



# *Kingston Ash Recovery Project*

## *Non-Time-Critical Removal Update*

February 24, 2011

# Then & Now



December 23, 2008



January 24, 2011



# Major Accomplishments

- ✓ **Swan Pond Circle Bridge / Underpass & haul road construction complete**
  - Opened to local traffic 11/10/2010
- ✓ **Time-critical ash railroad shipments**
  - Complete 12/1/2010
  - 414 trains & more than 4 million tons
- ✓ **Skimmer wall construction**
  - Complete 12/2/2010
- ✓ **Utility Installations complete**
  - Complete 01/2011

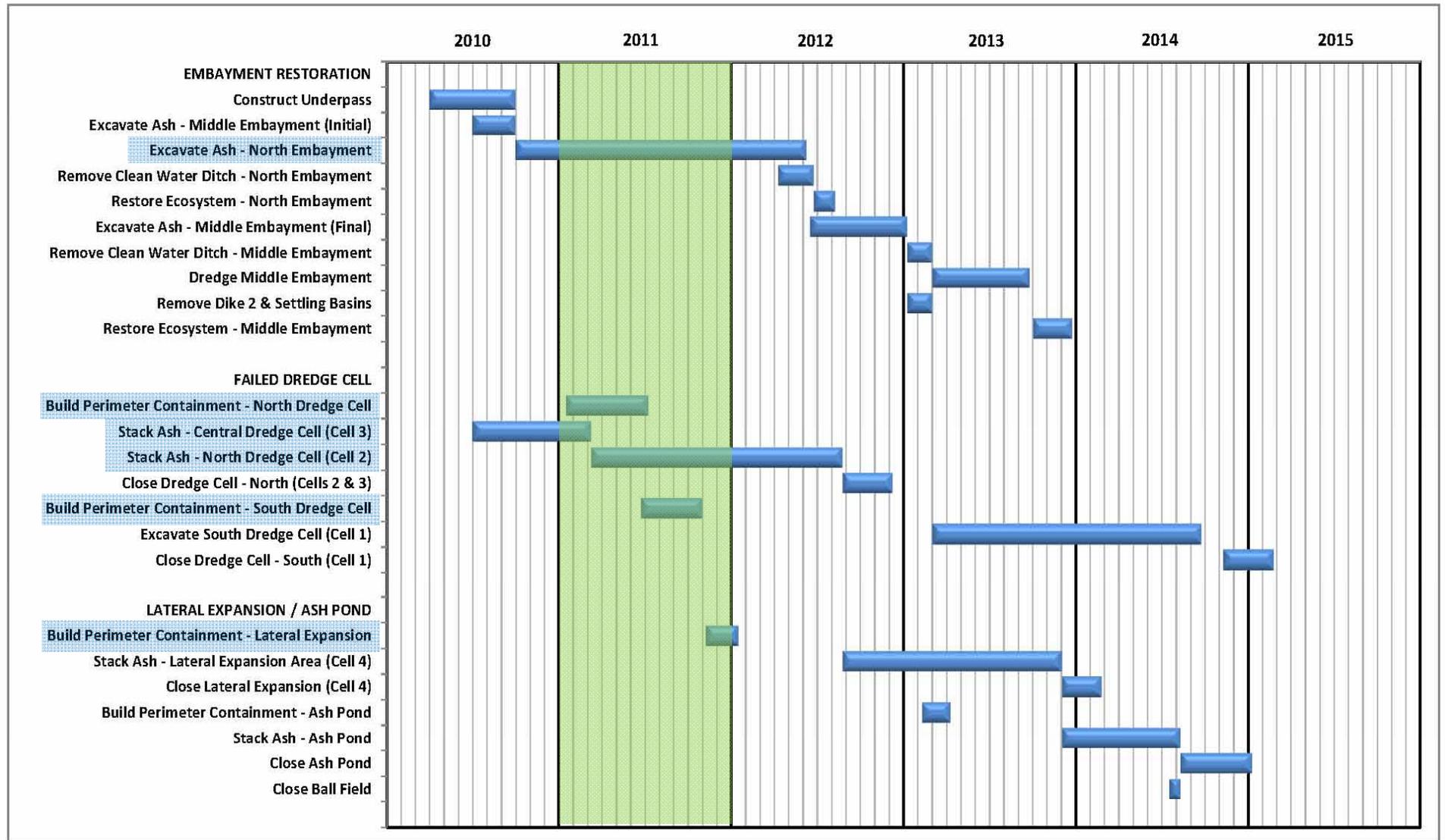


# Safety



- ✓ Program continues to meet or exceed standards of quarterly audits by EPA & Coast Guard
- ✓ Injuries continue to decline
- ✓ Our goal is to be injury free
- ✓ Recordable injury rate near Top 10-percentile of construction projects

# Non-Time-Critical Schedule



# Current Activities



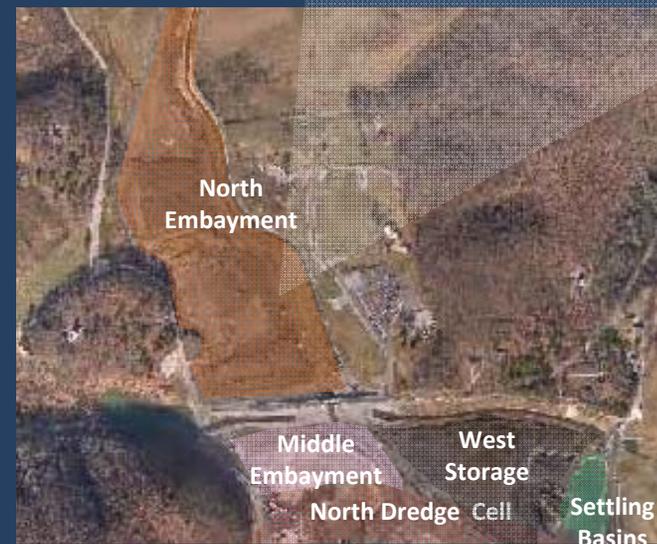
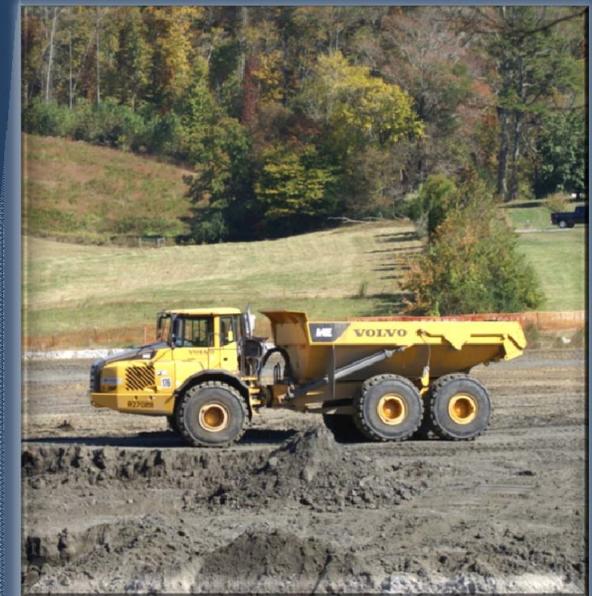
- **Excavation & hauling**
  - North Embayment
  - Middle Embayment
- **Drying Material**
  - Windrowing
  - Lime Treatment Operation
    - Ash Processing / Ball Field
- **Stacking**
  - Central Dredge Cell
  - North Dredge Cell
- **Perimeter Containment Wall**
- **River System Sampling & Analysis Plan**
- **Air & surface water monitoring**



# Ash Excavation & Hauling



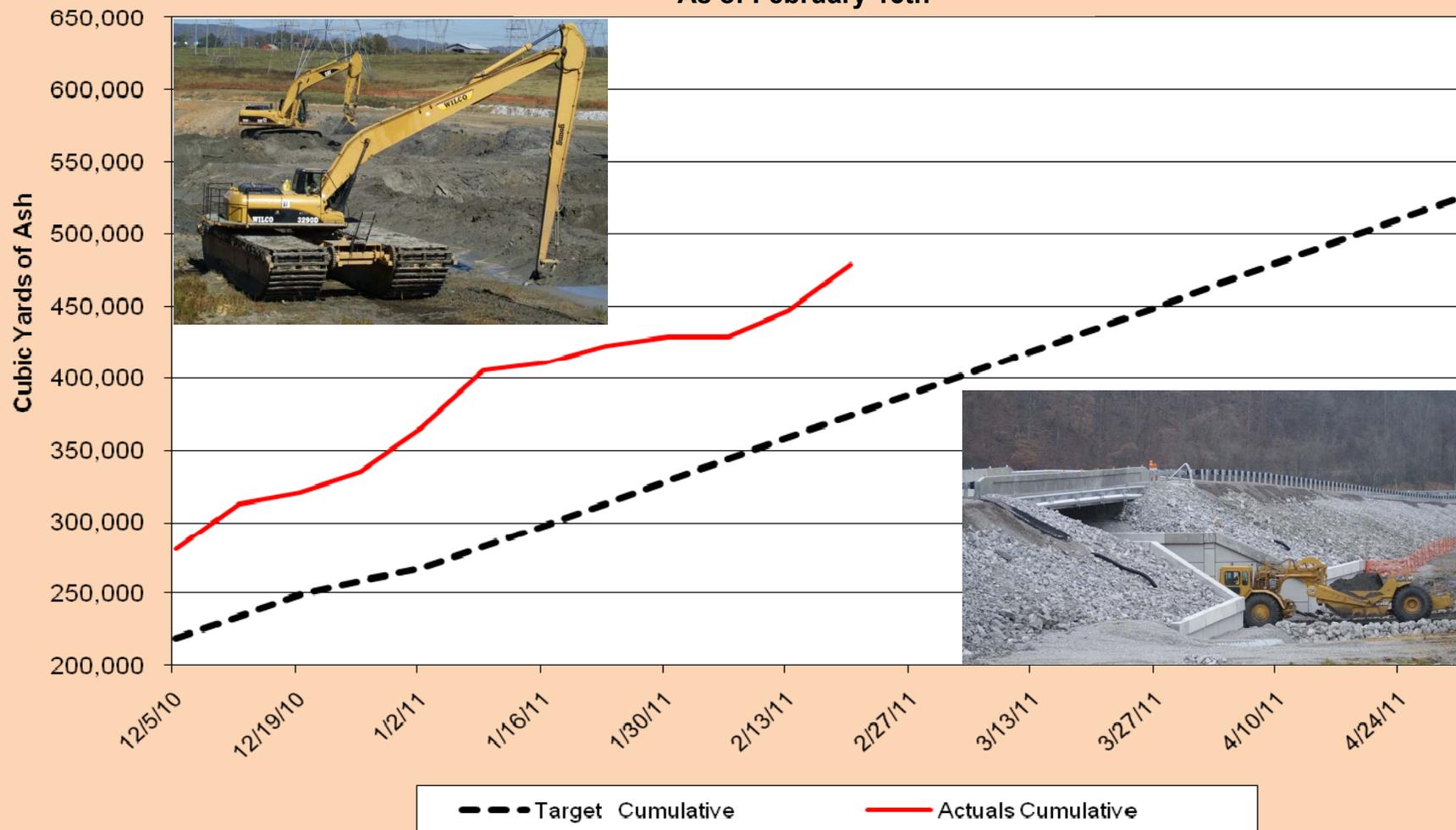
- Swan Pond Circle Bridge/ Underpass & haul roads open
- No impact on local traffic
- Approximately 470,000 loose CY of 2.8 million CY from north & middle embayments through Feb. 2011
- Hauling:
  - To short-term storage:
    - West storage
    - Lateral expansion
    - Ash processing / ball field
  - To long-term storage:
    - Central dredge cell
    - North dredge cell



# Ash Excavation & Hauling



Ash Excavation from Embayments - Weekly  
Loose Yards  
As of February 13th





# Ash Stacking

- **Drying material (as needed)**

- Windrowing
  - West storage
  - Lateral expansion
- Lime Treatment Operation
  - Ash Processing / Ball Field

- **Dust control measures**

- Water trucks (haul roads)
- Paper mulch (unworked areas)
- Mist (lime treatment operation)



- **Central & North Dredge Cells**

- Stacking
  - Approx. 374,000 loose CY volume stacked
- Contouring

- **Instrumentation**

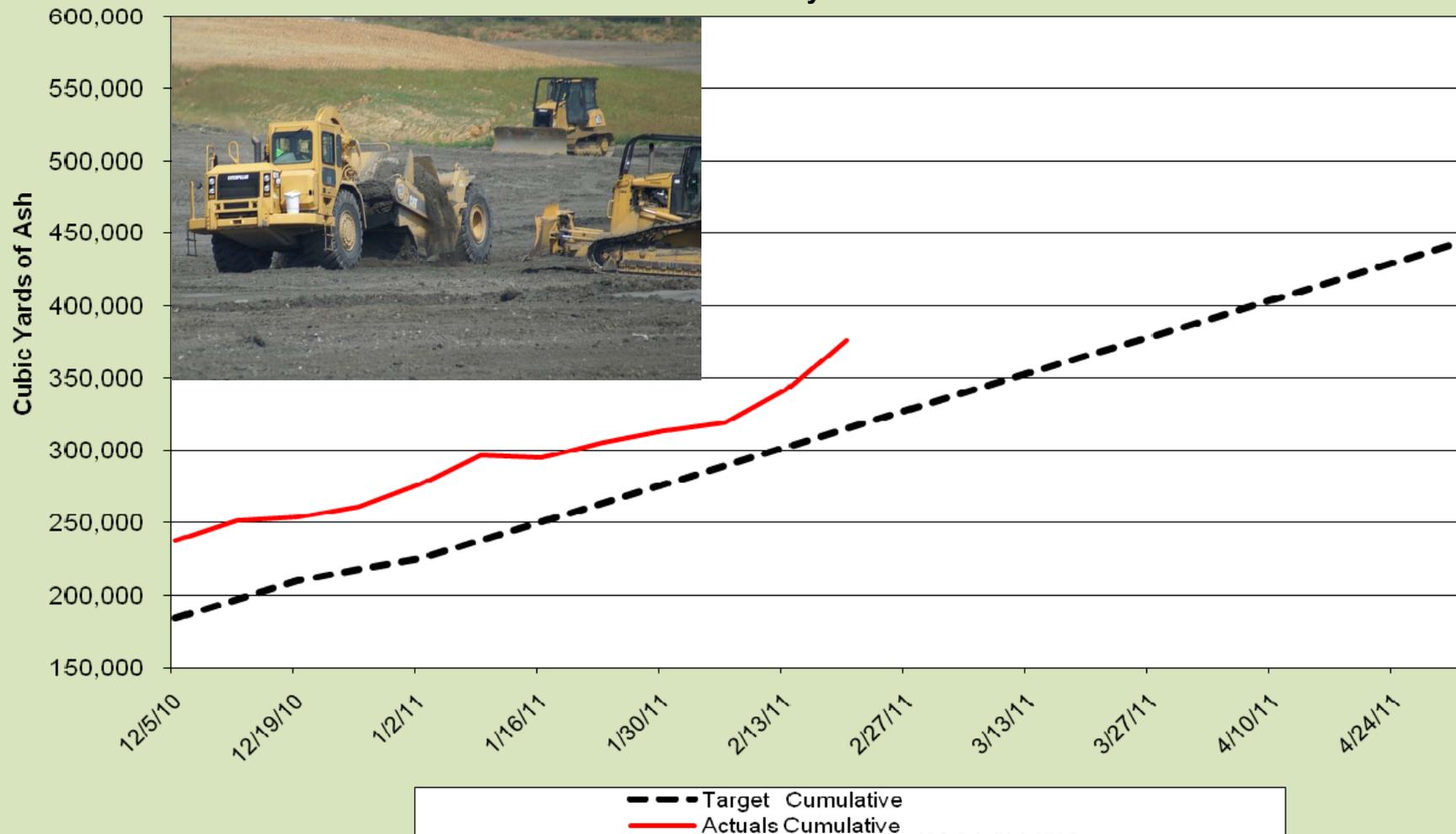
- Compaction
- Pore pressure (piezometers)
- Vertical settlement (Inclinometers)



# Ash Stacking

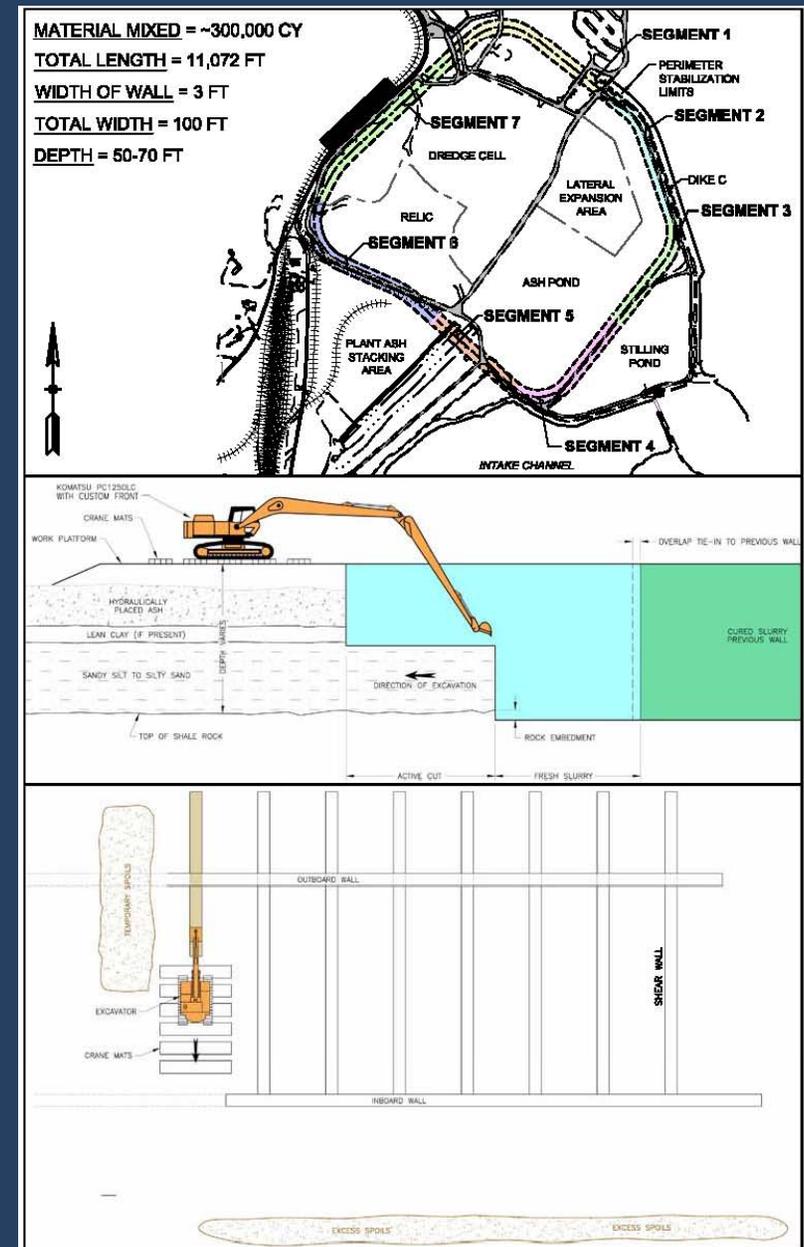


Ash Stacking in Dredge Cell - Weekly  
Loose Yards  
As of February 13th



# Perimeter Containment Wall

- **Perimeter Containment System**
  - Designed to withstand earthquake
  - 11,500 linear ft.
  - 50-70 ft deep – keyed into bedrock
  - Contract award pending
- **Demonstration project**
  - 100 ft. section
  - Begins March 2011
- **Full scale work**
  - Anticipated to begin Summer 2011





# *Dike C Buttress*



- **Reinforcement of Dike C**
  - 3,332 feet complete to date
  - Approximately 60% complete
- **Dike C Buttress Work Plan Segment A**
  - Dike reinforcement along KIF Plant Intake
  - Public Comment Period thru March 10
- **Plant Intake Bridge**
  - Demolition to clear area for Dike C reinforcement construction



# Air Monitoring

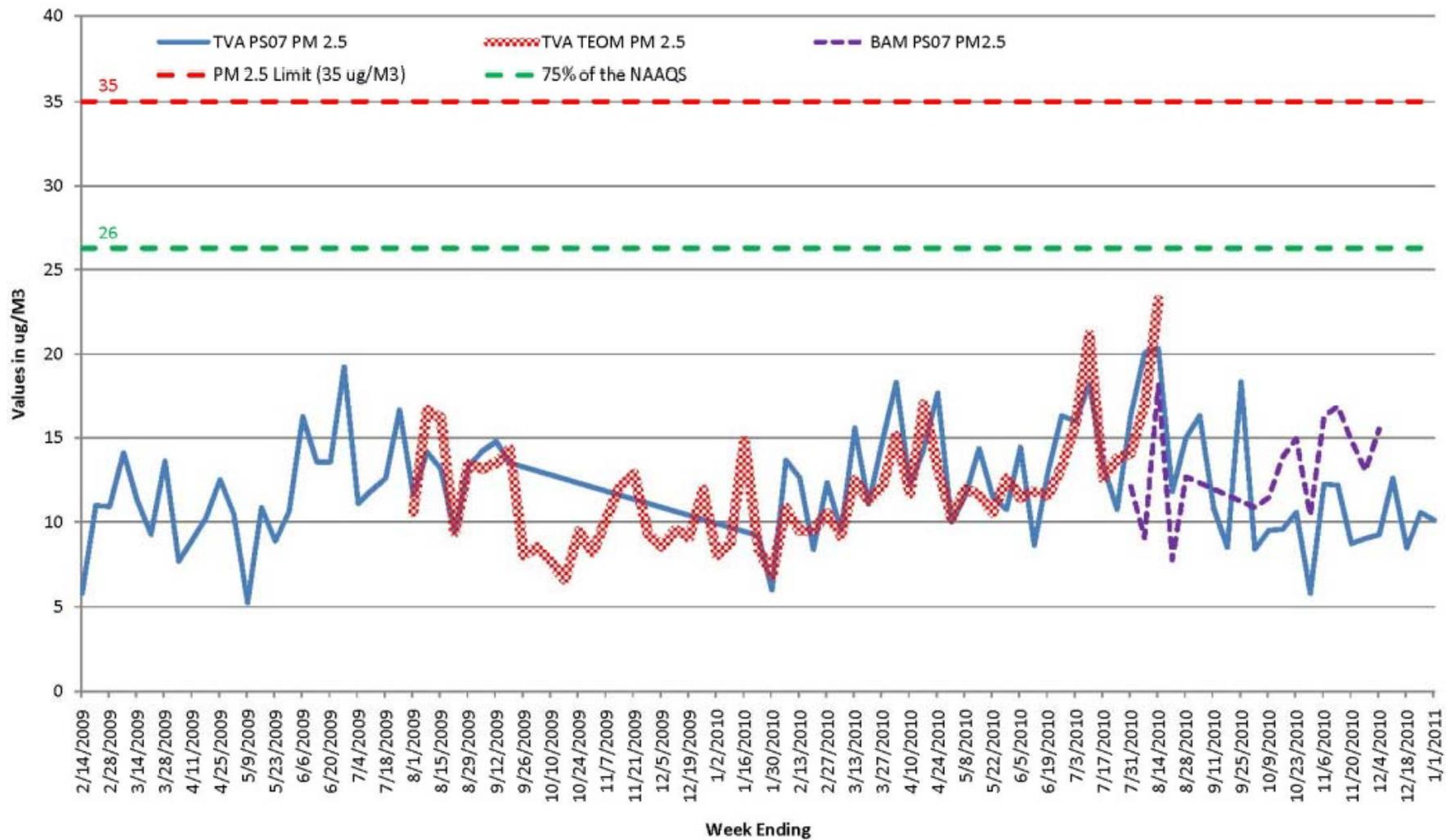


- Real-time air monitors (5 stations)
  - 2 TEOMs (PM 2.5 & 10)
  - 5 BAMs (PM 2.5)
  - 1 FRM (PM 2.5)
- Quarterly EPA Ambient Air Monitoring audit
  - No findings





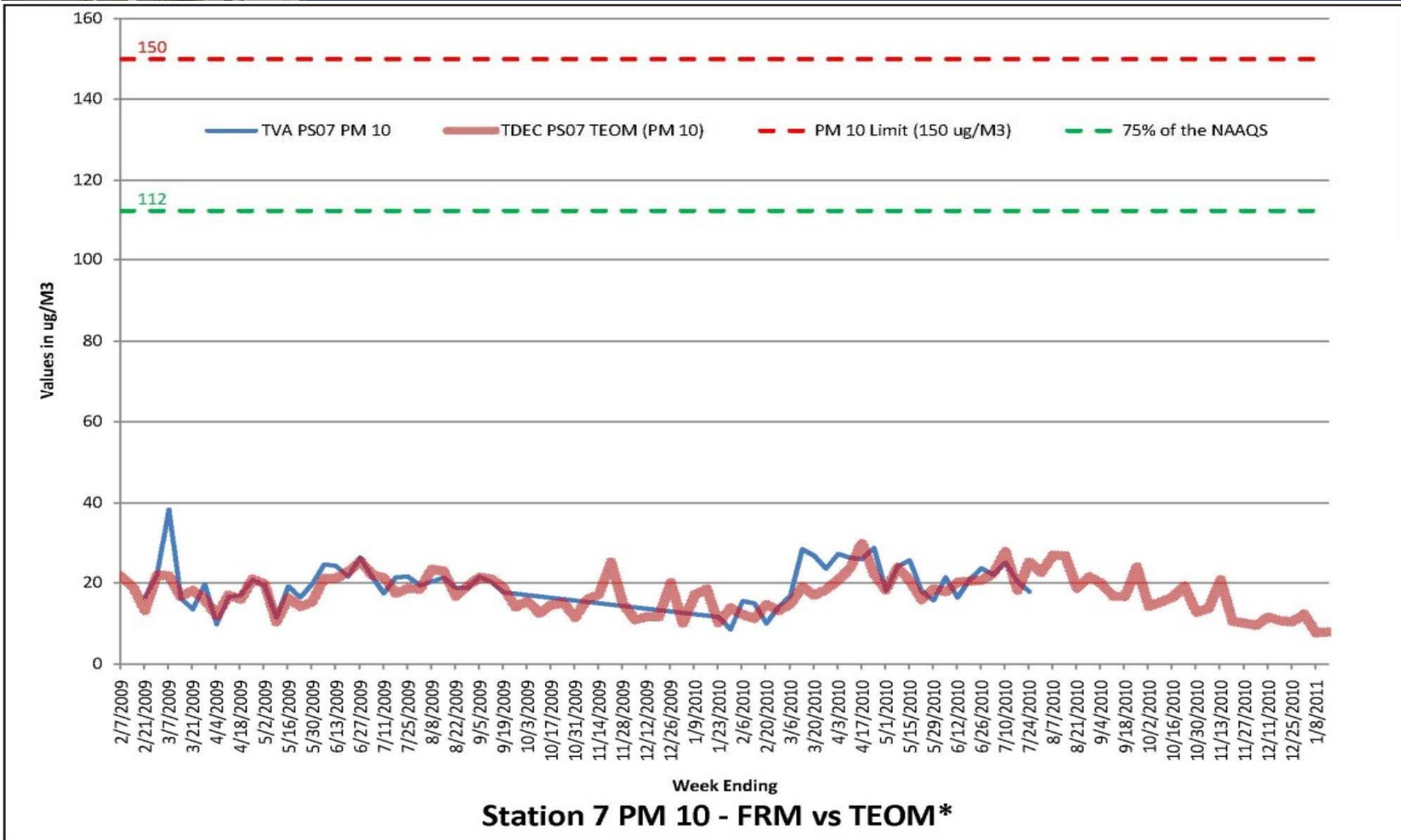
# Air Monitoring



Station 7 PM 2.5 FRM vs TEOM and BAM\*



# Air Monitoring



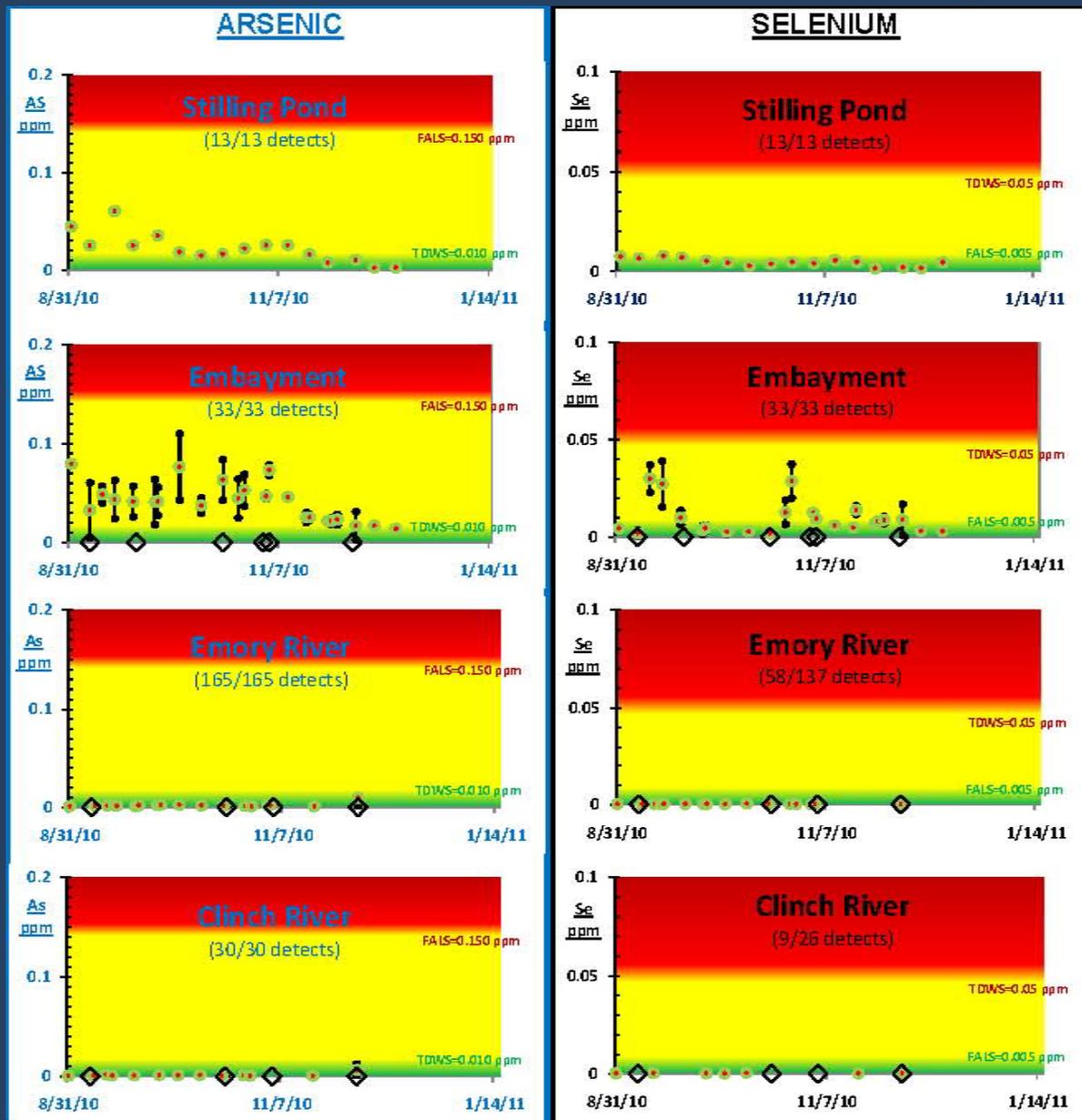


# Surface Water Monitoring

- 3 on-site locations sampled 1/week ●
- ISCO automated samplers (rain events) ●
  - 3 locations on Emory River
  - 2 locations on Clinch River
  - 1 location on-site (clean water ditch)



# Surface Water Monitoring



# River Sampling & Analysis Plan



- **Completed Field Work – Data undergoing validation and review**

- Fixed surface water sampling
  - 8 weeks, 5 locations
- Ground water
- Tennessee & Clinch
  - Submerged sediment
  - Ash deposits
- Clinch & Emory seasonally-exposed sediment
- Biota sampling
  - Fish
  - Benthic invertebrates
  - Bird eggs / hatchlings
  - Amphibians
  - Turtle blood & toenails



- **Ongoing Field Work**

- Clinch & Emory
  - Submerged sediment
  - Ash deposits
  - Sediment pore water sampling
  - Biological assay



- **Future Field Work**

- Aquatic vegetation

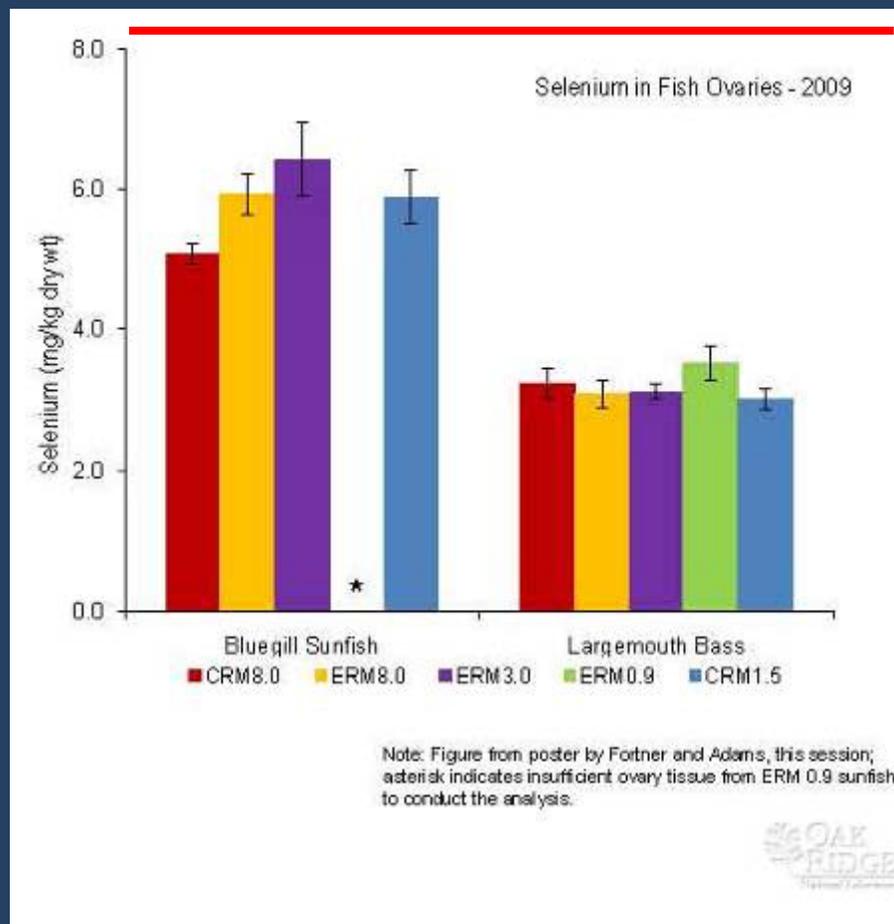
Some data is available and can be found at  
[www.tva.gov/kingston/presentations/setac2010](http://www.tva.gov/kingston/presentations/setac2010) & [www.epakingstontva.com](http://www.epakingstontva.com)

# Greeley and Adams (ORNL) Data

preliminary



- Current selenium concentrations in fish ovaries from the Emory and Clinch Rivers remain **lower than 10 mg/kg threshold** for reproductive impacts

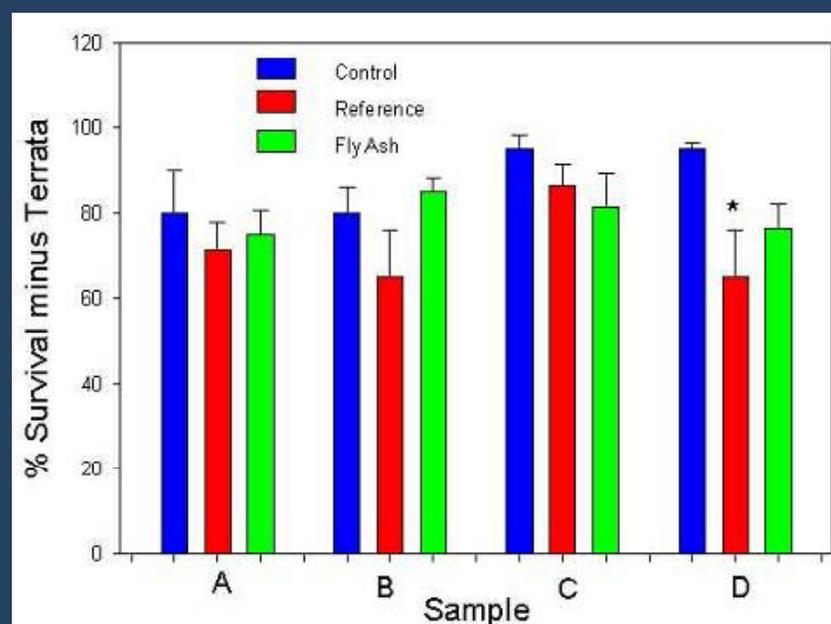
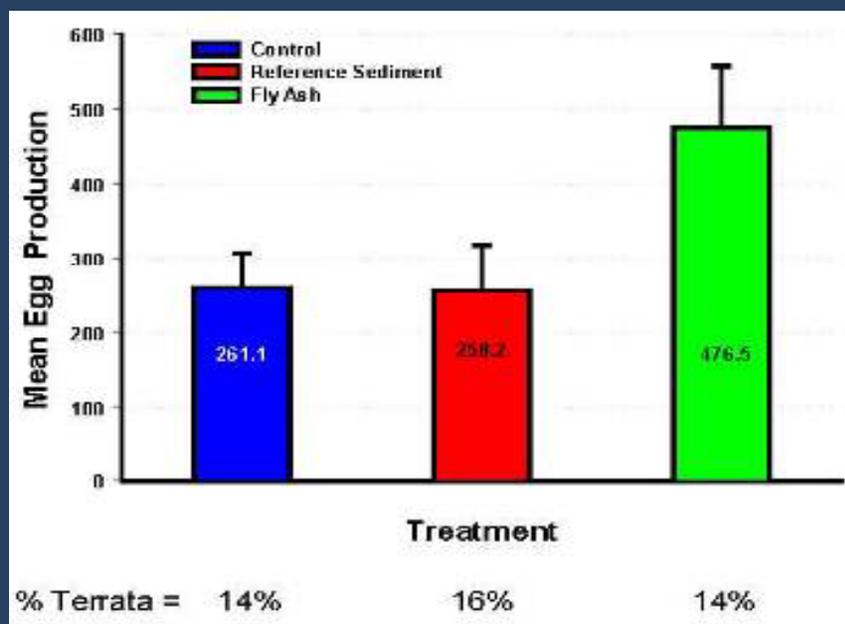


# Greeley and Adams (ORNL) Data

preliminary



- Direct contact to fly ash: *no apparent adverse effects* on 7-day fathead minnow embryo-larval development or adult survival rates

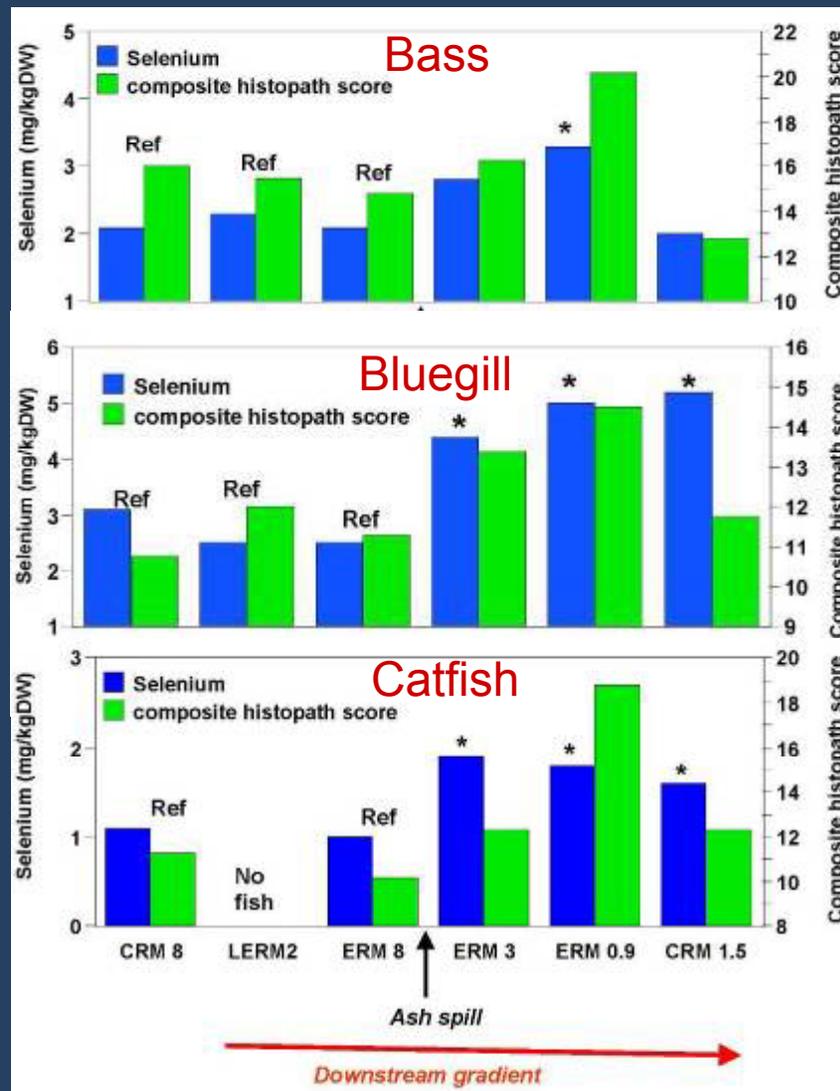


# Baker (TVA), Adams/Greeley (ORNL) Data



preliminary

- Health of fish immediately below the ash spill *appears to be compromised* to some degree
- Effects appear to be *localized to a small area* and to resident species

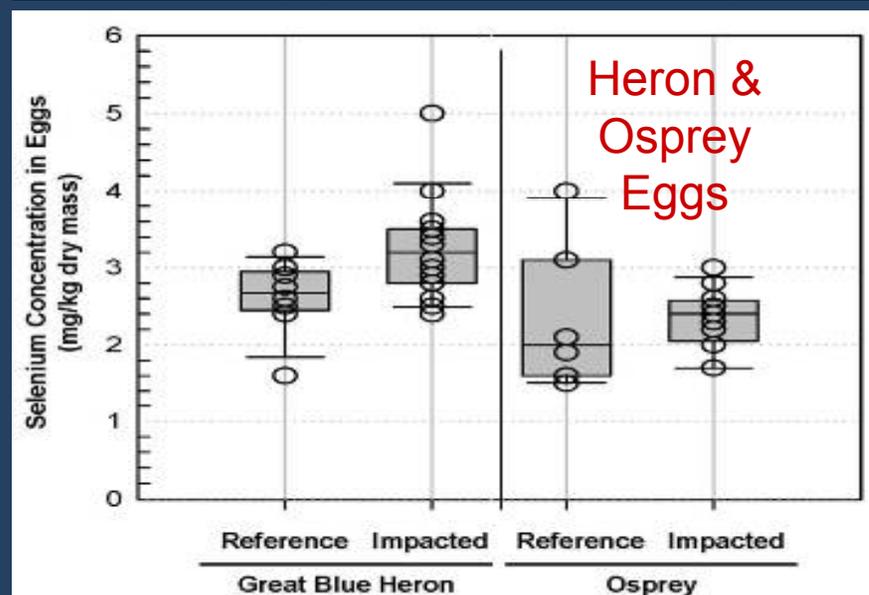
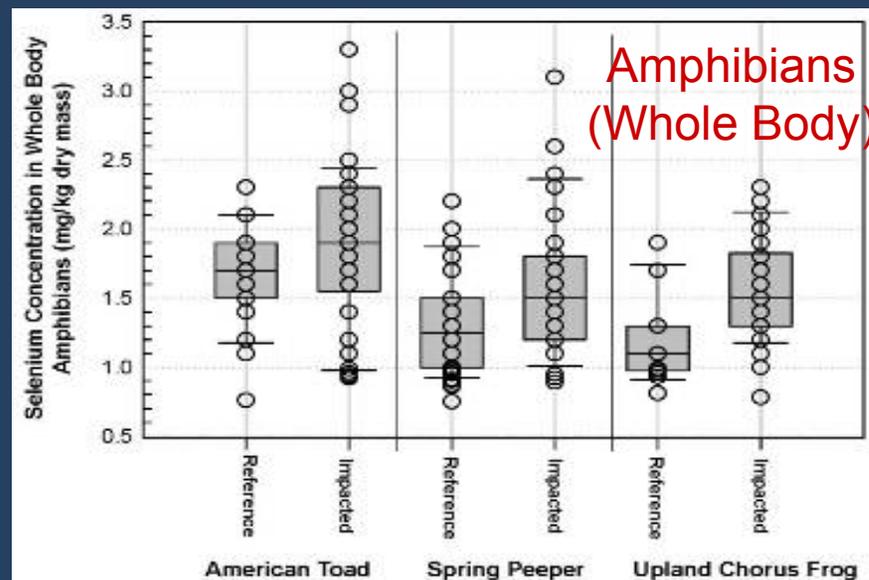




# Hopkins (Virginia Tech) Data

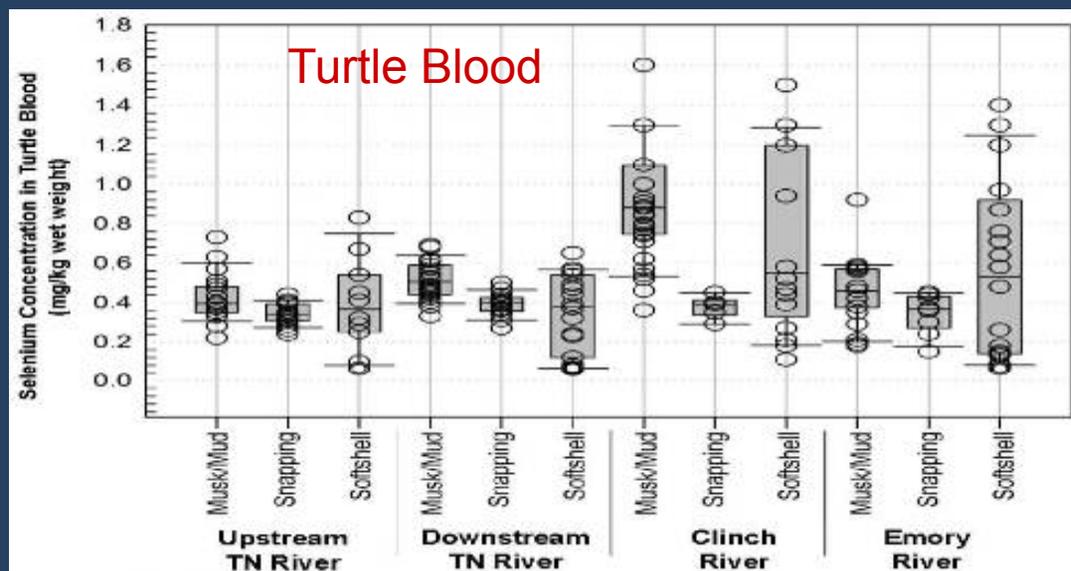
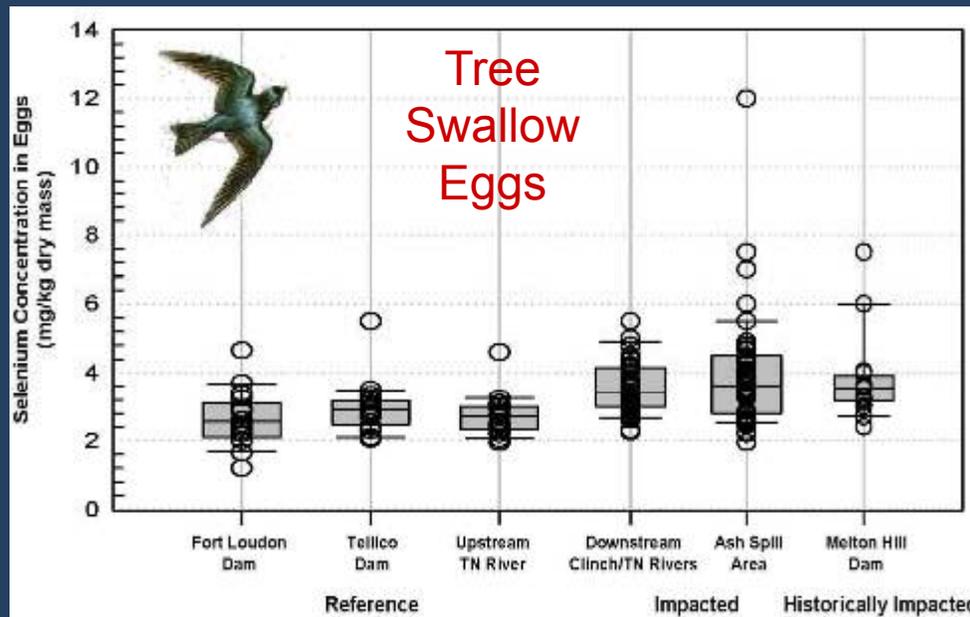
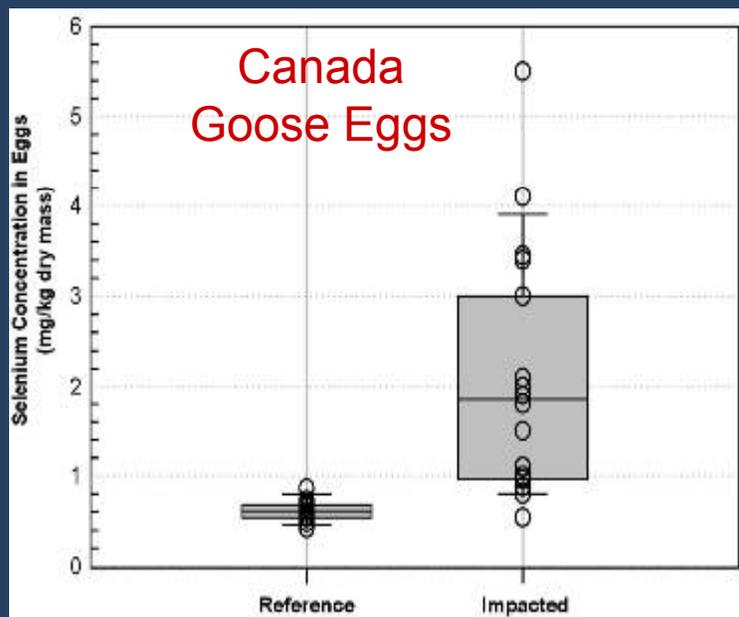
preliminary

- **Selenium** elevated in tissues of most wildlife species evaluated
- Full scale **physiological-reproductive studies** of tree swallows and turtles will determine whether exposure to trace elements has adverse effects



# Hopkins (Virginia Tech) Data

preliminary





# *Coming Up Next....*

- **Continue ash excavation & stacking**
- **Perimeter Containment System Demonstration Project – March 2011**
- **Full scale Perimeter Containment construction – Summer 2011**
- **Complete River System Sampling Analysis Plan activities – Fall 2011**
- **Phase III Action Memo – 2012**
- **Questions?**