



February 24 – February 28, 2013 ♦ Phoenix, Arizona

**Portsmouth Gaseous Diffusion Plant
Decontamination & Decommissioning Project
Piketon, Ohio**

Panel Chairman – William Murphie

Presentations by:

Dr. Vincent Adams, DOE

Dennis Carr, Fluor-B&W Portsmouth

Mark Duff, LATA of Kentucky

Kent Fortenberry, B&W Conversion Services

Session No. 88



THE PANEL



William Murphie

DOE-PPPO
Manager



Vince Adams

DOE-PPPO
Portsmouth Site Director



Mark Duff

LATA of Kentucky LLC
Program Manager



Dennis Carr

Fluor-B&W Portsmouth LLC
Program Manager

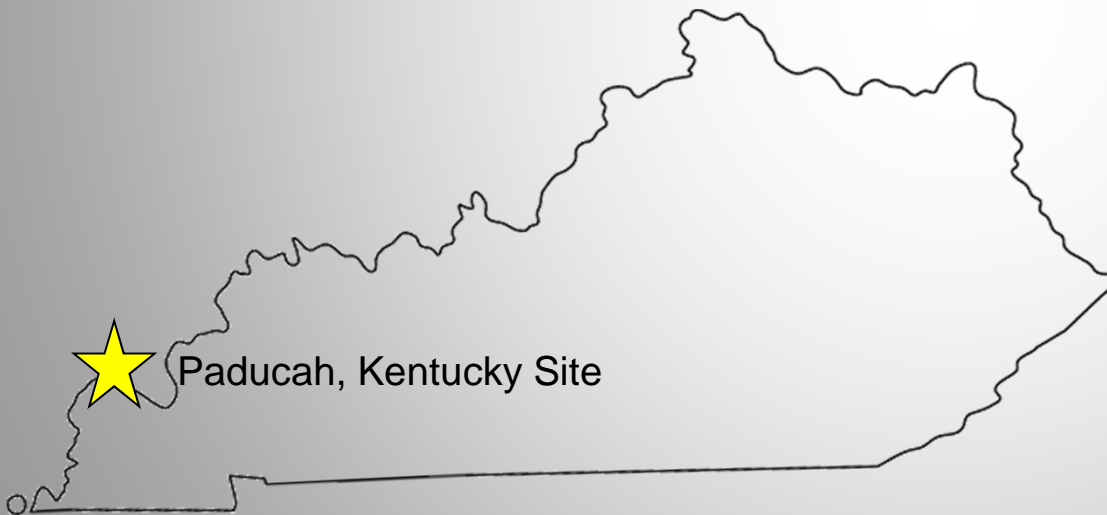


Kent Fortenberry

B&W Conversion Services LLC
Chief Engineer

*Portsmouth/Paducah
Project Office Vision:*

“Safely accelerate cleanup, ensuring protection of the public and environment, provide jobs for southern Ohio and western Kentucky, and work with the local communities to provide opportunities for economic growth.”



DOE PORTSMOUTH YEAR IN REVIEW



PRESENTED BY
VINCE ADAMS

Site Director
Portsmouth Gaseous Diffusion Plant



AMERICAN CENTRIFUGE PLANT

**DEPLETED URANIUM
HEXAFLUORIDE
CONVERSION
FACILITY**

**GASEOUS
DIFFUSION
PLANT**

Portsmouth



BACKGROUND

- Realignment from operations to D&D
 - Aligned work force to mission
 - Security posture optimization
 - Infrastructure optimization
- Regulatory documents
 - Waste Disposition
 - Process Buildings
 - Balance of Plant
- Sampling and characterization (PGE)
- Challenges to success
 - National Historic Preservation Act
 - Future site use/release criteria
 - Waste Acceptance Criteria
 - Stakeholder Partnerships
 - Maintenance and reuse of antiquated equipment
 - Funding



Older X-100 Administration Building

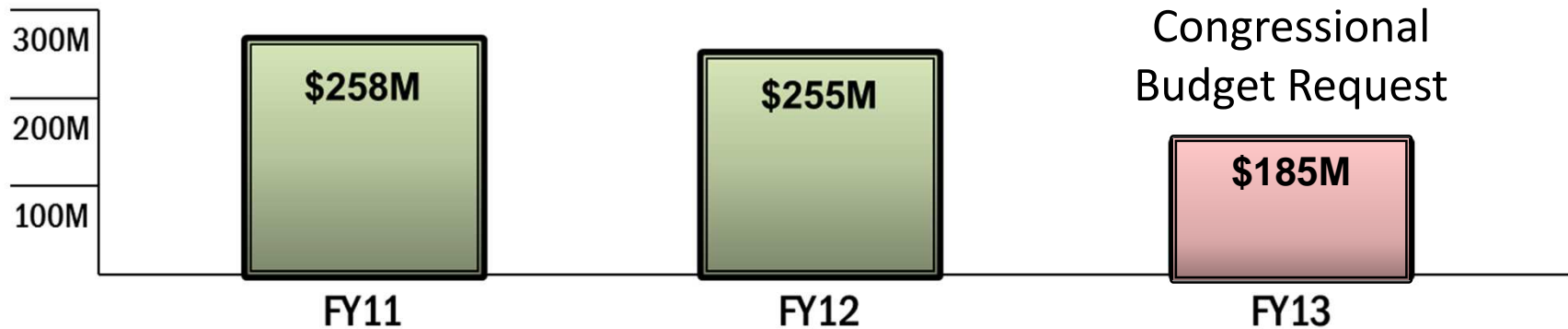


Newer X-100 Trailer Complex

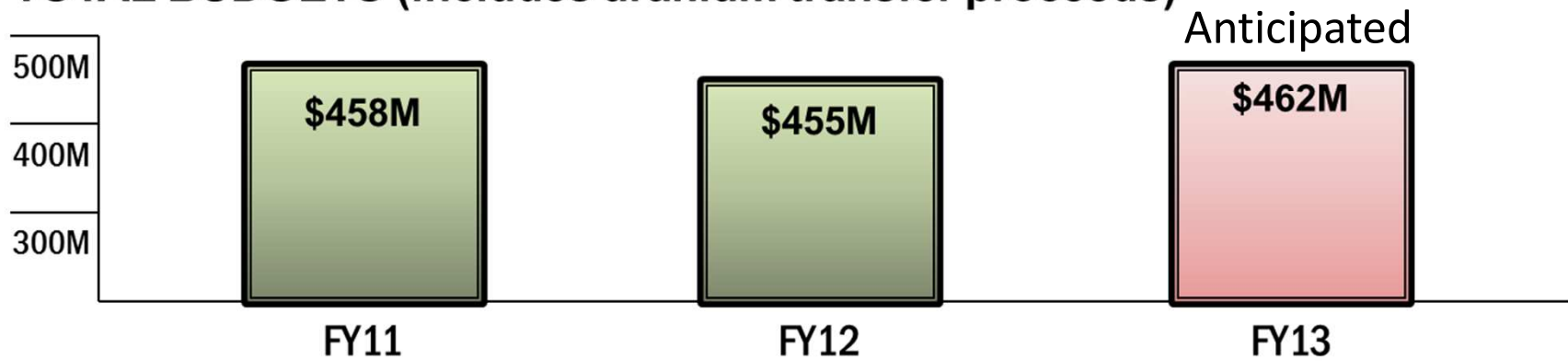


BUDGET

APPROPRIATIONS



TOTAL BUDGETS (includes uranium transfer proceeds)



URANIUM BARTER

- PAST
 - 1,600 MTU annually ~\$200M
- FY 2013
 - Allowance increased to 2,200 MTU
- FUTURE
 - Allowance increased to 2,400 MTU



URANIUM TRANSFER

- Cylinder transfer
 - On-site facilities returned to operation for material transfer
 - Thin-walled cylinders transferred to thick-walled cylinders



- Meets URENCO's NRC license
- Allows for international transport
- Eliminates shipping overpacks

DOE-SODI ASSET TRANSITION PROGRAM

- Best in Class EM Sustainability Award winner
- Generated more than \$4.4M, 300+ anticipated regional jobs
 - \$600,000 in grants to four surrounding counties, including:
 - \$150,000 to a Scioto County industrial park upgrade project
 - \$150,000 to Pike County for a \$2.7M sewer expansion project
 - \$150,000 to Jackson County for an airport upgrade project
 - \$150,000 to Ross County for an industrial park upgrade project
- Other recycling/reindustrialization accomplishments
 - Well site to Village of Piketon
 - Transferred 1.8M+ pounds of excess personal property, 100 vehicles
 - Pike County tie-in to site sewage plant
- Efforts to establish recycling/reindustrialization program
 - Sitewide EA to expedite future real property transfers
 - Suspension & Moratorium
 - Recycling IPT, Cost Benefit Analysis



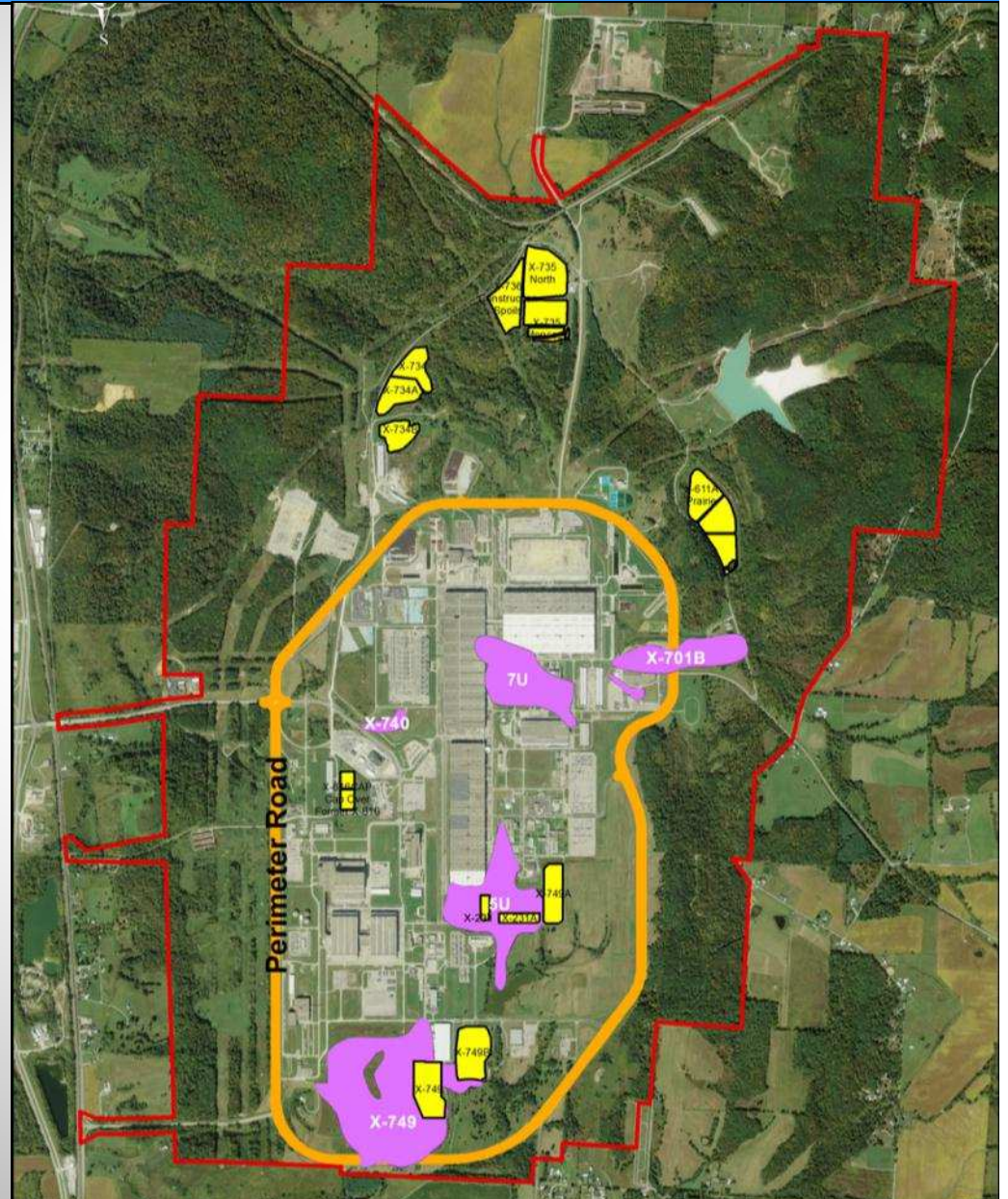
PUBLIC OUTREACH

- Improving relations with stakeholders has paid dividends
- Outreach efforts include:
 - Quarterly meetings
 - Public tours
 - Envoy Program
 - Fenceline Neighbors meetings
 - Civic involvement
 - Elected officials briefings
 - Portsmouth SSAB
 - Ohio U. grant
 - ASER high school participation
- Successes from 5% of contractor fee dedicated to region



PUBLIC OUTREACH

- Collaboration with officials on waste disposition & future land use
- Opportunity to use contaminated soils for OSDC and eliminate need for clean soil
 - Cost savings
 - Permanent solution to groundwater problem
 - Enhances site potential
 - Drives stakeholder support



Radiological Activity Inventory

FBP UF6 Cylinders
6,800 MTU (3.772%)

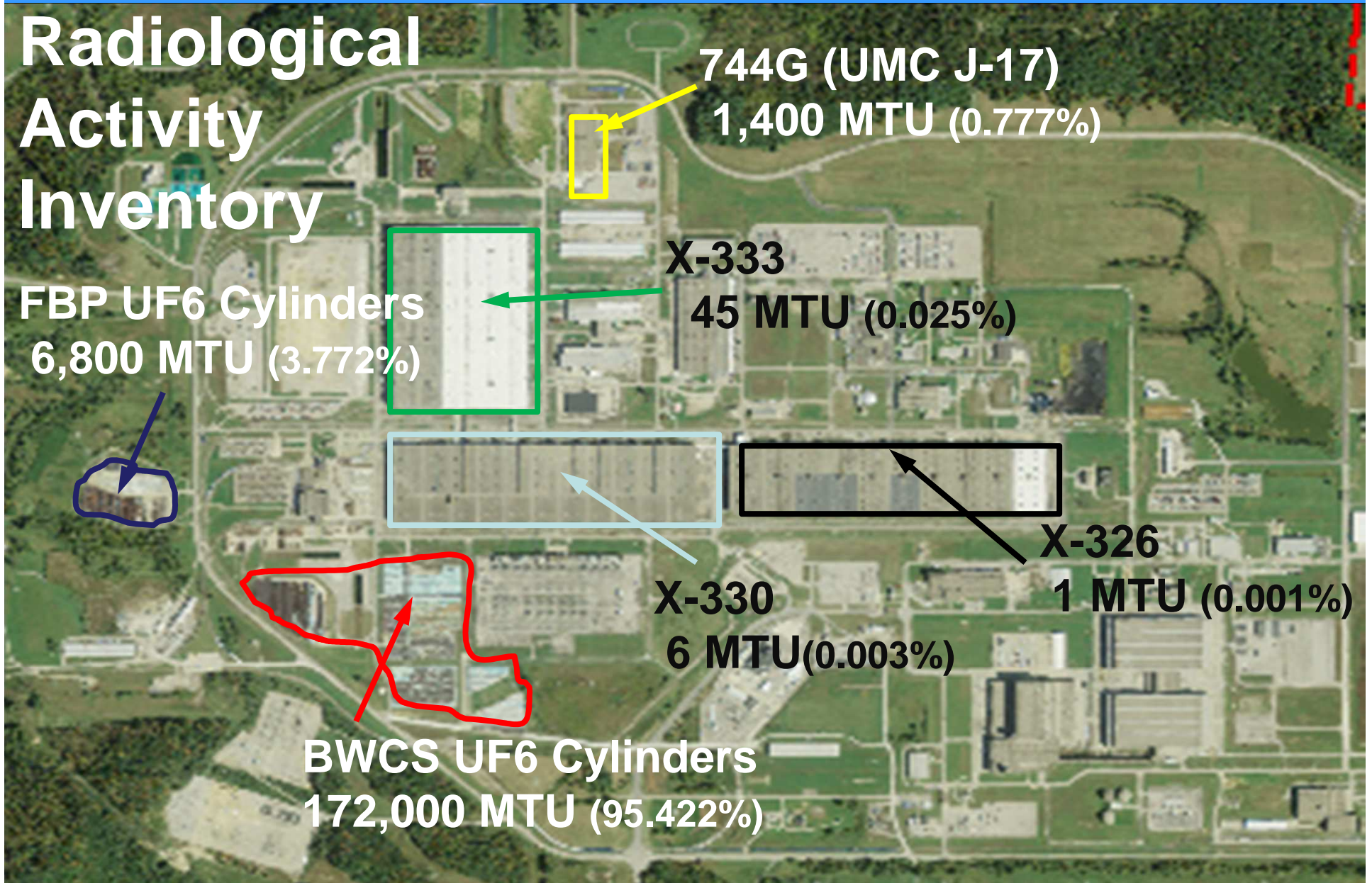
744G (UMC J-17)
1,400 MTU (0.777%)

X-333
45 MTU (0.025%)

X-326
1 MTU (0.001%)

X-330
6 MTU (0.003%)

BWCS UF6 Cylinders
172,000 MTU (95.422%)



PUBLIC OUTREACH

- Science Alliance
 - Science fair aimed at high school juniors in region
 - About 1,000 students and teachers engaged
 - Recognized with President's Award from Ohio School Boards Association
- Scholarship programs
 - 12 scholarships, \$24,000 annually
- Internships
- Regional Science Bowl



FLUOR-B&W YEAR IN REVIEW



PRESENTED BY
DENNIS CARR

Program Manager
Fluor-B&W Portsmouth LLC



SCOPE OF WORK

- Dismantling and disposal of Gaseous Diffusion Plant facilities
 - 3 large process facilities
 - Other ancillary GDP support facilities
- Clean up contaminated soil
- Ensure effective groundwater remediation
- Assess existing closed/capped landfills
- Leave site in a condition that supports community's vision



REGULATORY EFFORTS



Process Building D&D	Evaluation of Alternatives, Informational Meetings and Workshops	Proposed Plan	Public Comment Period	Record of Decision	Work Begins
Waste Disposition	Evaluation of Alternatives, Informational Meetings and Workshops	Proposed Plan	Public Comment Period	Record of Decision	Work Begins
RCRA Soil Decision	Implement Ongoing Corrective Measures (already in place from previous decisions)			Evaluation of Alternatives	

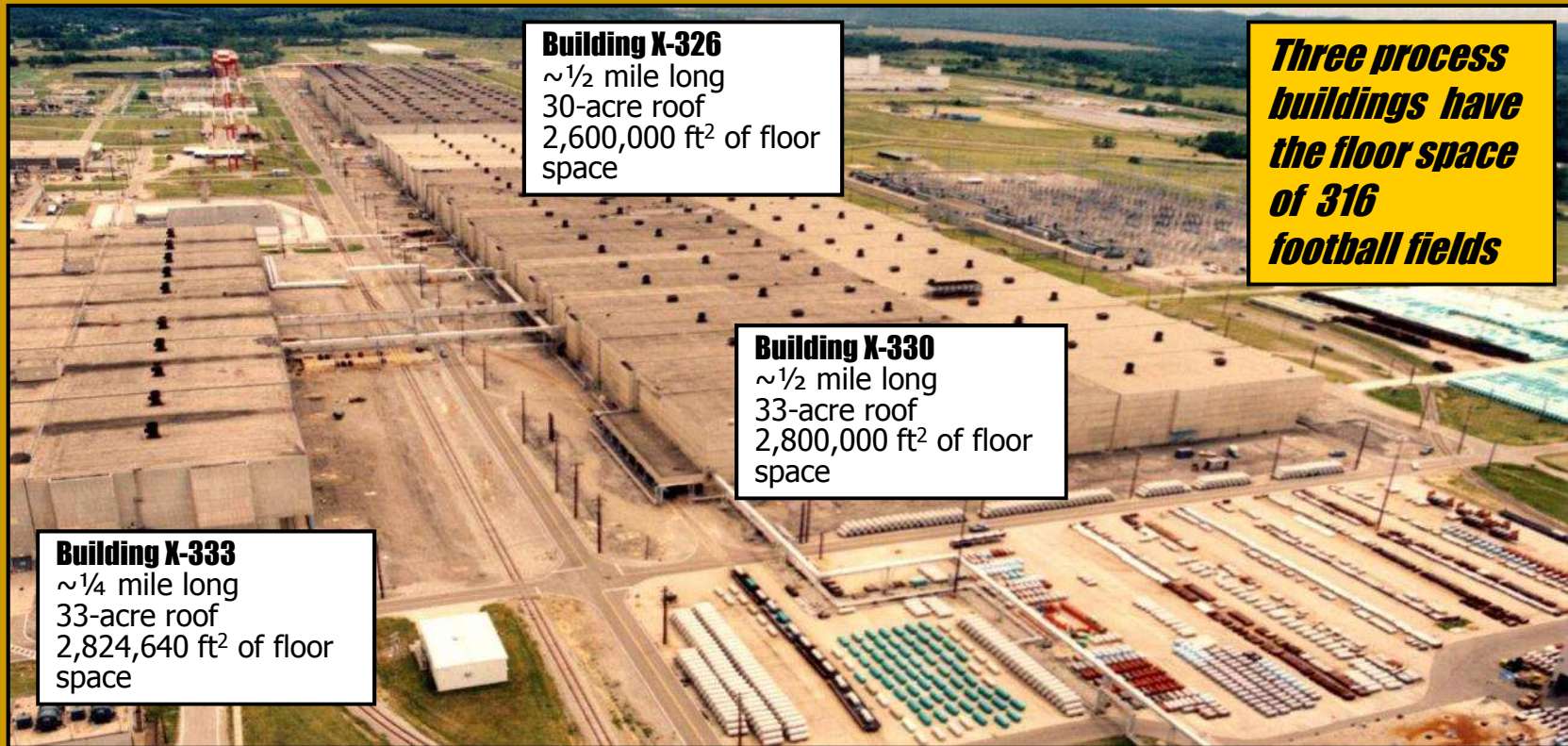


REGULATORY EFFORTS

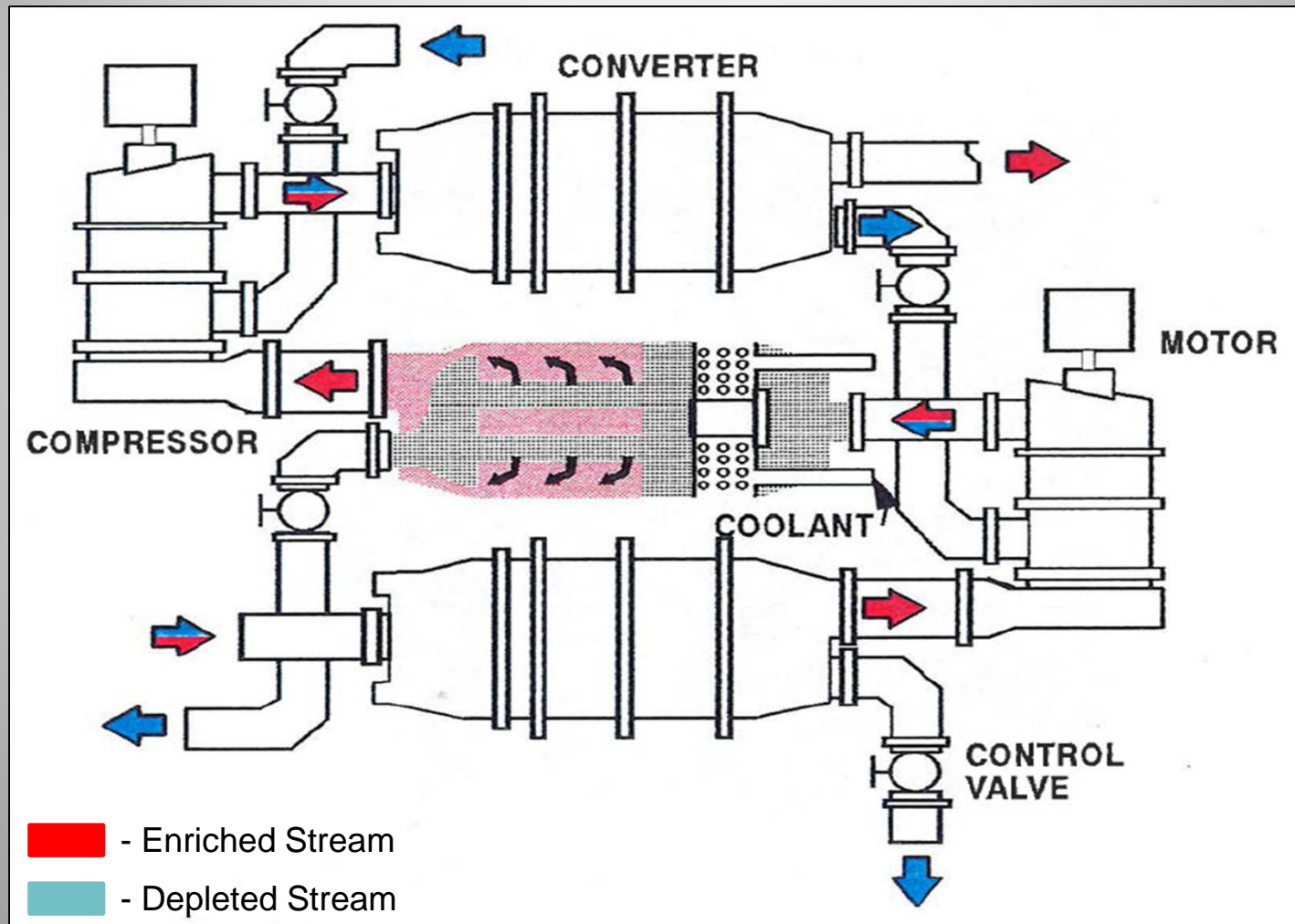
- Gained approval of groundwater transport model, risk assessment methodology
 - Supports Waste Acceptance Criteria (WAC) and cleanup-level approval
- Removal Action Work Plan (RAWP) approved for X-100 Complex D&D
- Community issued resolutions/recommendations for on-site disposal cell (OSDC)
- Sensible approach/design for OSDC
 - Start construction in CY2013 (if approved)
 - Preliminary design submitted to DOE and Ohio EPA
- Submitted Waste Disposition RI/FS to Ohio EPA for review



PROCESS BUILDINGS



GASEOUS DIFFUSION PROCESS



X-326 CUT & CAP

- To remove ~2,400 converters from X-326 Process Building before demo
 - In accordance with Sampling and Analysis Plan established between DOE and Ohio EPA



X-326 SAMPLING ANALYSIS PLAN - CONVERTER REMOVAL



CELL HOUSINGS



HOUSINGS REMOVED



CUTTING CONVERTER



RIGGING



LIFTING TO CART



CAPPING



LOWERING TO FLOOR



PACKAGING

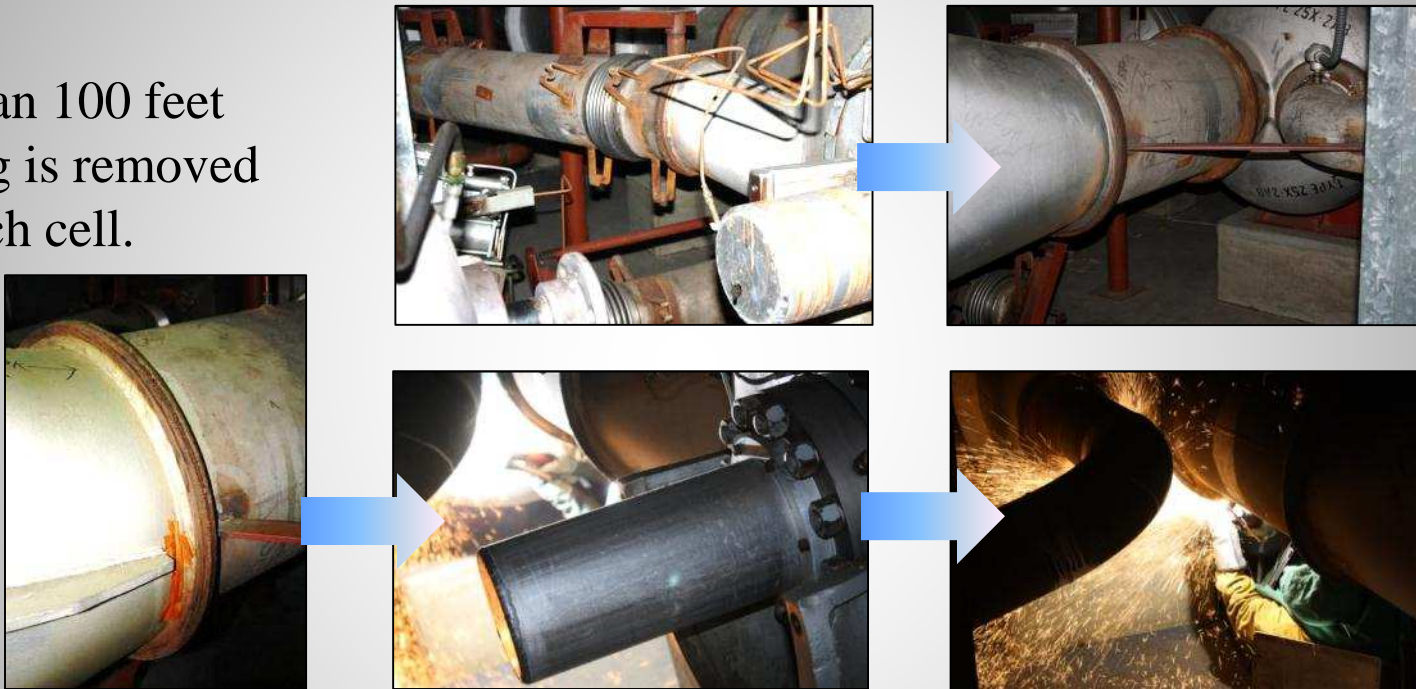


SHIPPING



X-326 SAMPLING ANALYSIS PLAN - PIPING REMOVAL

- More than 100 feet of piping is removed from each cell.



Interconnecting piping is cut into sections using a carbon arc torch.



A range of internal conditions can be seen in these pipe sections.



X-100 ADMINISTRATION BUILDING

- 135,000-square-foot facility constructed in early 1950s
- Demolition Sept. 11-24, 2012
- Debris: 298,620 cu. ft., 4.1M pounds; transported to Pike County landfill



X-100: During Demolition



X-100: After Demolition



X-101 HEALTH SERVICES FACILITY

- One of first built on site
- Formerly 24/7 staffing with 33 medical personnel
- 10,300-square-foot facility removed August 2012
- Debris: 47,520 cu. ft., 606,820 pounds; transported to Pike County Landfill



X-101: During Demolition



X-101: After Demolition



X-100 COMPLEX / VAULT RELOCATION

- Vault houses classified documents dating to 1950s
- New vault inside X-720 Maintenance & Stores facility completed fall 2012
 - Relocation of records due to demolition of X-100 September 2012
 - 1,700 cu. ft. records moved
- Independent from rest of X-720 facility



Measurements are taken to ensure the correct footer depth during the pouring of concrete for the new vault in the X-720 building.



ENVIRONMENTAL REMEDIATION

- Completed field activities for Soil Study
 - 120 surface/subsurface locations on and off site, >800 samples collected
 - Ahead of schedule, ~15% under budget
- Completed Phase I archaeological survey
- Completed Phase II archaeological surveys at 5 sites requiring further evaluation



A soil sample is collected off-site for analysis.



CASCADE SHUTDOWN

- Cascade in Cold Standby, 2001;
Cold Shutdown 2005
- Last cell powered off May 30, 2012,
after 57+ years of operation
- 1 billion+ lbs. uranium processed
through cascade
 - Nearly 40,000 14-ton cylinders



X-326 Facility Manager Jack Tully, DOE Site Lead Joel Bradburne and Operator Russ Nickell stand in the local control room after the shutdown.



GAS FIRED STEAM PLANT PROJECT

- Shut down October 16, 2012
- Footprint reduced from 7-acres to ¼ acre
- Carbon emissions reduced
- \$2 million yearly savings
- Old plant to be removed 2013



X-600 Coal-Fired Steam Plant



X-690 Gas Boiler Steam Plant

LATA KENTUCKY YEAR IN REVIEW

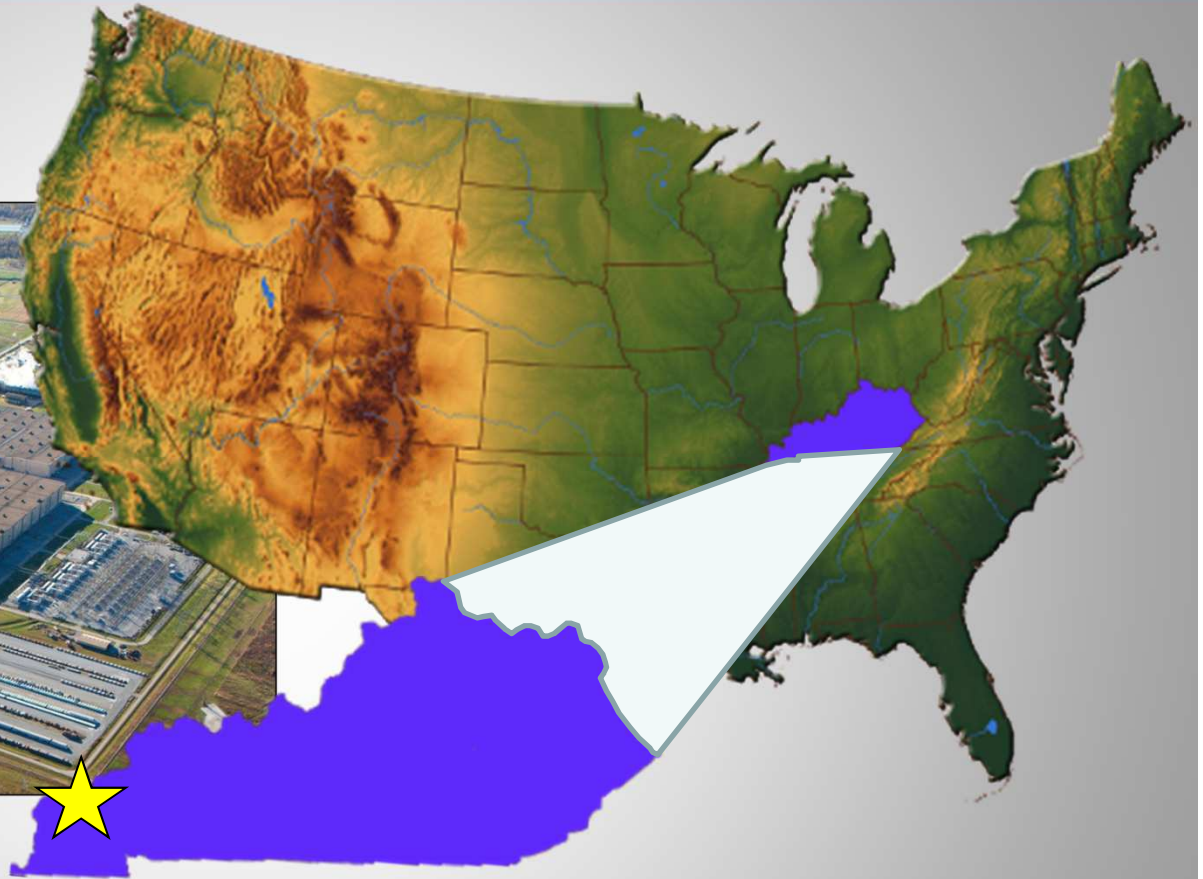


PRESENTED BY
MARK DUFF

Program Manager
LATA Kentucky, LLC



PADUCAH



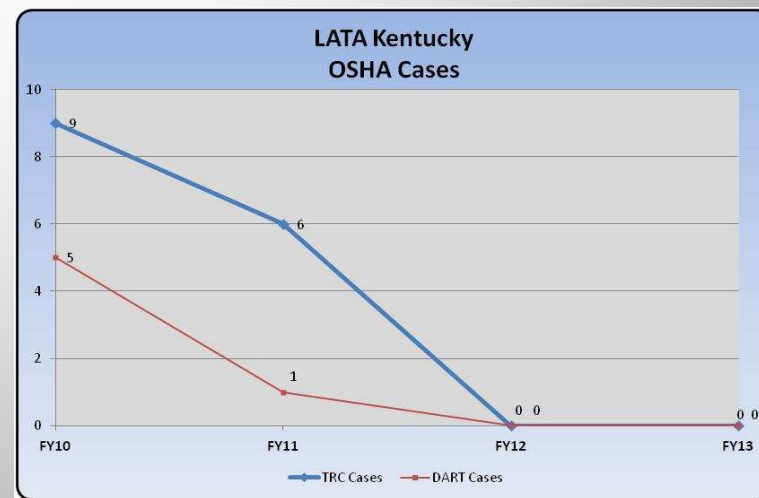
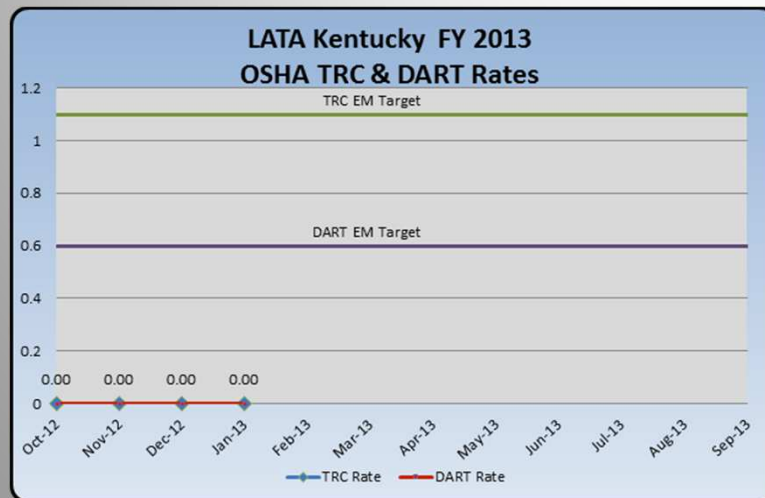
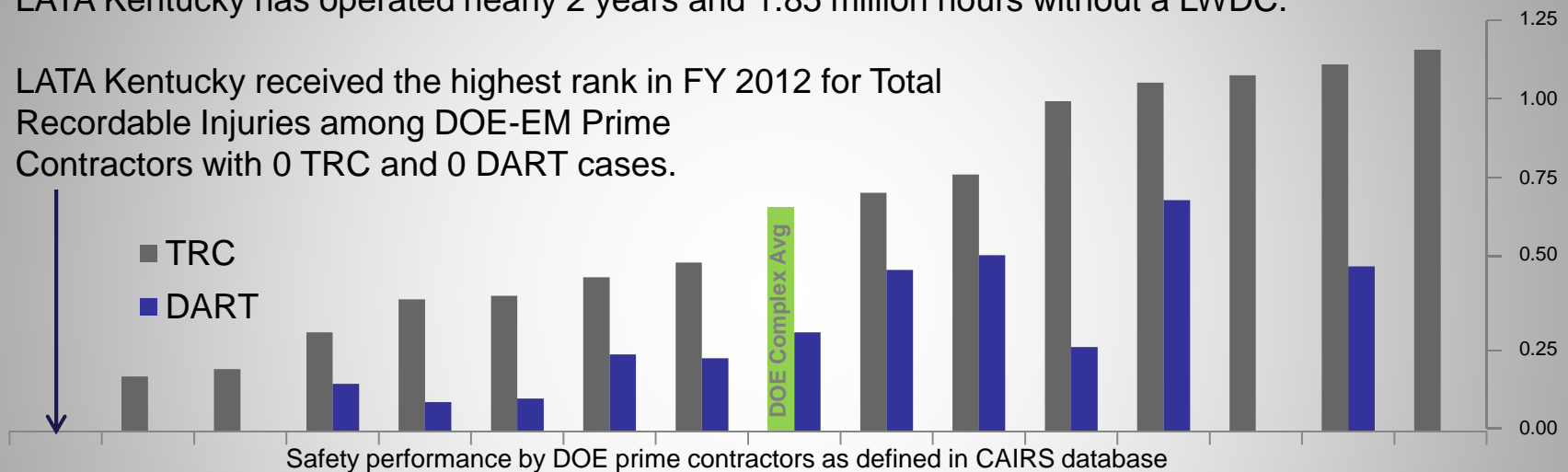
PADUCAH QUICK FACTS

- 3,500+ acre federal site
- Shared site with operating gaseous diffusion plant and DUF_6 conversion facility
- 1,800+ jobs for western Kentucky



SAFETY PERFORMANCE

- LATA Kentucky has operated nearly 2 years and 1.85 million hours without a LWDC.
- LATA Kentucky received the highest rank in FY 2012 for Total Recordable Injuries among DOE-EM Prime Contractors with 0 TRC and 0 DART cases.



CLEANUP SCOPE

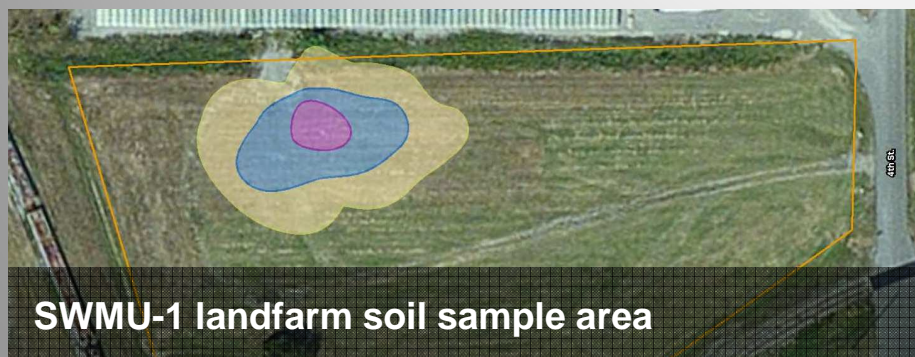
Paducah Remediation Contract is organized into five primary operable units:

- Groundwater—Clean up chief sources and mitigate off-site risk of contamination.
- Inactive Facilities—25 structures: 24 razed.
- Burial Grounds—8 areas spanning ~86 acres.
- Soils—66 areas totaling ~115 acres, grouped to gain efficiencies.
- Surface Water—About 6 miles of creeks and ditches.

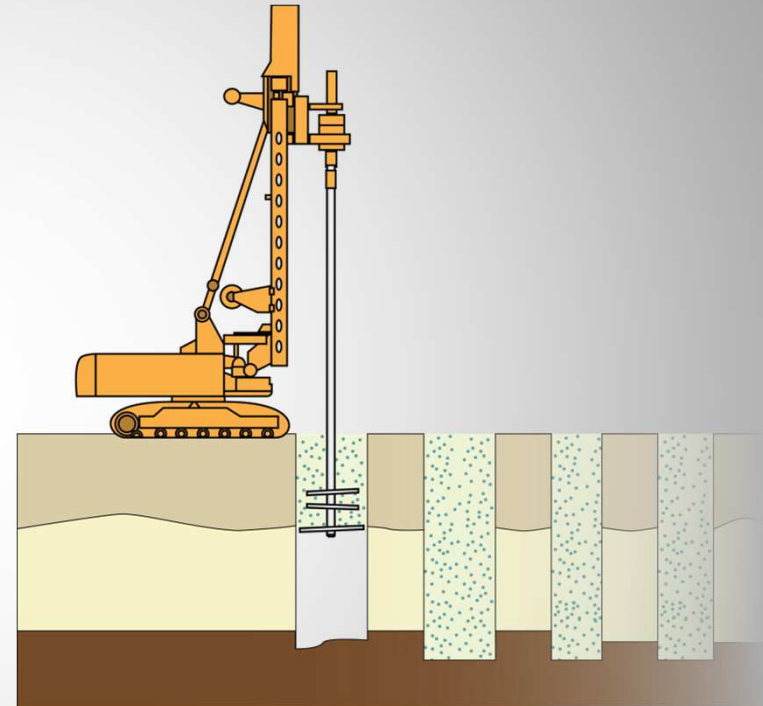


GROUNDWATER PROGRAM SOUTHWEST PLUME

- On-site SW Groundwater Plume:
 - Waste oils containing TCE were biodegraded at landfarm (SWMU 1) from 1973-1979.
 - TCE also in ground at two sites near C-720 Maintenance Building.
 - TCE in shallow aquifer (20-60 ft) at all locations.
- Soil testing done July-October 2012 to determine locations for deep soil mixing at oil landfarm.



GROUNDWATER PROGRAM SOUTHWEST PLUME



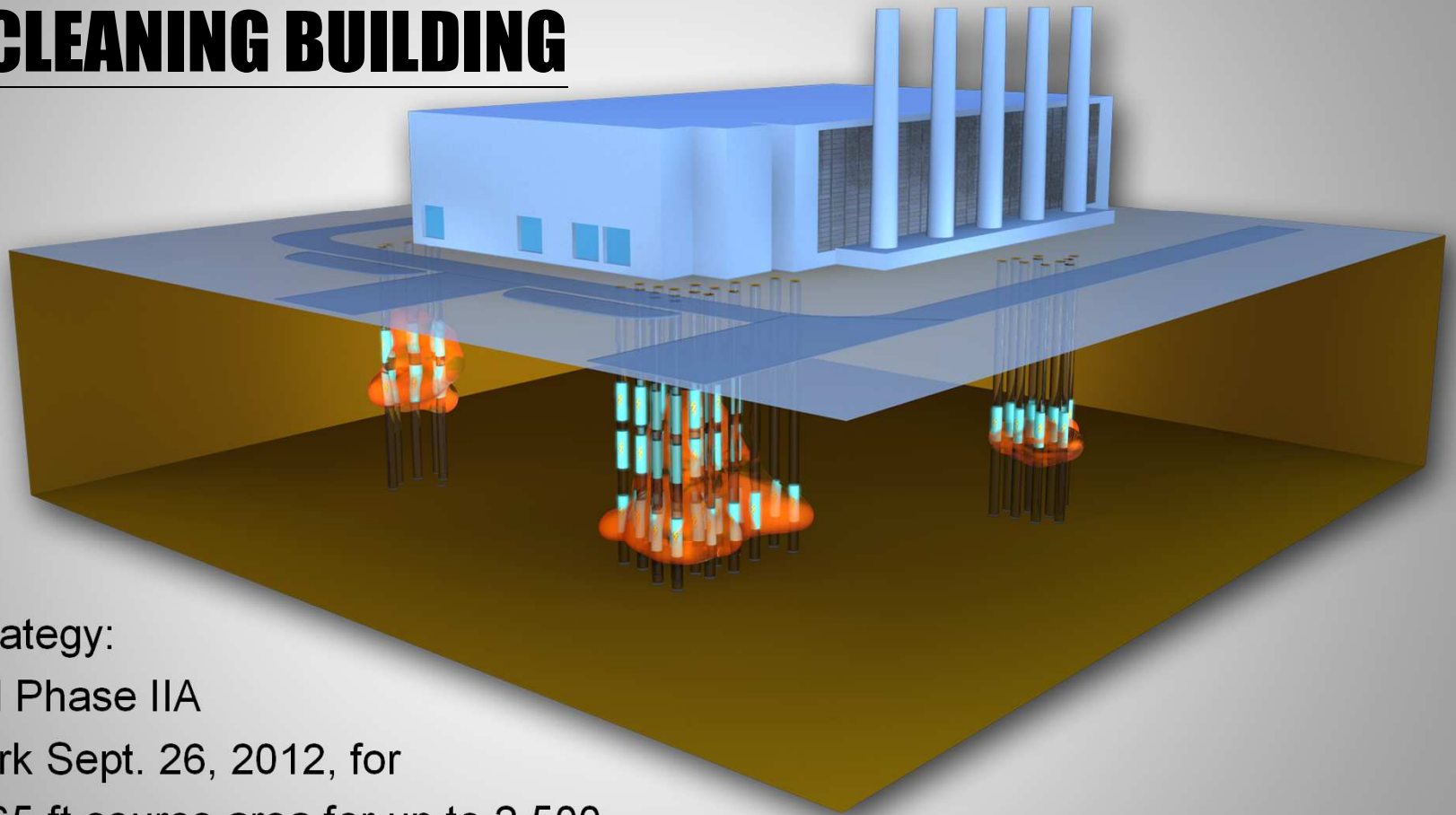
- Field work to clean up landfarm sources slated to start in September 2013.
- Augers will inject reactive iron to mix it with oils to depth of about 50 ft.
- Results of 2012 soil testing will be used to determine if bioremediation or long-term monitoring is needed at C-720 sites.

GROUNDWATER PROGRAM **C-400 CLEANING BUILDING**



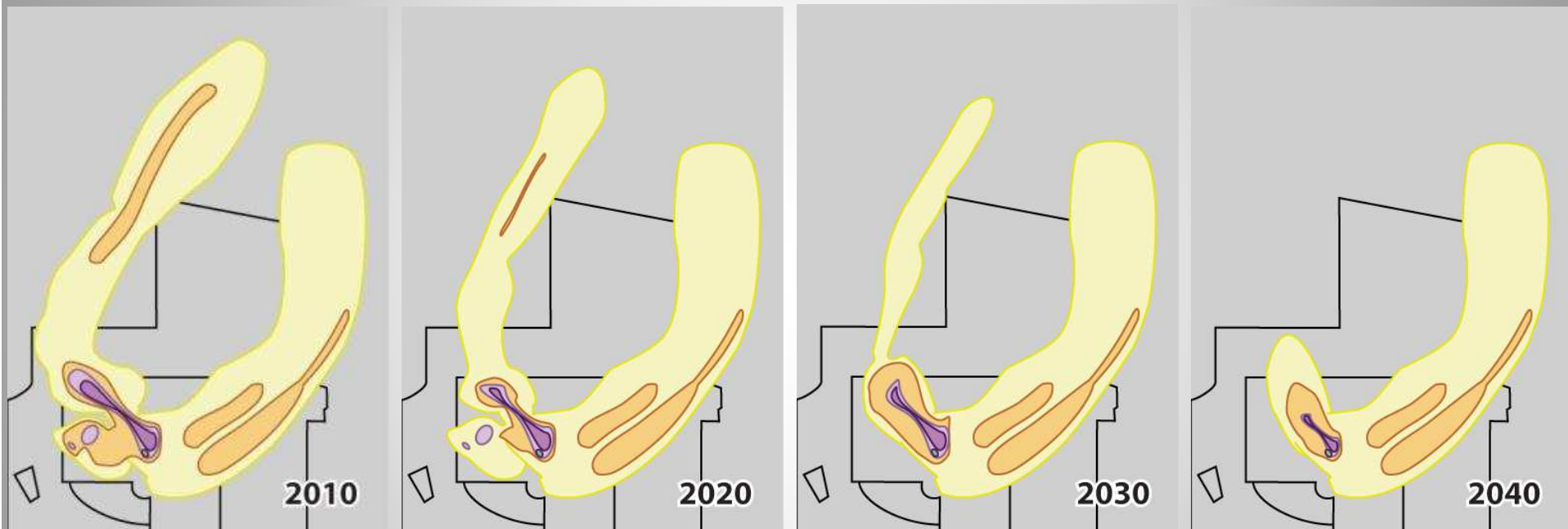
- 2,100 acres of contaminated groundwater extends off-site toward Ohio River.
- Cleanup will address both on-site sources and off-site risk.
- C-400 Cleaning Building source of trichloroethene (TCE).

GROUNDWATER PROGRAM **C-400 CLEANING BUILDING**



- C-400 strategy:
 - Started Phase IIA fieldwork Sept. 26, 2012, for upper 65-ft source area for up to 2,500 gals of TCE; system to be operational by summer 2013.
 - Continued Phase IIB technology evaluation for lower 60-100 ft; anticipate recovering up to 600-4,500 gals of TCE using chemical or steam treatment.

GROUNDWATER PROGRAM NORTHEAST PLUME OPTIMIZATION



- DOE currently provides municipal water to about 100 homes and businesses.
- The optimization program will reduce the northeast plume similar to our northwest program to reduce offsite contamination.



D&D PROGRAM C-340 METALS PLANT

- Demolition activities started September 2012; completed February 12, 2013.
- Subcontract for structural demolition awarded to LVI Services.
- \$46.9M life cycle project.
- 3,500 tons of waste, including 1,500 tons of PCB contaminated debris.
- 65,000 ft² 7-story structure.



D&D PROGRAM C-340 METALS PLANT CHALLENGES

- Transite:
 - Over 48,000 ft², ~ 1500 sheets removed from August 22nd – December 19th
 - Complete - over 100 tons of transite in landfill
- Risk of release of contamination beyond control boundaries
 - Continued concern from site workers expressed from downwind locations
 - 20 monitors deployed around perimeter of ACM regulated to address potential disbursement beyond the Asbestos Regulated Area of C-340
- Reactor Towers/Bomb Furnace
 - Three reactor towers on 6th and 7th floors determined to include concealed asbestos underlayment in clamshell heaters around the tower



D&D PROGRAM C-410 FEED PALNT

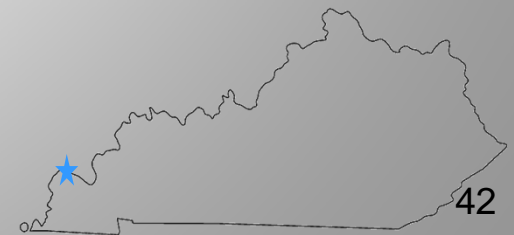
- \$107.9M life cycle project
- Over 160,000 ft², 7-story structure
- Removed > 9,000 linear feet of UF₆ piping/equipment
- Demo-ready status scheduled for May 2013
- 20 cold traps with significant quantities of UF₆ require critical lifts into containers for storage in CAT-2 facility on site
- Similar technical challenges to C-340



D&D PROGRAM

Lessons Learned

- Furnaces, clams shell type heaters, insulated reactor vessels contain hidden layers of asbestos.
- Non-asbestos containing firebrick in heaters represent potential contamination release.
- Building roofs may contain very light, easily dispersible insulation.
- Basements and pits represent several challenges including:
 - Standing water on the slab hides these pits or trenches.
 - Generating potentially contaminated pits full of water.
 - Runoff of contaminated rainfall and dust suppression water through cracks and sumps.
- The fixative is effective at controlling airborne radiological contamination, BUT:
 - Paint chips and the fixative may become airborne in cold weather.
 - Use colored fixative different than base building paint.
 - Fixatives may become carcinogenic when heated.
 - Limitations may apply on high reach demolition during periods of high winds.



D&D PROGRAM

Lessons Learned

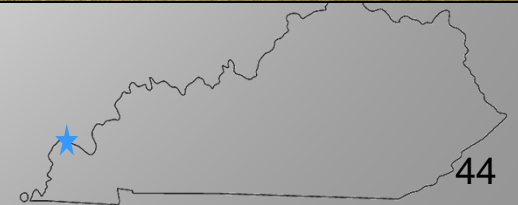
- Security issues need to be resolved to allow use of closed circuit camera on the high reach demolition equipment to improve operator visibility.
- Limitations on manlift basket capacity can provide challenges for transite removal.
 - Size of our transite sheets (about 40 square feet) exceeded manlift manufacturers size – required an engineering evaluation to ensure safety of our approach.
 - Weight restrictions – weight of sheet of transite and 2 people can exceed capacity of some lifts.
 - Tools for cutting the lead heads are limited – we used bolt cutters.
- Cold weather demolition can significantly reduce efficiency and increase safety risks.



LESSONS LEARNED FOR GDP TRANSITION

PCB Removal

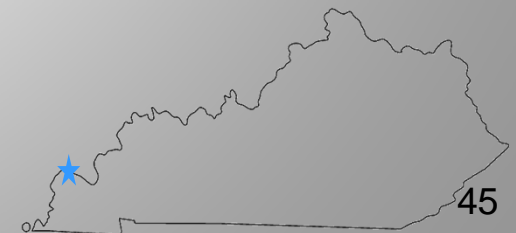
- Plant has PCB electrical equipment:
 - 275 large capacitors and 75 transformers.
 - Potential contamination indoor and outdoor due to spills and overfills.
- 6 buildings with PCB oil leaching through gaskets.
- 24 buildings with PCB gasket material:
 - Most admin buildings with PCB gaskets.
 - >16,000 collection troughs capture oil from PCB-impregnated gasket material in ductwork.



LESSONS LEARNED FOR GDP TRANSITION

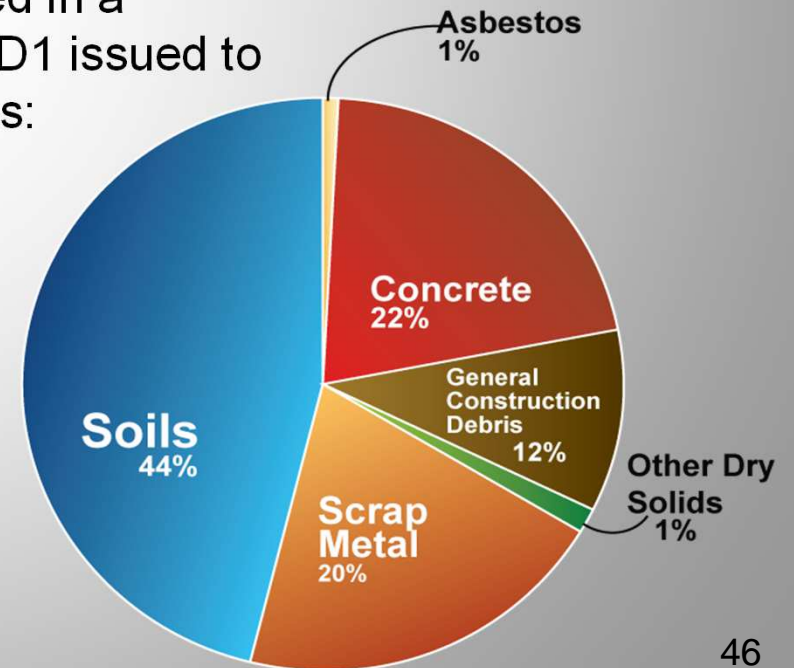
PCB Removal

- PCB contamination will be widespread and remediation/maintenance programs will continue through demolition phases.
- C-340 Metals Plant included PCB contamination through 50% of the building.
- About 1,960 known PCB gasket spills on building floors since 1989.
 - Prior to 1989, floor sweepers were used to clean up spills.
 - Oil filled cable trays dried out.
- 1,100 gals of PCB oils from ventilation ducts contained over past 2 years.
- Generation will continue through oil seepage in PCB gasket materials.
 - Joints likely to open during cooling of HVAC and increase flow and extent of leakage.



PATH FORWARD

- Continued remediation cleanup and D&D at Paducah until 2039 is expected to generate up to 4M yd³ of waste.
- The existing plant industrial landfill will be utilized to maximum capacity (~1M yd³).
- The remaining 3M yd³ of waste is being evaluated in a Remedial Investigation/Feasibility Study Report (D1 issued to regulators in May 2012) examines three scenarios:
 1. Waste disposal decisions project-by-project.
 2. Ship waste to licensed facilities off-site.
 3. Build an engineered waste-disposal facility on-site.
- Proposed Plan target: Spring 2013
- Record of Decision target: Early FY14



BWCS YEAR IN REVIEW



PRESENTED BY
KENT FORTENBERRY

Chief Engineer

Babcock & Wilcox Conversion Services



MISSION

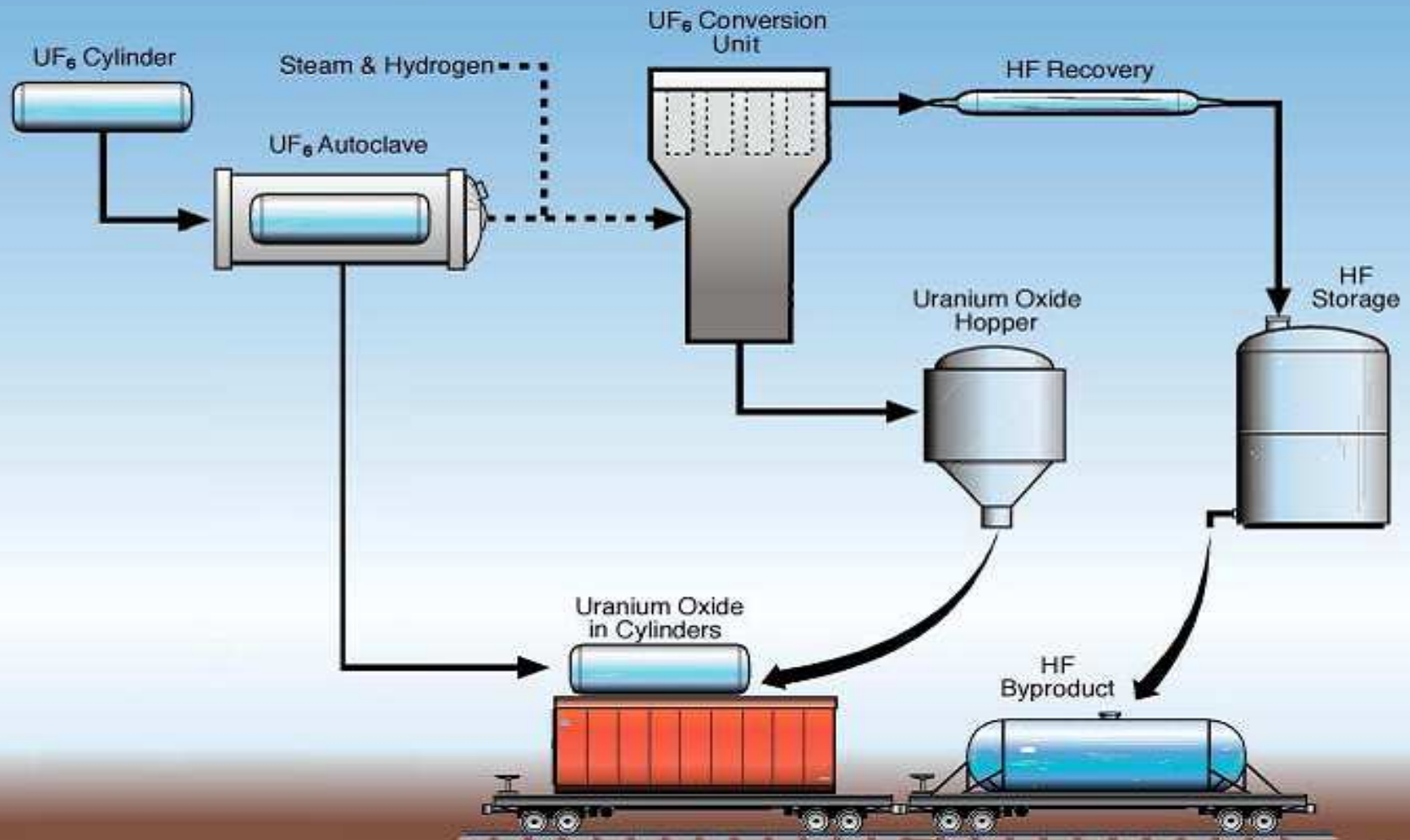


21,000 cylinders of DUF6
(245,000 Metric Tons)
Mission life of ~18 years
Three lines – six conversion units

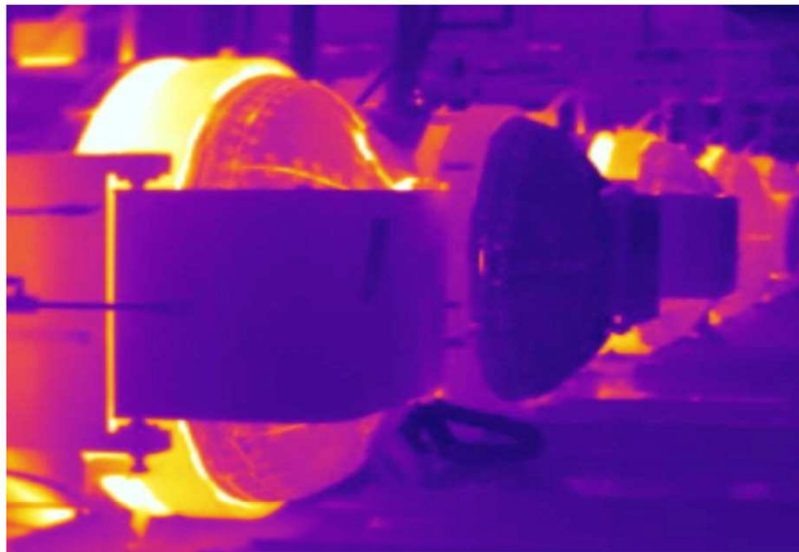


36,000 cylinders DUF6
(440,000 Metric Tons)
Mission life of ~25 years
Four lines – eight conversion units

DUF₆ Conversion Process



FY 2012



- All lines ran simultaneously for extended periods SAFELY
- Reached production goal of 6109 MT
- Total production:

Paducah	2800 MT
Piketon	3400 MT

FY 2013 OPERATING STRATEGY



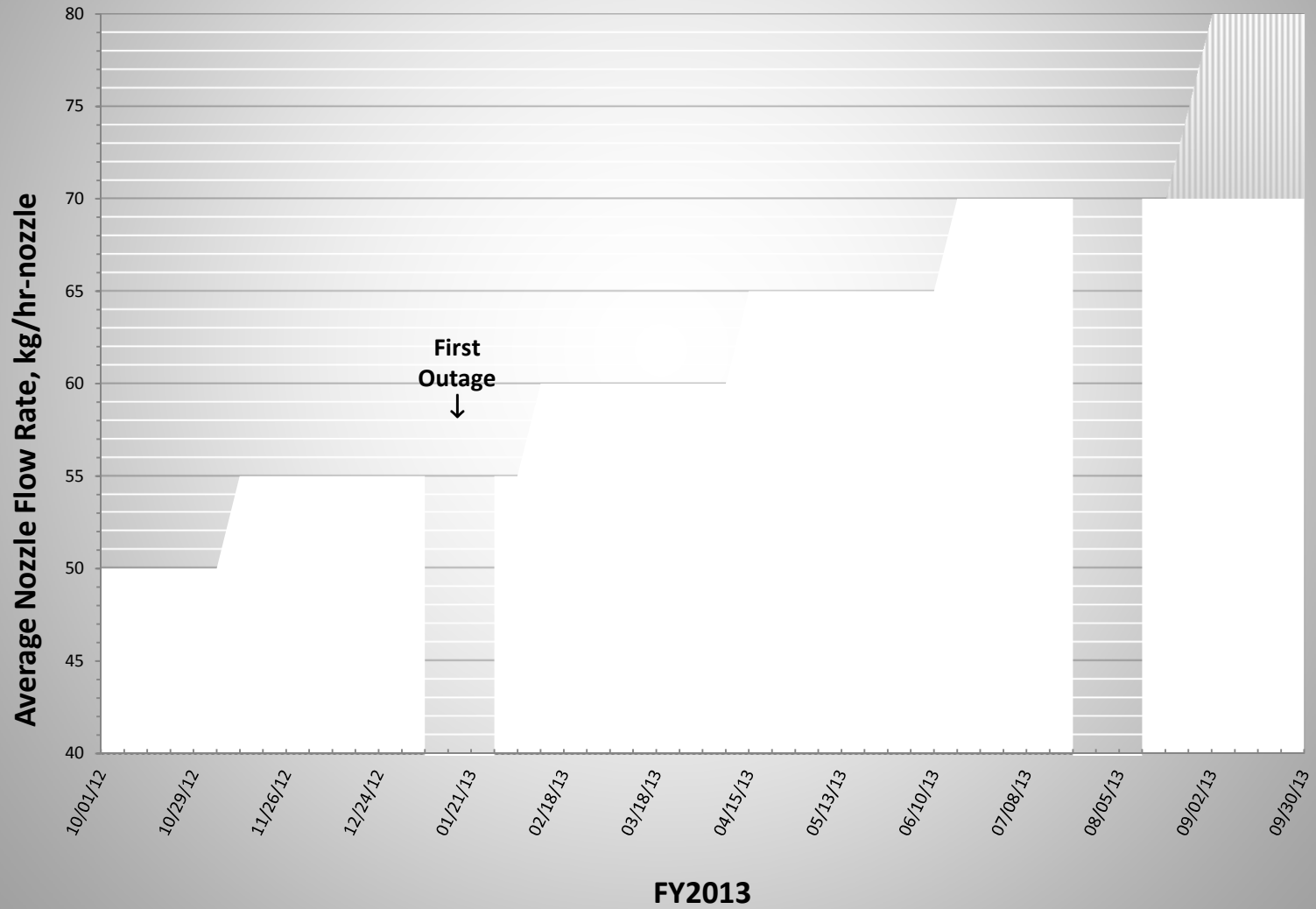
Optimal, stable, sustainable throughput has not yet been determined.

The FY 2013 Operating Strategy is designed to define it.

FY 2013 OPERATING STRATEGY



- A phased approach of small, incremental throughput increases, followed by steady state operations
- A comprehensive collection and evaluation of plant data
- A controlled process for identifying and resolving design and operational issues, and ultimately for identifying the optimal stable, sustainable throughput



CHALLENGES



- BWCS must identify the optimal stable, sustainable throughput.
- Conflict between plant availability and identification of plant limitations.
- Basic Process Control System
- Oxide powder sampling protocol needed for process optimization
- Limited time and opportunity for modifications.
- Coordination, integration, and technical sharing between the two plants is essential

TECHNICAL PRIORITIES



- Process Offgas Blowers
- Conversion Process Optimization
- Oxide Transfer Issues
- Distributor Plates
- Nozzles
- Rotary Valves
- Material Handling (cylinder movement)

MODIFICATIONS

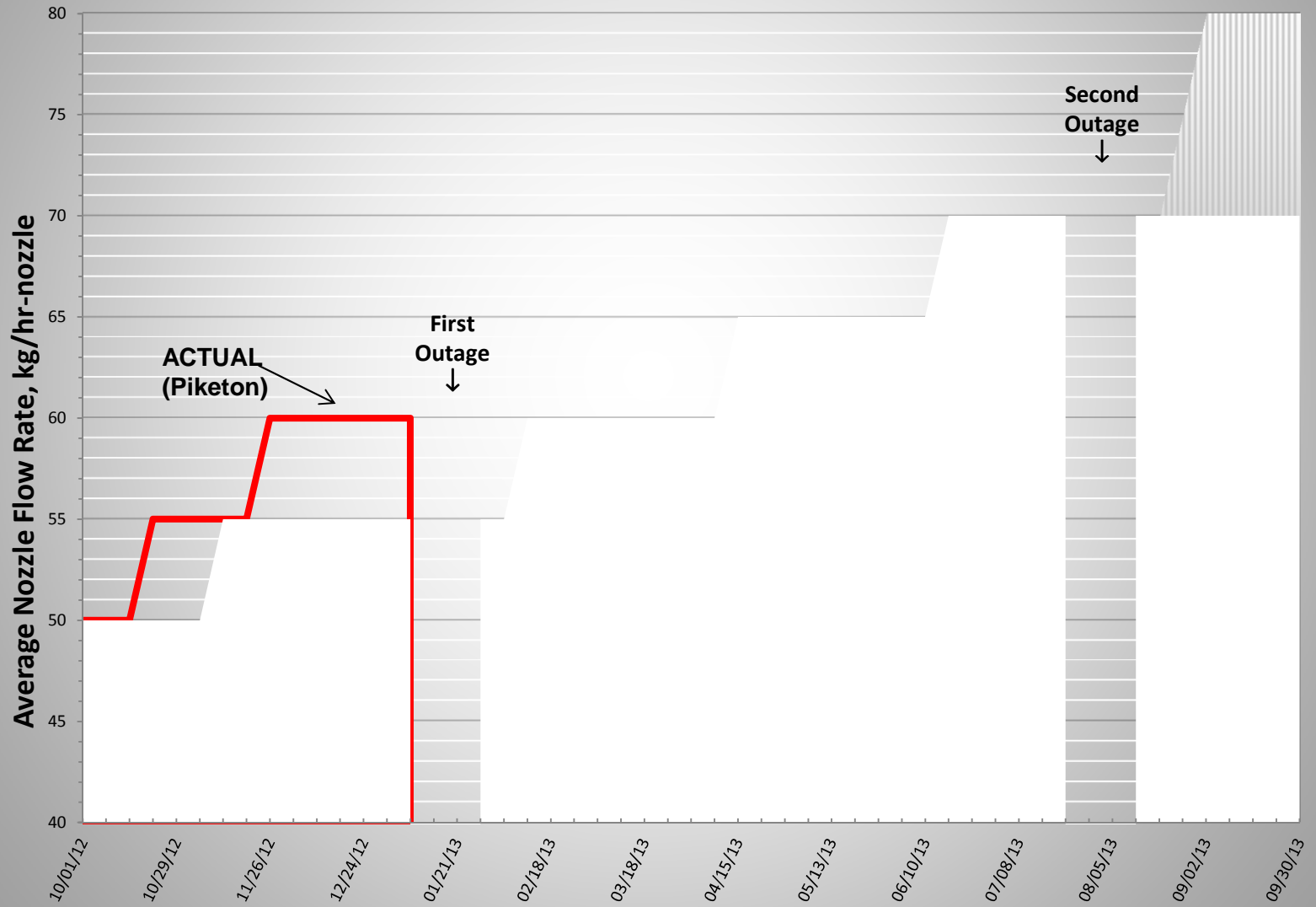
Current



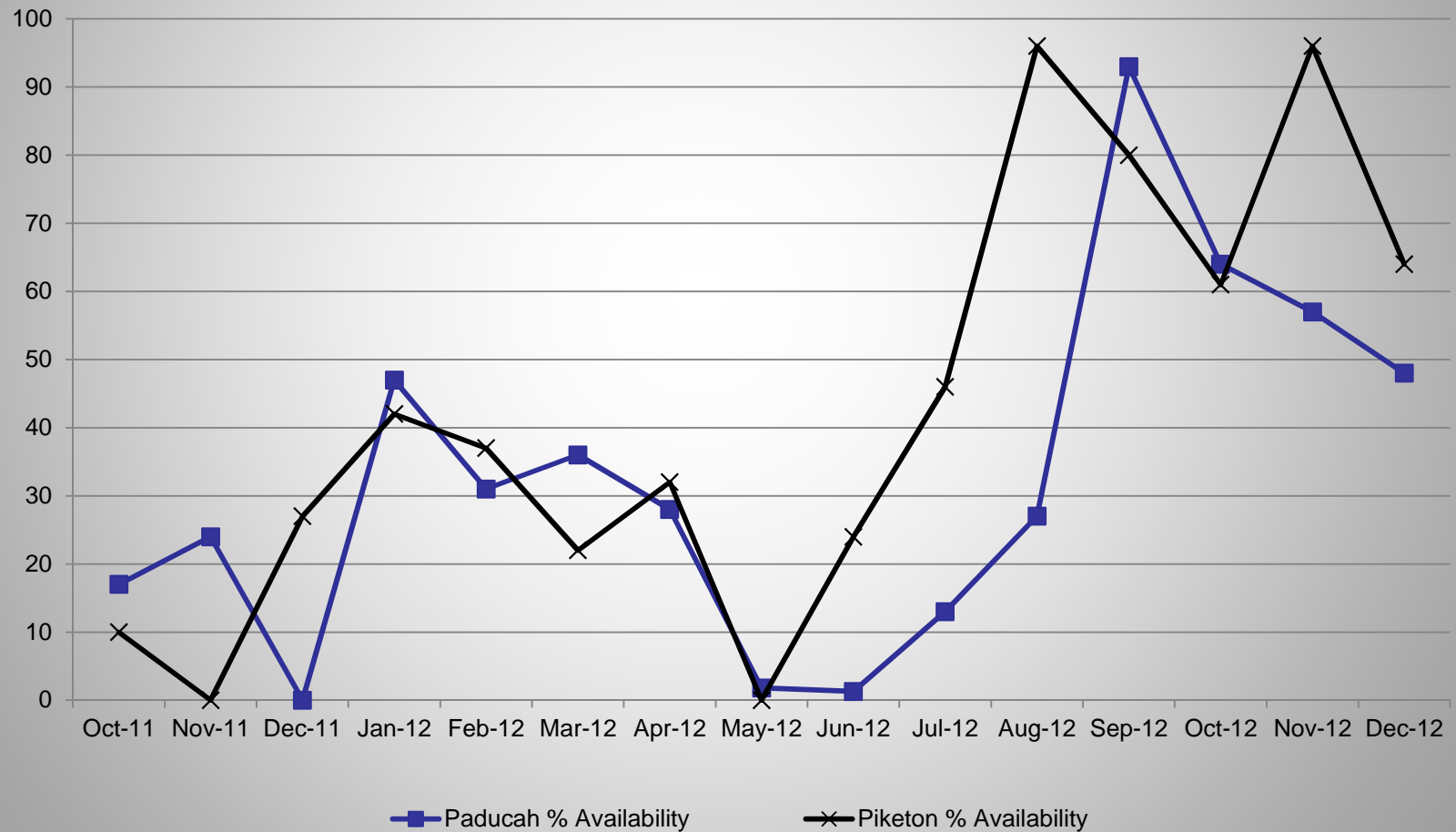
- Process Offgas System isolation valves
- Autoclave Isolation valve limit switch modification
- De-ionized Water makeup to Backup Scrubber
- De-ionized Water spray to Backup Scrubber blower
- Steam boiler isolation
- Power filters

Modifications under consideration

- Steam flow transmitters
- Fluidizing steam isolation
- Deionized Water flush to Primary Scrubber blowers
- Isolation valves for HF drain lines
- Transfer Drum vents
- Vacuum pump / DUF6 feed line re-design
- Hydrogen accumulator



PLANT AVAILABILITY



2013 GOALS



Metric Tons DUF6 processed

Paducah FY2013

7352 MT (projected)

2045 MT (1st four months)

Piketon FY2013

5513 MT (projected)

2290 MT (1st four months)