwater beneath several areas of the reservation has become contaminated. Groundwater investigations have been done on and adjacent to the ORR since the 1980s, but a dedicated effort began in 2013 to sample numerous offsite locations and identify near-term onsite groundwater remediation projects. At that time, the Department of Energy's Oak Ridge Office of Environmental Management (OREM), the Tennessee Department of Environment and Conservation (TDEC), and the Environmental Protection Agency (EPA) collaborated on a series of workshops to develop a groundwater strategy for the ORR.

A Groundwater Strategy Team was formed, which held a series of workshops to develop a groundwater strategy. Three workshops reviewed conceptual site models for each ORR watershed, identified affected groundwater plumes and related data gaps, and identified potential groundwater projects.

Two workshops combined and ranked the identified plumes using a modified EPA Hazard Ranking System. Potential projects were ranked, and early action projects were selected.

The final workshop reviewed groundwater use restrictions and policies and alternatives to engineered groundwater restoration.

The strategy team used the findings of the workshops to develop a groundwater strategy document (DOE/OR/01-2628). A number of strategy objectives were identified to guide the path forward for groundwater remediation on the ORR. Those objectives include:

- Identify and address potential threats to offsite public health from exposure to groundwater contaminated by ORR sources.
- Pursue selected remedial actions, as necessary, to prevent unacceptable risk and groundwater degradation and to restore groundwater to beneficial use where practicable.
- Achieve final ORR cleanup, including final groundwater decisions.

To achieve, the strategy team discussed all of the known contaminated groundwater plumes located on the ORR and placed them in the hazard ranking system based on the size of the plumes, contaminant concentrations, and if a plume was moving, especially if it might migrate off the reservation. The team identified potential projects to address the 35 plumes.

Projects were selected to begin right away. The first was an offsite groundwater assessment. Work would sample 49 offsite locations – 34 wells and 15 springs – to determine if contamination from the ORR was found, the assessment would investigate if it originated from DOE

How ORSSAB Makes a Difference

Community Outreach

PRINT:
- Monthly meeting newspaper ads
- News releases
- Brochure
- FAQ handout
- Quarterly newsletter
- Annual report

ELECTRONIC:
- ORNL, Y-12, ETTP website posts
- Emails to media, elected officials
- ORSSAB website
- Social media

BROADCAST:
- Cable TV
- Infomercials

OTHER:
- Booth at area events
- Outreach presentations

Questions?

Progress and History of the Environmental Management Program and How the Oak Ridge SSAB has Influenced the Program

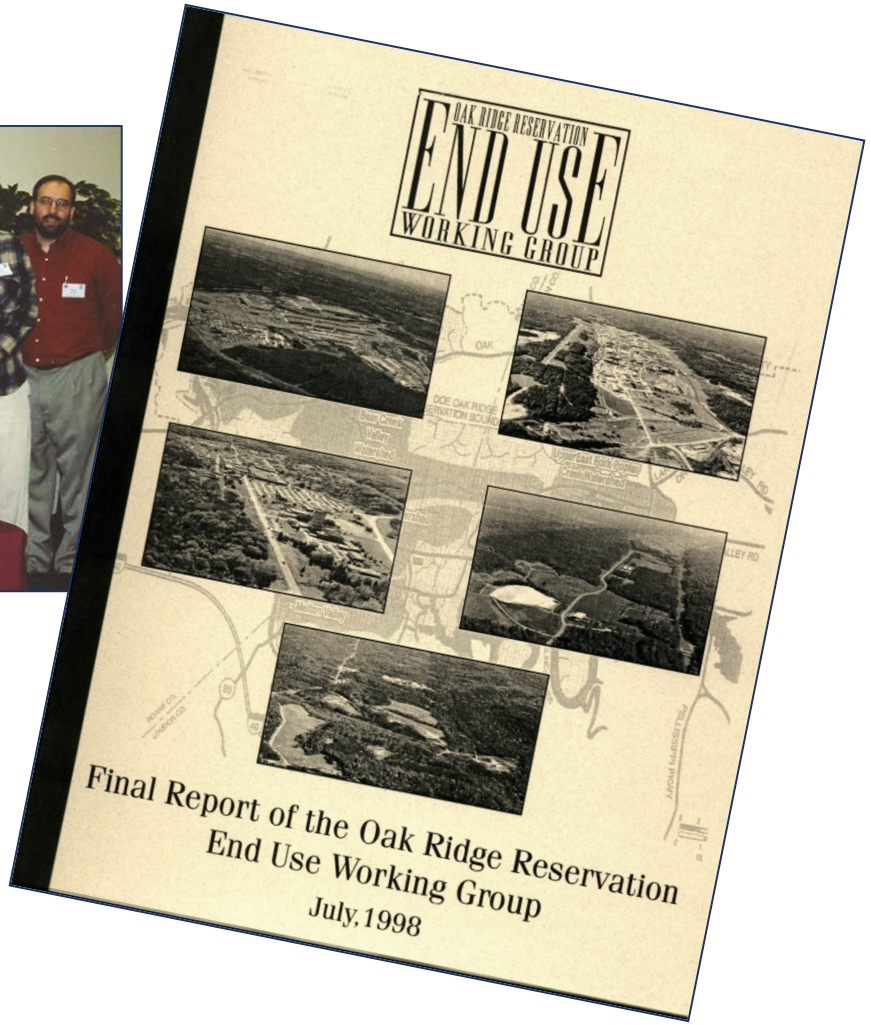
Dave Adler
July 2018

Oak Ridge SSAB History

1995: Oak Ridge SSAB established

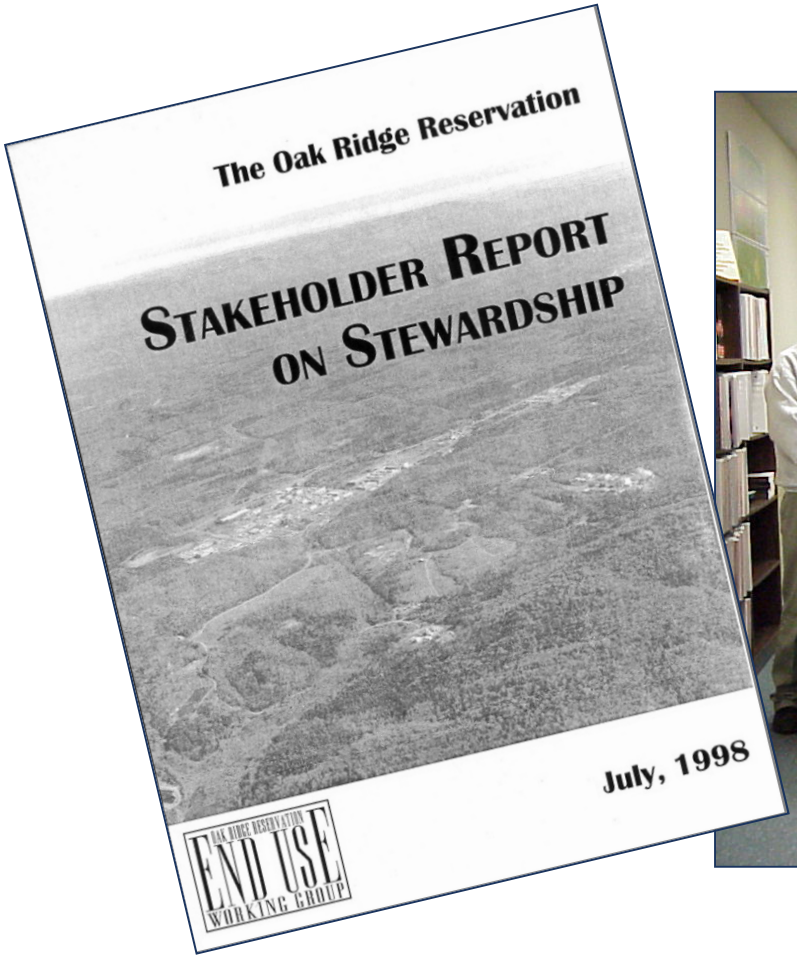
Oak Ridge SSAB History

1997: End Use Working Group is formed



Oak Ridge SSAB History

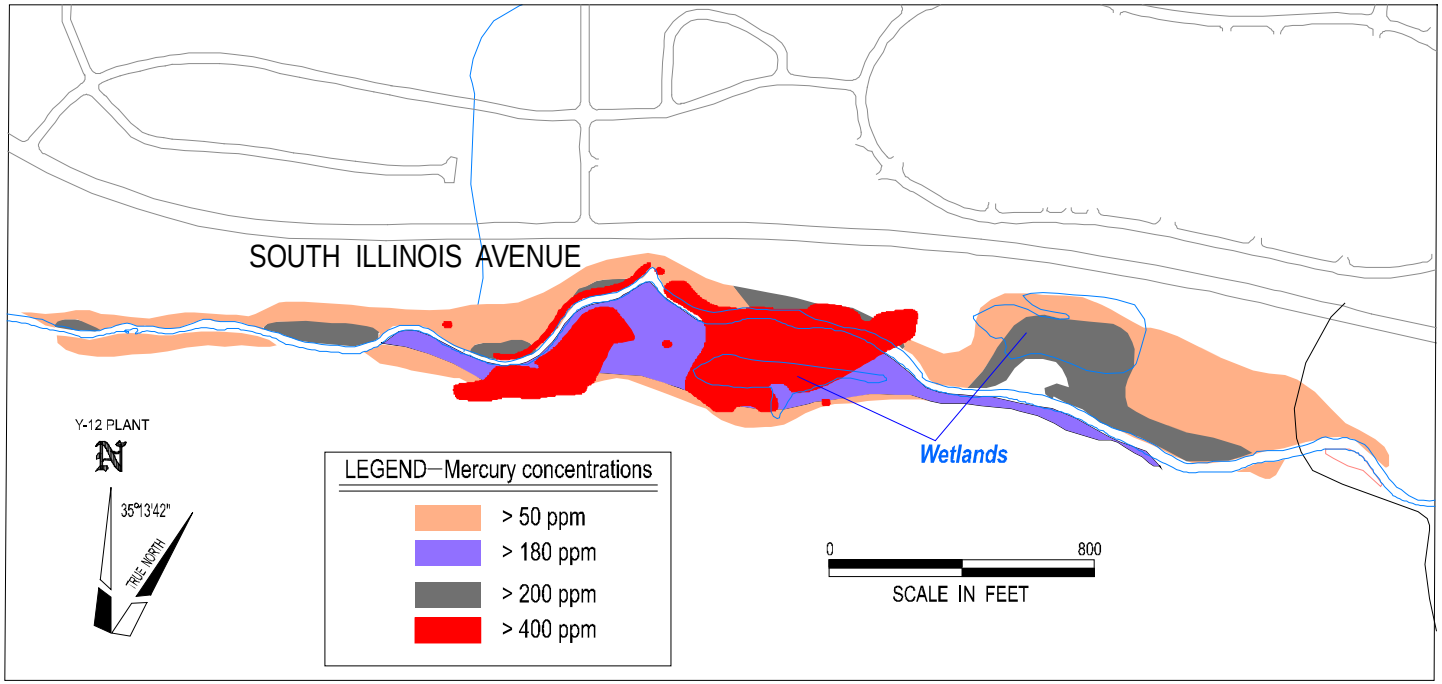
1997: Stewardship Working Group is formed



EM Progress to Date

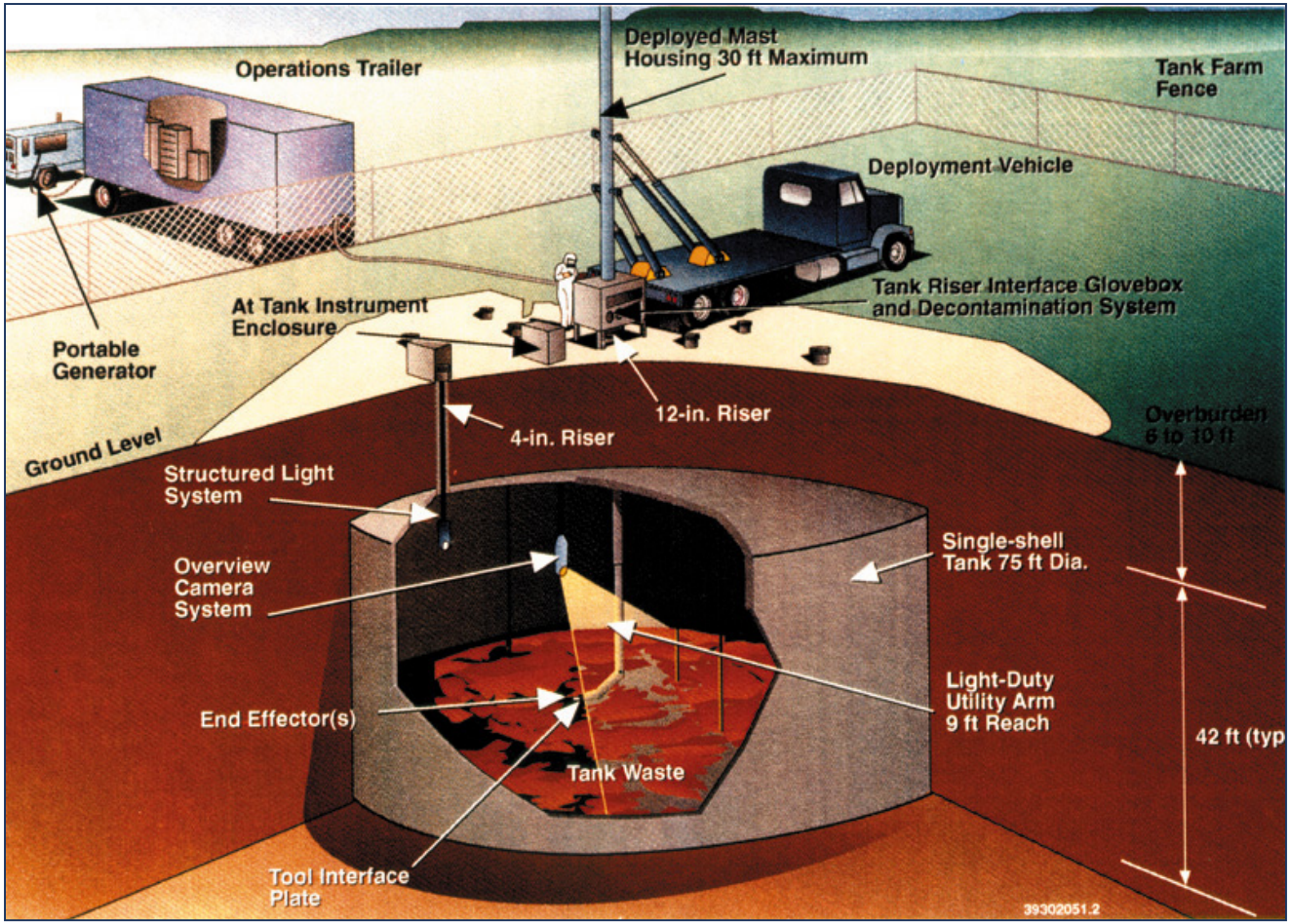
EM Progress to Date

1997: Remediation of Lower East Fork Poplar Creek completed



EM Progress to Date

2000: Gunite Tanks completed



EM Progress to Date

2002: Disposal begins at the EM Waste Management Facility

EM Progress to Date

2004: Processing and packaging begins at the Transuranic Waste Processing Center

EM Progress to Date

2006: Melton Valley remediation completed near ORNL

EM Progress to Date

2006: Last of 6,000 depleted uranium hexafluoride cylinders shipped

EM Progress to Date

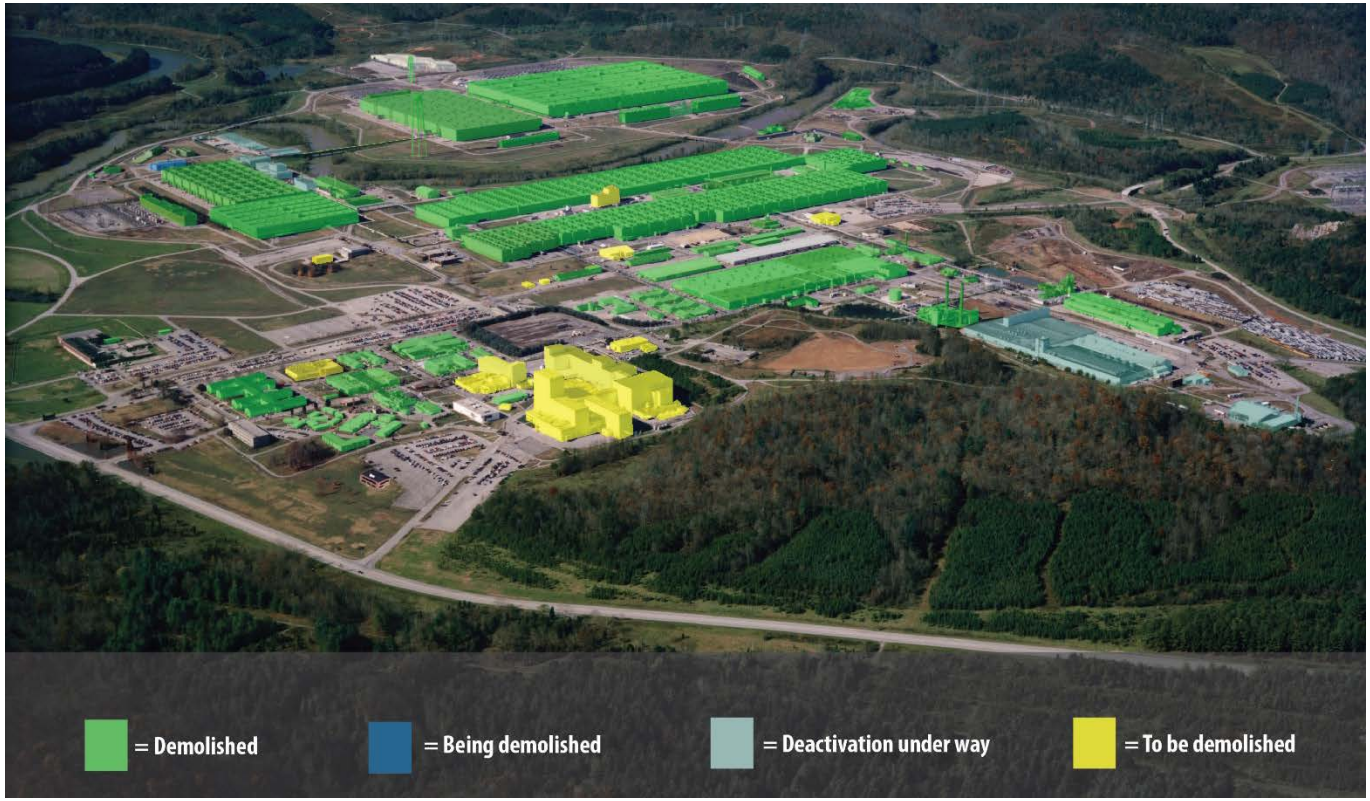
2006: EM's private Haul Road opens, diverting thousands of waste shipments off public highways

EM Progress to Date

2016: Congress provides funding to address risks at Y-12 and ORNL excess contaminated facilities

EM Progress to Date

2016: EM completes removal of all former gaseous diffusion uranium enrichment buildings at the East Tennessee Technology Park



EM Progress to Date

2017: U-233 Direct Disposition Campaign completed

EM Progress to Date

2017: EM breaks ground on the Y-12 Mercury Treatment Facility

SSAB Influence on EM

- Over 230 recommendations since 1995

- ORSSAB recommendations have an effect on every aspect of the EM program:
  - Budget, waste management, oral history, stewardship, remedy selection/implementation
  - 10 recommendations on EM Waste Management Facility
  - 20 recommendations on Melton Valley cleanup
  - 43 recommendations on long-term stewardship

SSAB Influence on EM

- Every major record of decision developed under EM has had heavy SSAB involvement
- None of the final RODs have been at odds with majority SSAB opinions
- End Use and Stewardship Working Groups, ORSSAB recommendations have ongoing influence

SSAB Influence on EM

- DOE, EPA, and the State are very interested in the SSAB's opinions and factor them into their decision-making as a matter of course
- ORSSAB provides DOE and the regulators with a forum for understanding stakeholder perspectives

Y-12 National Security Complex

NOTES:

The Y-12 Plant (now known as the Y-12 National Security Complex [Y-12]) began as a uranium enrichment facility during World War II. Wastes were buried in many areas around the plant, and thousands of pounds of mercury were released into the environment from 1950 to 1982 during the production of radioactive materials used in hydrogen bombs.

Today the plant is used primarily for disassembly of nuclear weapons and storage of uranium. It is also the site for a CERCLA Waste Management Facility (known as the Environmental Management Waste Management Facility [EMWMF]), which is being used for disposal of much of DOE's environmental cleanup program wastes.

Y-12 comprises approximately 800 acres and is only 400 yards from the nearest Oak Ridge resident. The site is operated by Consolidated Nuclear Security.

High-priority risk-reduction actions at Y-12 are directed initially to mitigate mercury migration into surface water. Future actions at Y-12 include demolition of process buildings and other unnecessary Manhattan Project and Cold War facilities, remediation of Chestnut Ridge, completion of soil remediation at the Y-12 complex, and completion of remediation at Bear Creek Valley, including the Bear Creek Burial Grounds.

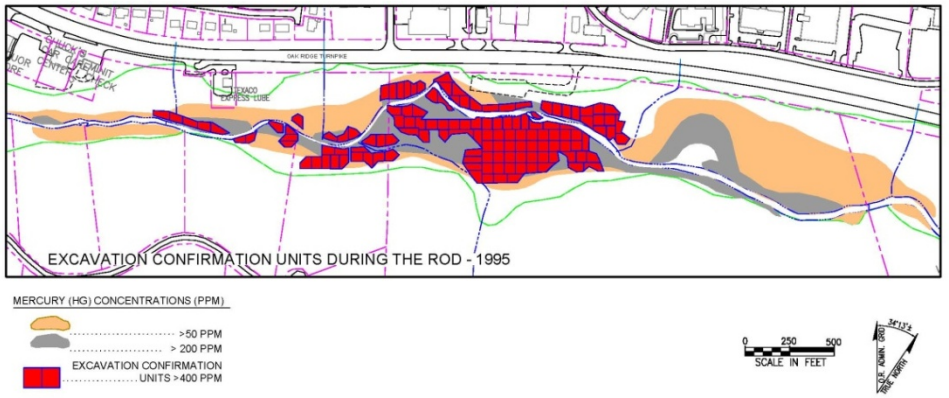
Lower East Fork Poplar Creek

NOTES:

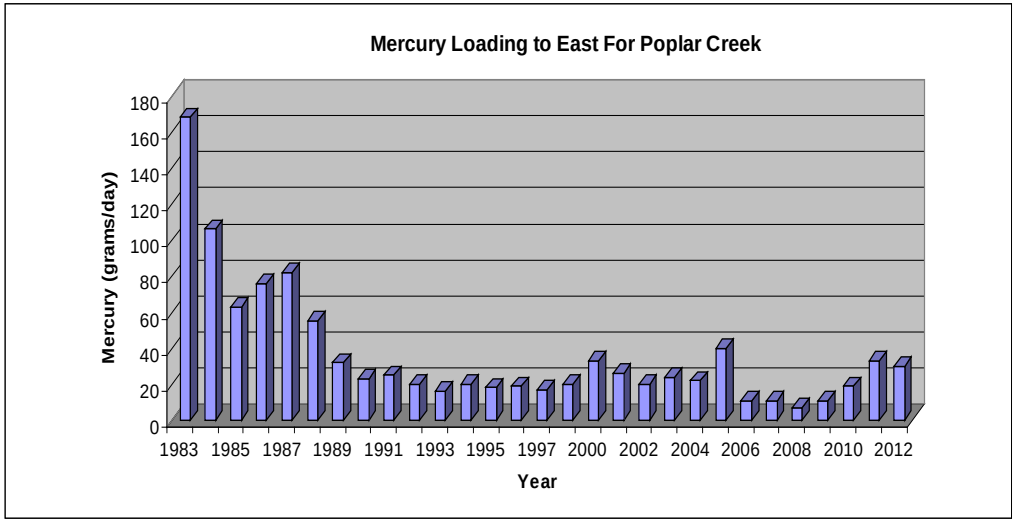
The Lower East Fork Poplar Creek flows through the residential and business portions of the City of Oak Ridge. The creek is downstream of Y-12 and the flood plains became contaminated with mercury and other contaminant releases that occurred from the 1950s to 1982.

The remedial investigation and proposed plan for the area identified two primary areas of the floodplain that required excavation. A third area currently covered by asphalt will be dealt with later.

An assessment process to define a 400-ppm mercury cleanup level for the floodplain soils was proposed and supported by the public. The remedial action was accomplished in 1997. A final alternative for the creek surface waters and creek bed sediments will be decided after completion of the UEFPC soils remediation and mercury mitigation activities.



Mercury release to Lower East Fork Poplar Creek (grams/day)



Upper East Fork Poplar Creek

NOTES:

An estimated 700,000 pounds of mercury were either lost into the environment or were otherwise unaccounted for at Y-12 during production of materials used in nuclear weapons from 1950 to 1982. Thousands of pounds of mercury found its way to UEFPC. Mercury levels in the creek have been reduced significantly, but still exceed Clean Water Act established levels. Mercury remaining in the soils, sediments, and surface water is still a concern, especially in contributing to the buildup of mercury in fish and aquatic life.

Treatment alternatives were evaluated giving consideration to their ability to capture and treat the anticipated volume and meet regulatory goals. Construction of the Outfall 200 Mercury Treatment Facility with a capacity to capture and treat up to 3,000 gallons of water per minute from UEFPC was part of the resolution.

During fiscal year (FY) 2006, the Environmental Protection Agency (EPA) and the State of Tennessee provided comments on the draft Record of Decision (ROD) for Phase 2 interim remedial actions for accessible soil, buried waste, or subsurface structures that contribute significantly to contamination above acceptable risk levels in UEFPC. The Phase 2 ROD was finalized and approved by all parties in April 2006.

Outfall 200 Mercury Treatment Facility

NOTES:

The Oak Ridge Office of Environmental Management (OREM) will construct the OF200 Mercury Treatment Facility (MTF) to reduce mercury discharges from the Y-12 National Security Complex (Y-12) into East Fork Poplar Creek (EFPC). Construction and operation of the OF200 MTF is a CERCLA Interim Action.

A ROD Amendment establishing specific design parameters for the OF200 MTF was approved May 2016. These design parameters include a treatment capacity of 3,000 gpm, a stormwater capture rate of 40,000 gpm, and 2 million gallons of stormwater storage capacity.

The Final Design was completed July 2017. The MTF design includes a headworks facility located immediately downstream of OF200 and a treatment plant located near the east end of Y-12.

The "Headworks" component of the Outfall 200 Mercury Treatment Facility

The headworks will capture, store, and pump stormwater to the treatment plant via a pipeline. The treatment plant will remove mercury from the stormwater and discharge treated water into EFPC.

The treatment train includes grit removal at the headworks, flow equalization, pH adjustment, chlorine removal, chemical flocculation and precipitation, media filtration, sludge thickening, and sludge dewatering at the treatment plant.

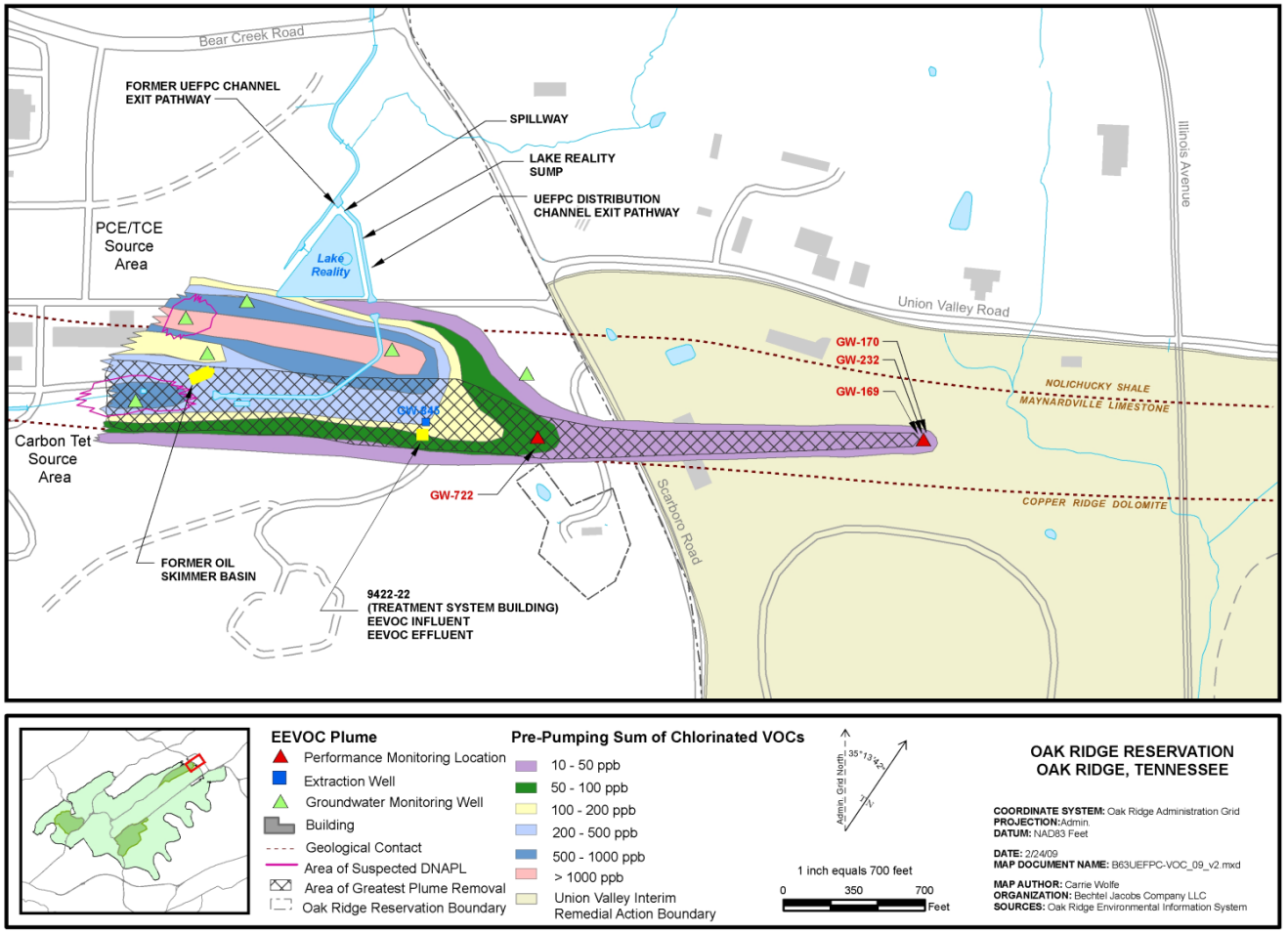
Construction of the OF200 MTF is planned to begin December 2017 with the initiation of early site preparation activities.

The "Treatment Plant" component of the OF200 MTF

East End Volatile Organic Compound (VOC) Plume

The scope of this project is to mitigate the migration of the VOC groundwater plume beyond the Y-12 boundary to reduce risk to offsite groundwater. The plume extends from the east end of Y-12 to a spring approximately 2,400 feet east of the Oak Ridge Reservation boundary. This VOC plume has been greatly reduced in size, and a groundwater use restriction through the Union Valley ROD has been placed on the private industrial lands east of the Y-12 site.

NOTES:



Biology Complex

NOTES:

A major step toward changing the Y-12 skyline and reducing worker risk was the demolition of the four buildings that comprised a significant portion of the former Biology Complex.

The project eliminated 135,812 square feet of deteriorated buildings and was the largest of the three Y-12 demolition projects funded by ARRA.

The first buildings in the complex were built to expand Y-12's uranium enrichment process during World War II. They were later used for a variety of biological research projects.

Most notable was the mouse genetics program that made significant contributions in the areas of obesity, diabetes, radiation, and other human health issues.

The "Mouse House"

Bricks falling off the walls made demolition imperative

Demolition of the four buildings was completed in May 2010 at a cost of $26.5 million in Recovery Act funds. The remaining buildings will be maintained until funding is available to complete the work.

Alpha 5 and Beta 4 Legacy Material Disposition

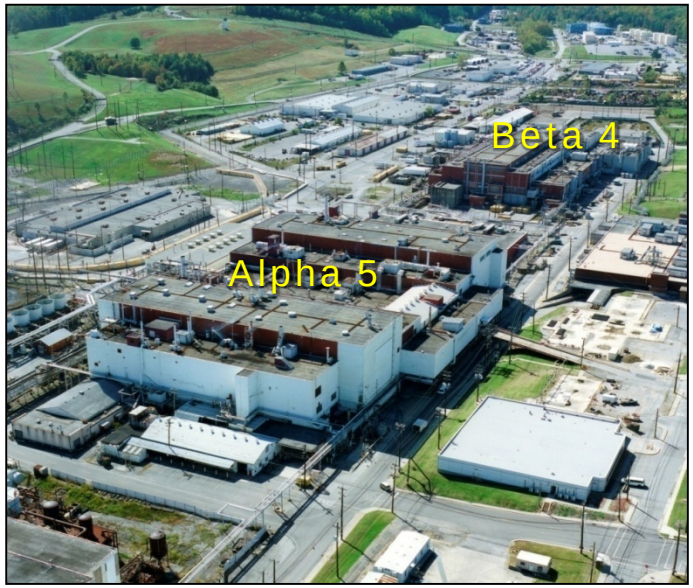
NOTES:

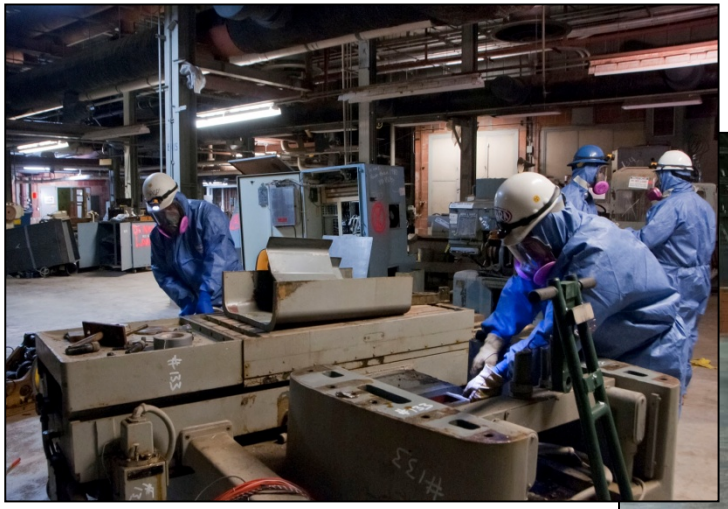
Alpha 5 and Beta 4 date to the 1940s and have been used recently for storing legacy material from past plant operations.

Recovery Act funding was used to clear 3,438 cubic meters of material from Beta 4.

In Alpha 5,613,000 square feet of floor space was cleared of legacy materials.

The total cost for both projects was $122 million.





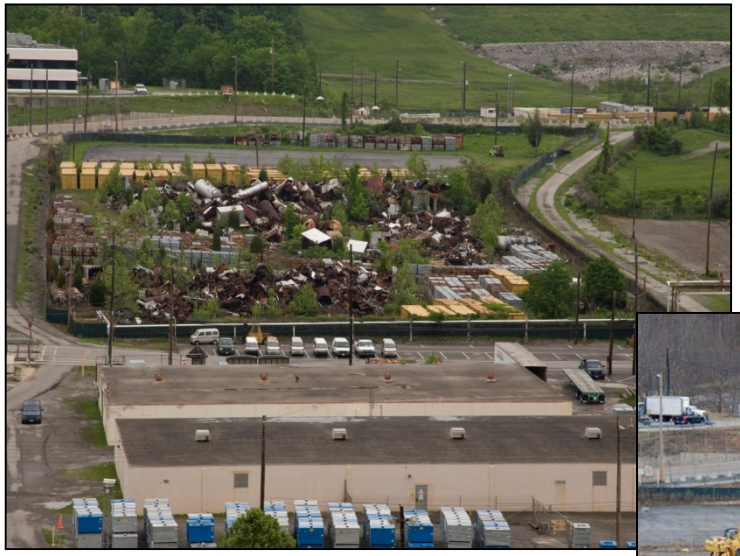
Cleaning out the interior of Alpha 5

Interior of Alpha 5 after cleanout

Y-12 Salvage Yard

Scrap removal in the Old Salvage Yard at Y-12 began in 2010 and was completed in 2011. Approximately 31,000 cubic yards of radioactively contaminated scrap metal, 1,087 containers of radioactive scrap, and several large pieces of machinery were removed from the site.

NOTES:



Y-12 Salvage Yard at the beginning of the project

Scrap removal allowed access to subsurface soil and a remedial action was taken to remove contaminated soil that could contribute to groundwater contamination.

The excavated soil from the salvage yard was characterized and about 988 cubic yards of contaminated soil and miscellaneous debris were disposed at the EMWMF in Bear Creek Valley.

Y-12 Salvage Yard as cleanup neared completion

Building 9735

NOTES:

On February 8, 2010, four months ahead of schedule, Building 9735 became the first of the Recovery Act-funded deactivation and demolition projects at Y-12 to be razed.

Built in 1946 as an engineering laboratory, the 15,043-square-foot building ceased operations in the mid-1990s.

The project involved complete deactivation and demolition of the building, as well as the disposition of approximately 1,911 cubic meters of material and waste to the Y-12 Sanitary and Industrial Waste Landfills and approximately 31 cubic meters to the Nevada National Security Site (NNSS).

The building had asbestos and lead but minimal radiological contamination.

The total cost was $4 million.

Alpha 4 Project

NOTES:

Alpha 4 is a 600,000 square foot transite-covered, structural steel-and-concrete facility with three floors and a sub-basement, located in the protected area of the Y-12 site.

The scope of the remediation project will be to demolish the Alpha 4 facility. Work includes eliminating classification concerns during building demolition, gathering additional building characterization data to support a well-defined scope of work for prospective bidders on the various decontamination and decommissioning (D&D) subcontracts, completing hazardous materials abatement to remove asbestos, deactivating utilities, removing equipment, and demolishing the structure.

S-3 Ponds

NOTES:

The S-3 Ponds site consisted of four unlined ponds constructed in 1951 to manage liquid waste. The ponds received various liquid wastes containing uranium and nitrates from Y-12 operations. The water was treated in 1983 and released. Coarse rock and gravel were added to the remaining sludge, and a cap was used to seal the contents. Asphalt was applied, and the area is now a parking lot. Ongoing monitoring is being performed to evaluate remaining environmental impacts.

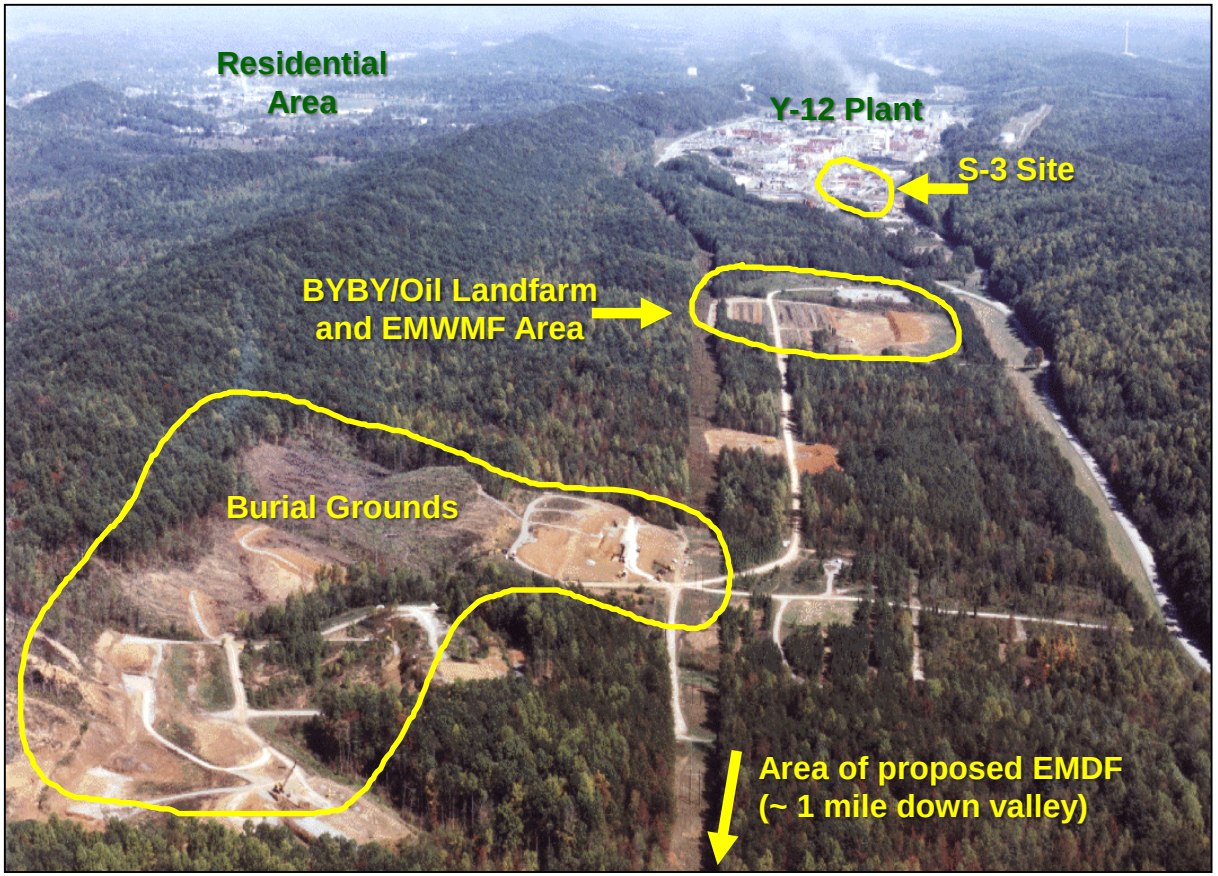
S-3 Ponds prior to remediation

A parking lot now covers the old S-3 Ponds site

Bear Creek Valley Watershed

NOTES:

Bear Creek Valley was used for disposal of uranium and associated waste from Y-12 operations. Four main disposal areas were used within the watershed. Other than the CERCLA Waste Management Facility (EMWMF), no major facilities or operations are located in Bear Creek Valley.



However, as a result of additional cleanup scope, the EMWMF is expected to be filled to its capacity of 2.2 million cubic yards in the mid-2020s.

A recent remedial investigation/feasibility study has identified an area in Central Bear Creek Valley as a potential site for a second waste disposal facility to be known as the Environmental Management Disposal Facility (EMDF).

The EMDF will be similar in size and construction to the EMWMF, and projected to hold about 2.2 million cubic yards of waste and fill material.

BYBY/Oil Landfarm Area

NOTES:

The Boneyard/Burnyard (BYBY) was one of the original (1940s) waste disposal areas in Bear Creek Valley, where uranium and other wastes were disposed in unlined trenches or burned. Approximately one million gallons of waste oils and machine coolants were disposed at Oil Landfarm between 1973 and 1982. The Sanitary Landfill was used from 1968 to 1983 for sanitary solid waste disposal.

View of the restored North Tributary 3 looking south in fall 2004

Same view as above in summer 2006

The "Phased Construction Completion Report for the Oil Landfarm Soil Containment Pad" was issued in 2001 to document actions taken to remove and dispose of all soil from the pad.

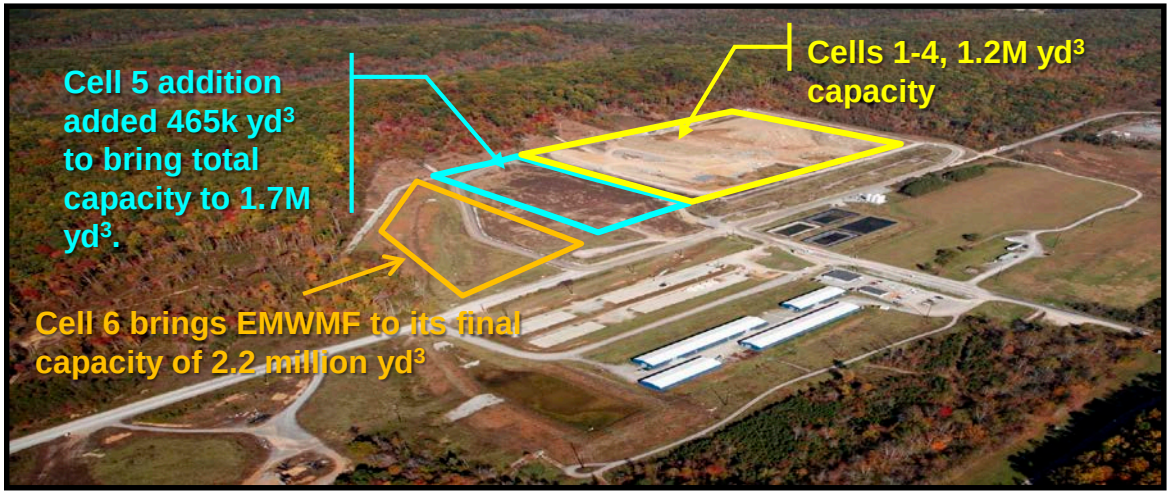
Field construction activities at BYBY began in May 2002 and were completed in FY 2004, eliminating a major source of uranium to Bear Creek. Of the 80,000 cubic yards of contaminated debris, 63,000 cubic yards were disposed in the EMWMF, and 17,000 cubic yards were capped on site. Post-construction monitoring in nearby streams has shown that this significant source of uranium has been eliminated, but that other release sites are contributing more.

CERCLA Waste Disposal Facility

aka Environmental Management Waste Management Facility (EMWMF)

NOTES:

EMWMF is an above-grade disposal facility with multiple layers of protective geotextiles and low-permeability clays above and below disposed waste to prevent contaminants from leaching into the groundwater.



EMWMF accepts low-level radioactive and hazardous wastes that meet specific waste acceptance criteria developed in accordance with EPA and state regulations. Waste types that qualify for disposal include soil, dried sludge and sediment, solidified wastes, stabilized waste, building debris, scrap equipment, and secondary waste such as personal protective equipment.

The facility consists of six disposal cells. The completion of the construction of Cell 6, funded by ARRA, brought the facility to its final capacity of 2.2 million cubic yards. That should be sufficient to handle waste disposition from work in Oak Ridge until the mid-2020s. Plans are being considered to construct a second onsite disposal facility (the EMDF, see page 17) to handle waste generated by additional cleanup activities.

Haul Road from ETTP to EMWMF

In May 2005, construction began on a haul road to transport waste generated from cleanup activities at ETTP to EMWMF without using public roadways.

Construction was finished in January 2006, at a cost of about $20 million. Over the years, the haul road will eliminate 60,000-70,000 truck trips from state Highways 58 and 95.

NOTES:

Bear Creek Valley Burial Grounds

NOTES:

The burial grounds are located approximately two miles west of Y-12 and were operated from about 1955 to 1993. Their primary use was for disposal of uranium turnings and industrial waste contaminated with uranium from nuclear weapons production.

The burial grounds comprise walk-in pits, uranium vaults, and several waste disposal units known as BCBG-A, -B, -C, -D, -E, and -J. Each disposal unit contains a series of trenches that are 14 to 25 feet deep. A concrete blanket covers the burial grounds to mitigate risk posed by shock sensitive materials that are buried there. Remediation of the burial grounds could involve hydrologically isolating the units through a system of caps and trenches. Selected portions may be treated in situ through grouting or vitrification to limit contaminant releases to groundwater.

In 2008, DOE submitted initial drafts of the "Focused Feasibility Study and Proposed Plan for Remediation of the Bear Creek Burial Grounds" to EPA and the State. This document develops and evaluates alternatives for remediation of buried waste and contaminated soils at the burial grounds, and builds upon the "Remedial Investigation and Feasibility Study for Bear Creek Valley", which was issued in 1997.