

Time Critical Removal Action Update
TVA Kingston Ash Recovery Project

January 26th Public Meeting





TVA Kingston Fossil Fuel Plant Release Site

This Site



- Home
- Dredging
- Excavation
- Disposal
- Productivity
- Nature and Extent
- River Advisory/Closure
- Health and Safety
- Calendar
- Weather

Site Sections

- Dredging
- Excavation
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Document Libraries

- Documents For Current Public Comment
- Responsiveness Summaries
- Recent Additions
- Pollution Reports (POLREPs)
- Community Information
- Incident Command
- Time-Critical Work Plans
- Selenium Reports
- Non-Time Critical Removal
- EPA Order and Administrative Record
- USEPA Region 4 Congressional Testimonies
- TVA Weekly Reports
- EPA Air Audits and Reviews

Imagery Libraries

- Aerial Photos

Photos Taken: January 15, 2010

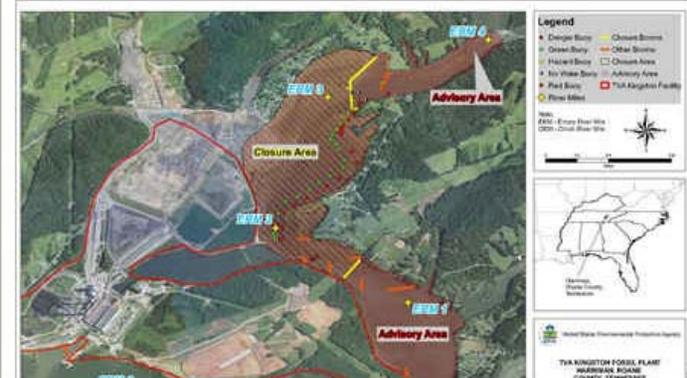


Activities in Ballfield

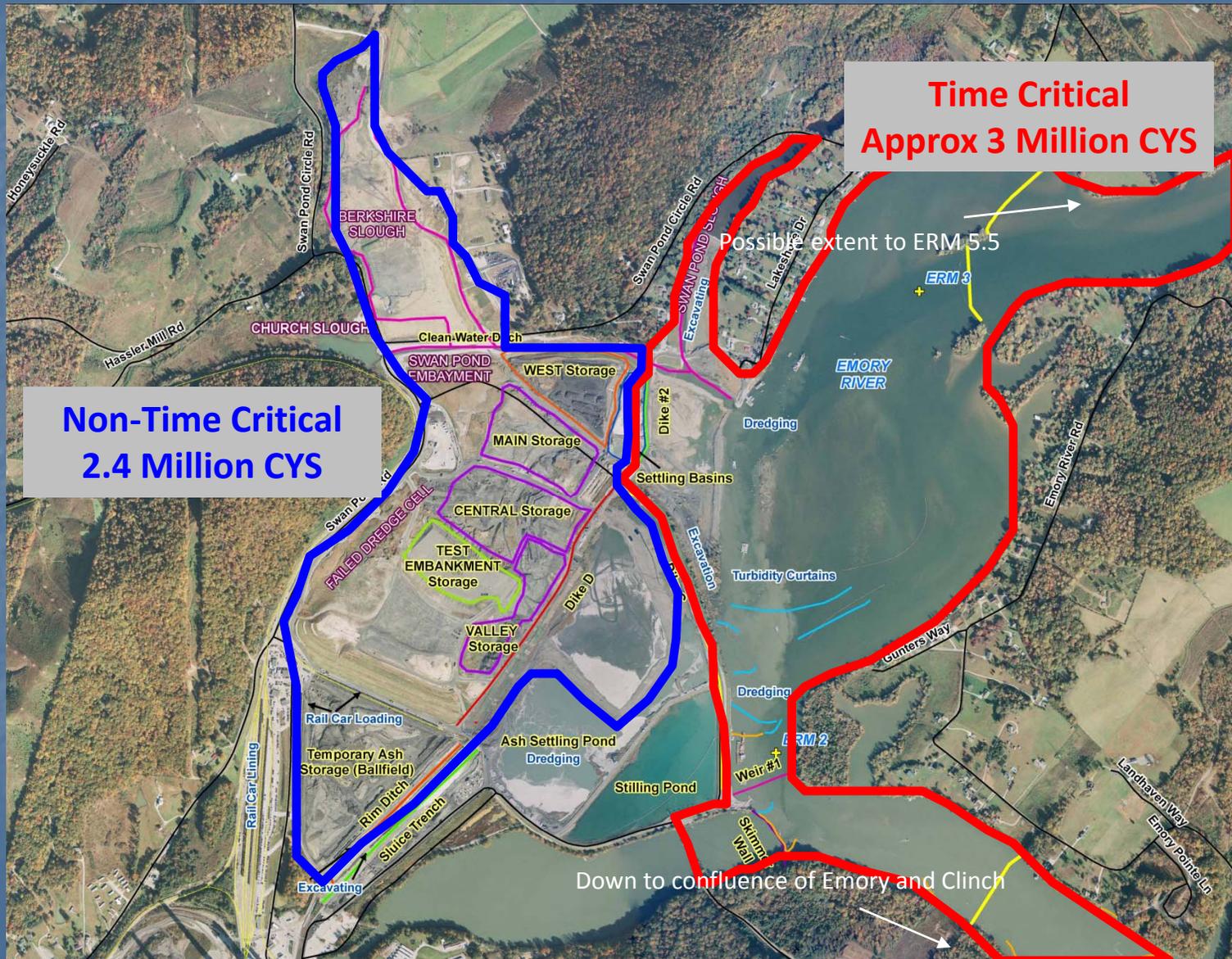
Site Operations - December 22, 2009
(click image to view larger)



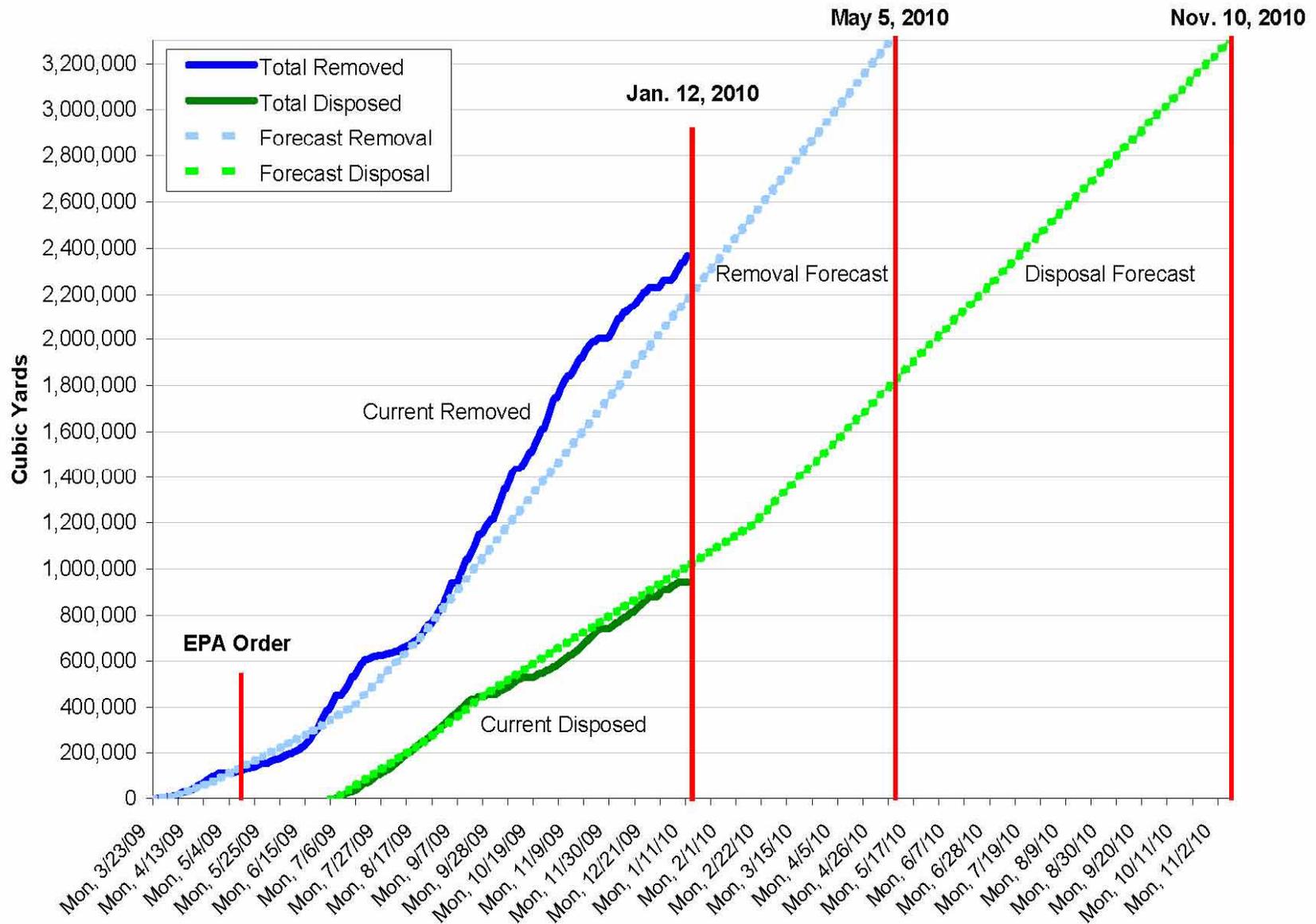
Recreational Advisory for Watts Bar Reservoir
(click image to view larger)



Removal Actions

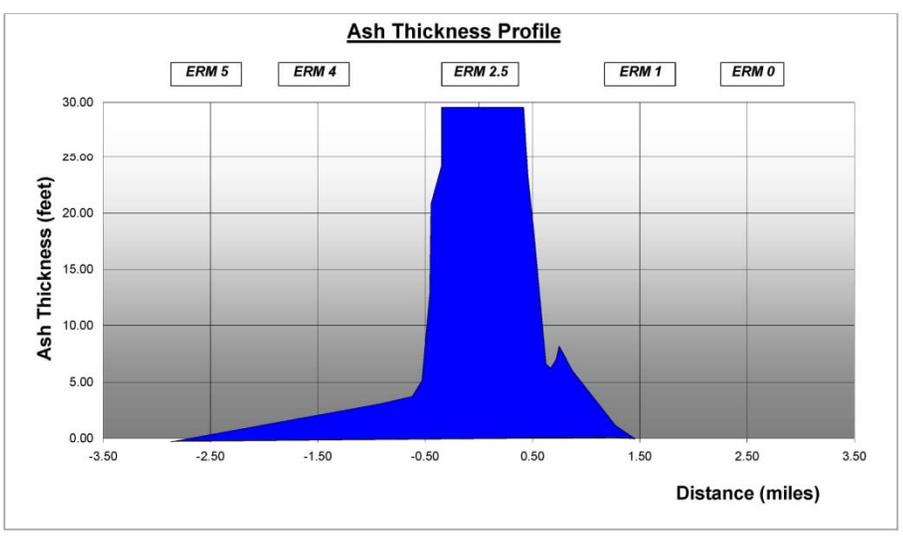


Removal and Disposal Projections

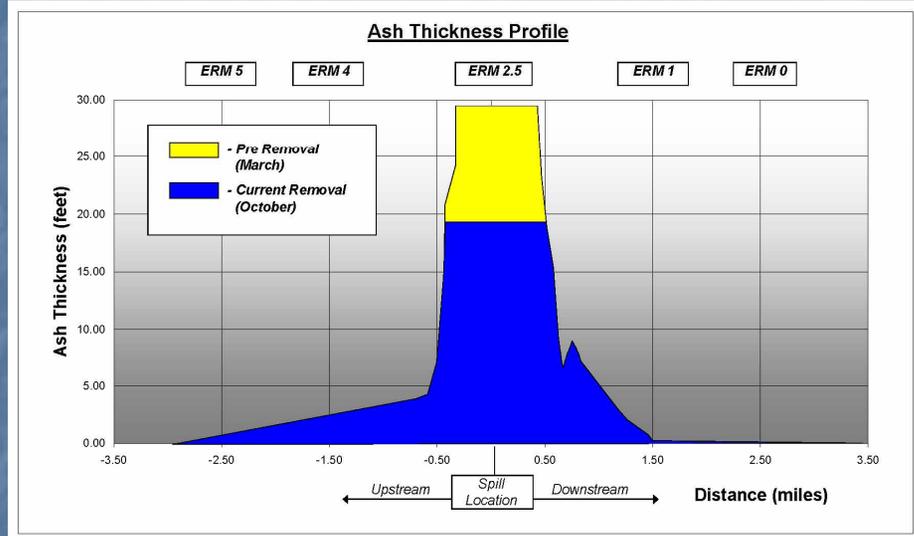


Source Removal

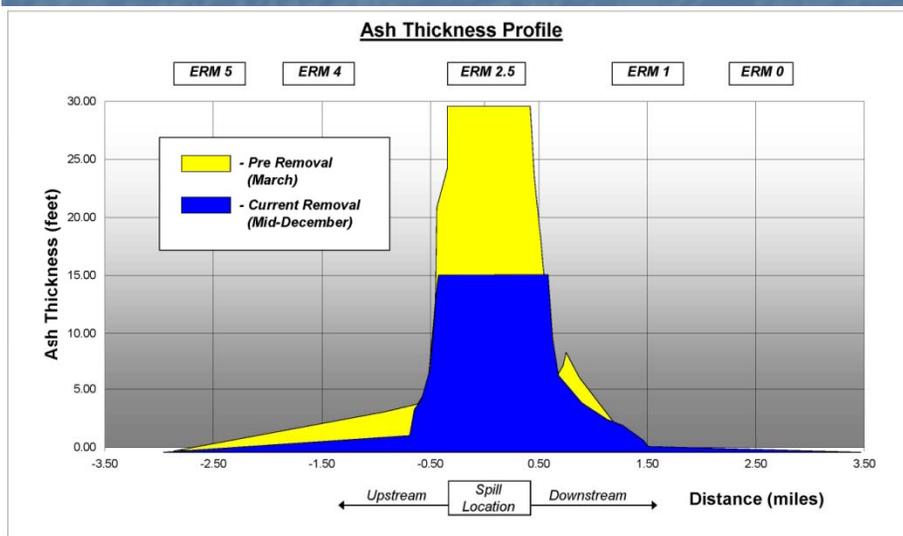
May 2009



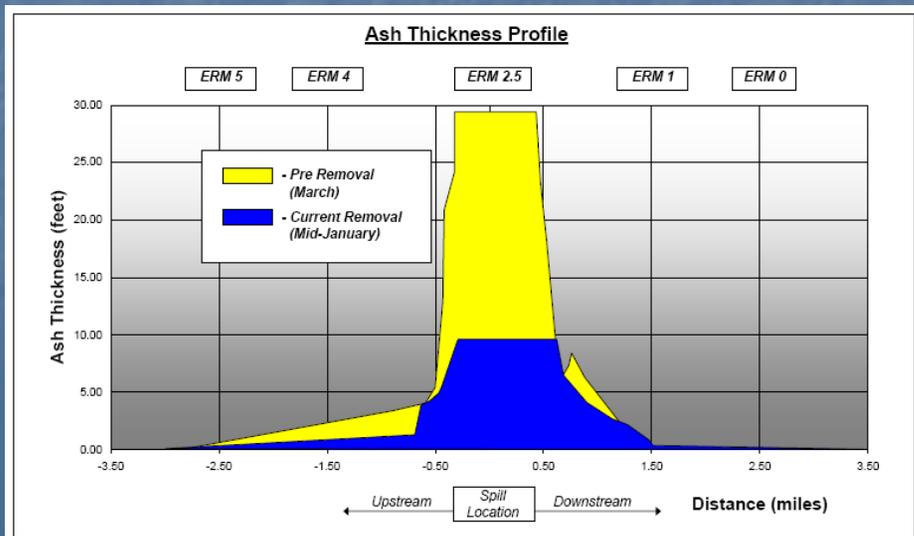
November 2009



December 2009



January 8, 2010

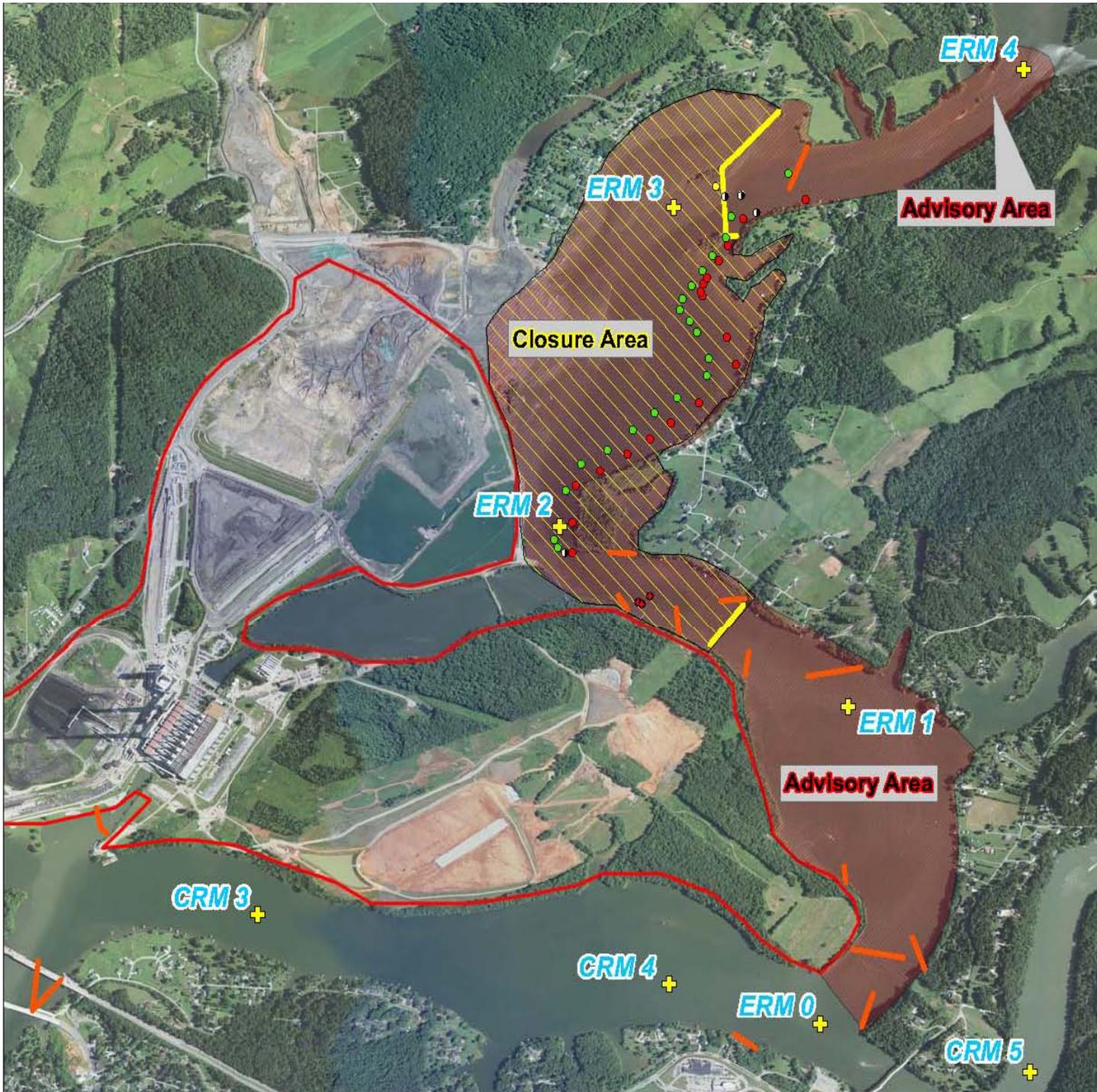


Ballfield to Temporarily Peak at 30'



Design reviewed by
AECOM, Geosyntec and
Bureau of Land
Reclamation National
Dam Safety Experts

01/15/2010



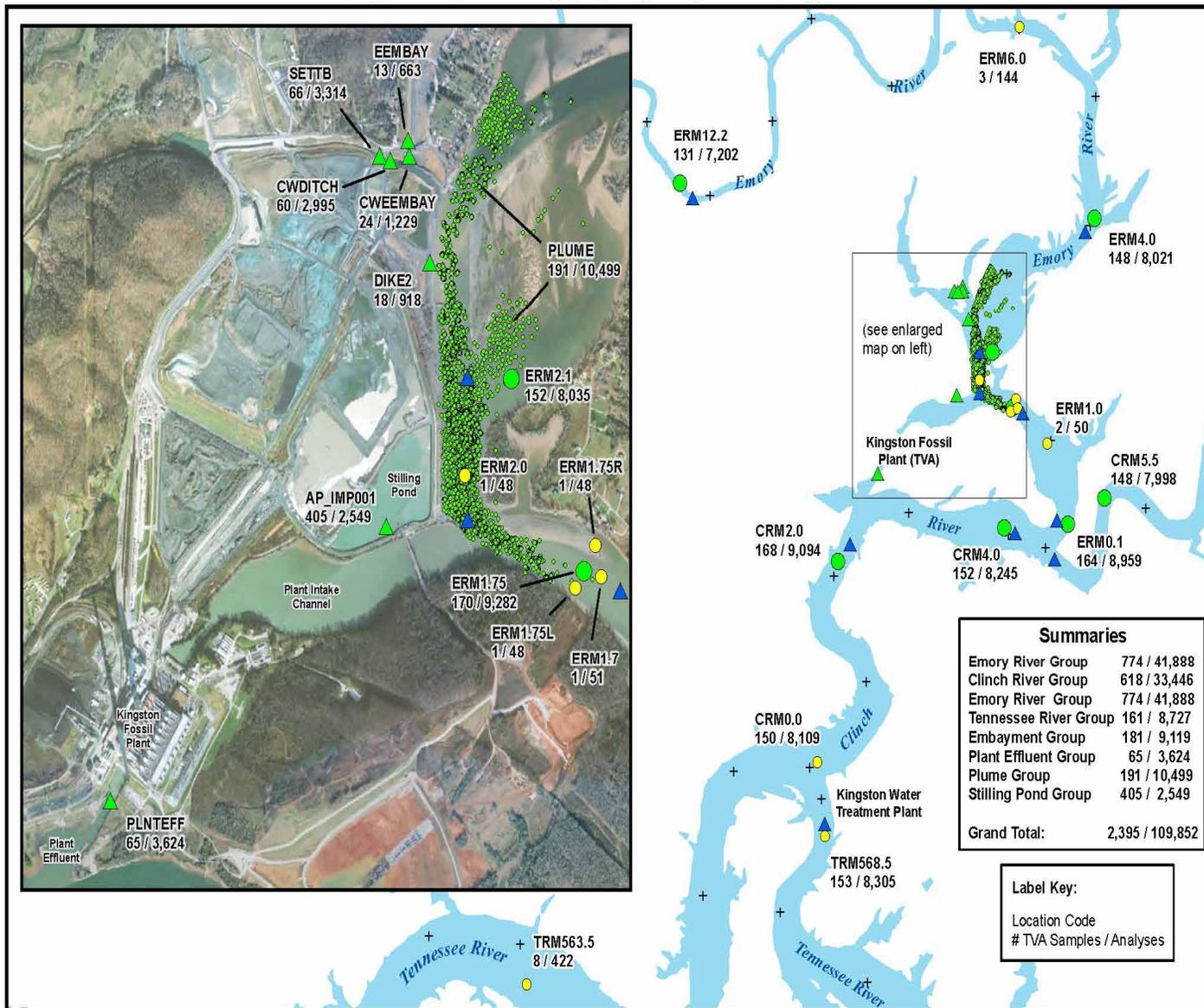
River Closure and Advisory Status

How much longer ?

How far up and down River ?

Is there a safe way to allow navigation ?

Kingston Ash Recovery Water Quality Monitoring



Summaries

Emory River Group	774 / 41,888
Clinch River Group	618 / 33,446
Emory River Group	774 / 41,888
Tennessee River Group	161 / 8,727
Embayment Group	181 / 9,119
Plant Effluent Group	65 / 3,624
Plume Group	191 / 10,499
Stilling Pond Group	405 / 2,549
Grand Total:	2,395 / 109,852

Label Key:

Location Code
TVA Samples / Analyses

- ▲ Ash Operations Surface Water Monitoring Points
- Fixed River Surface Water Sample Locations
- Other River Surface Water Sample Locations
- ▲ TDEC River Surface Water Sample Locations
- Plume Surface Water Sample Locations
- +
 River Miles

Date of map imagery:
December 1, 2009
Data current through:
December 31, 2009
Tennessee Valley Authority
E&T - Environmental Resources
Geographic Information & Engineering

Water Quality Monitoring

- TVA and TDEC alternate days during the week
- EPA conducts split sampling events with TVA

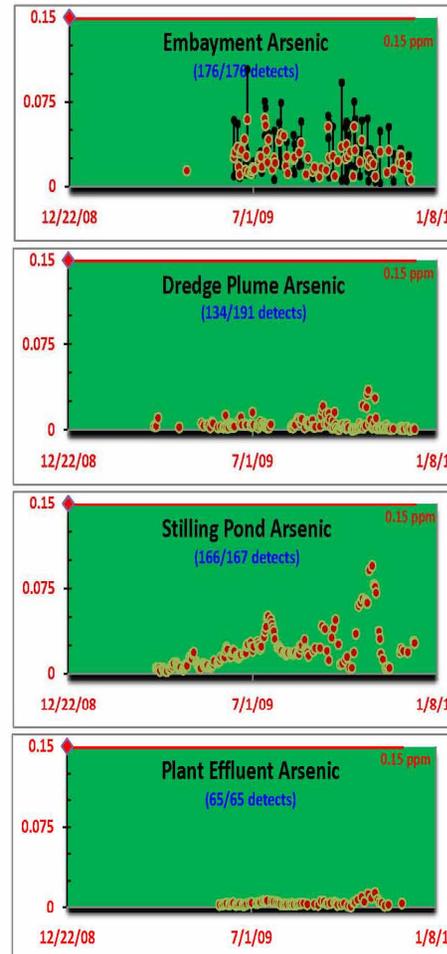
Project: \\knxpgt\16\KIF_EMT\GIS\Kingston_Ash_Slide\ mxd\KIF_Ash_Recovery_Water_Quality_Monitoring_8x11_20091231.mxd

Arsenic

Kingston Ash Recovery Environmental Monitoring



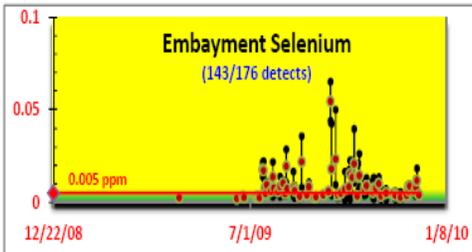
The Tennessee Fish & Aquatic Life Criteria for **Arsenic** is **0.15 ppm**



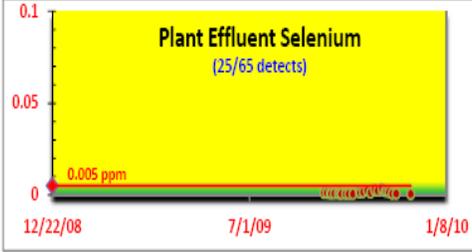
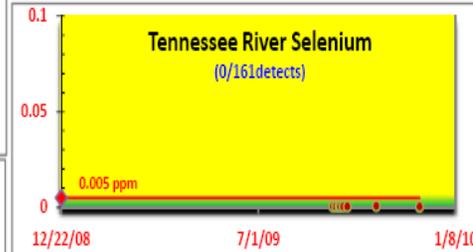
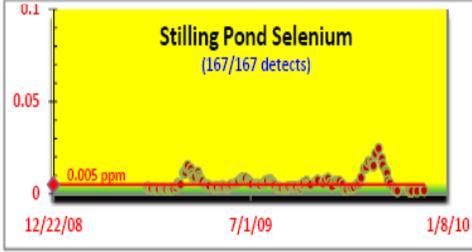
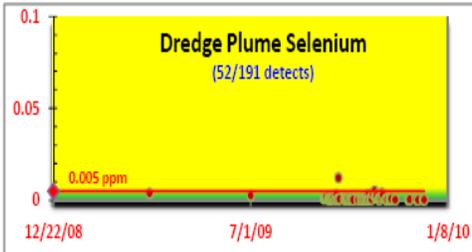
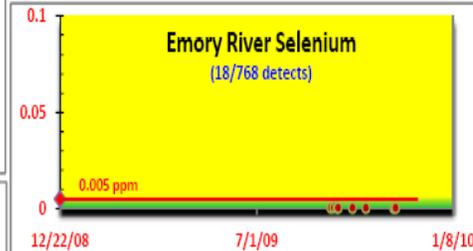
The following applies to all graphs on this page:
Dissolved concentrations only (total concentrations are not plotted)
 Detects **ONLY** are Plotted
 All concentrations are in parts per million (ppm)

Selenium

The Tennessee Fish & Aquatic Life Criterion for **Selenium** is **0.005 ppm**

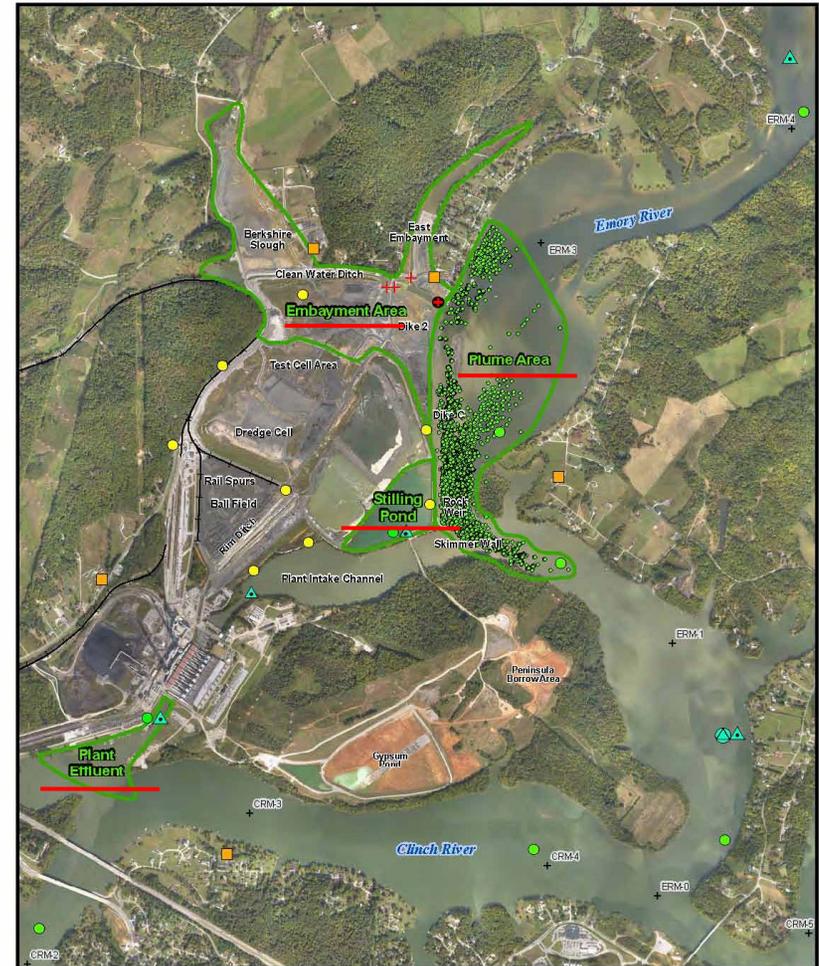


The spill was to the Emory River.



The following applies to all graphs on this page
Total concentrations only (dissolved concentrations are not plotted)
Detects ONLY are Plotted
All concentrations are in parts per million (ppm)

Kingston Ash Recovery Environmental Monitoring



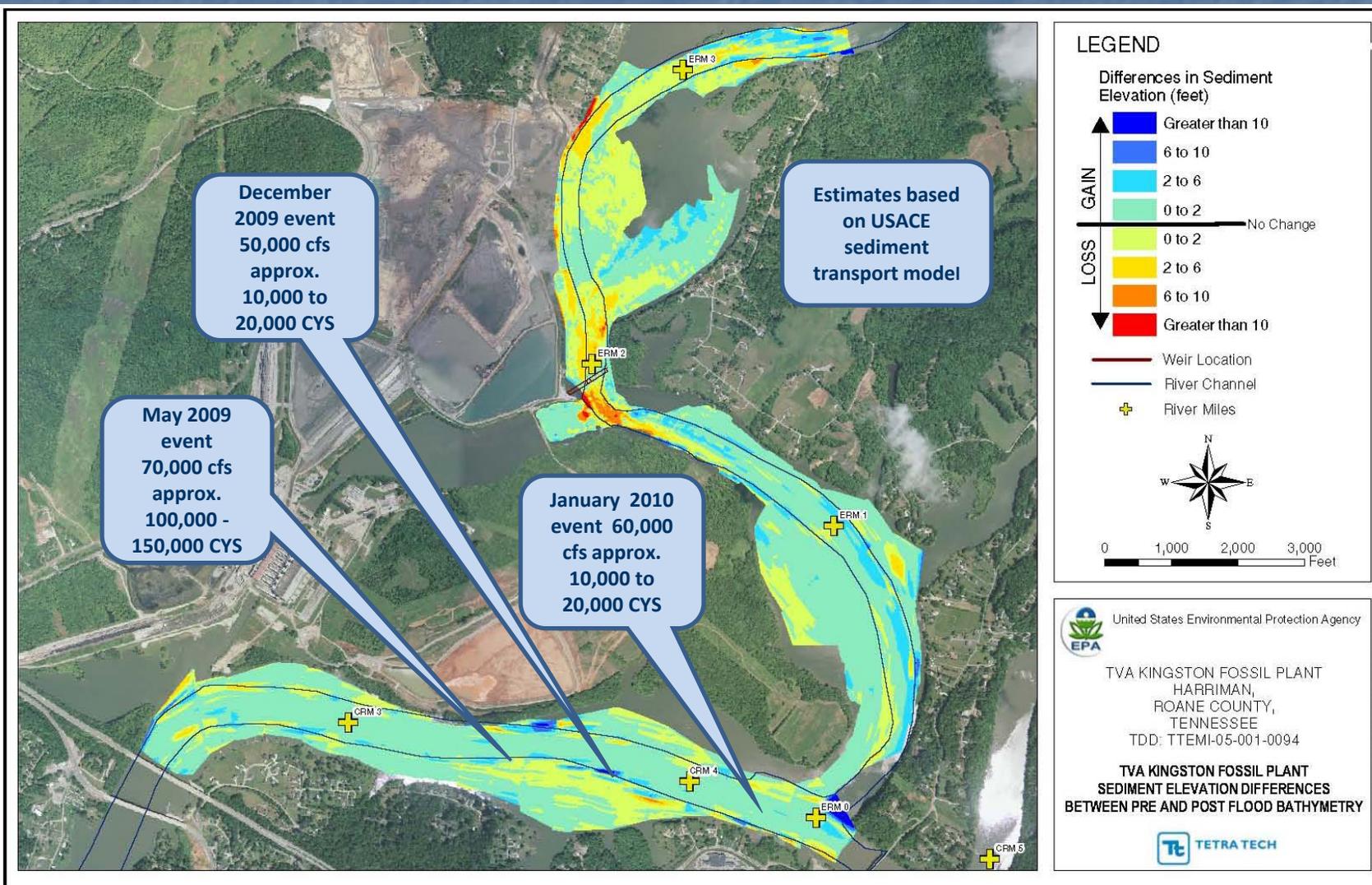
Date of map Imagery: October 8, 2009

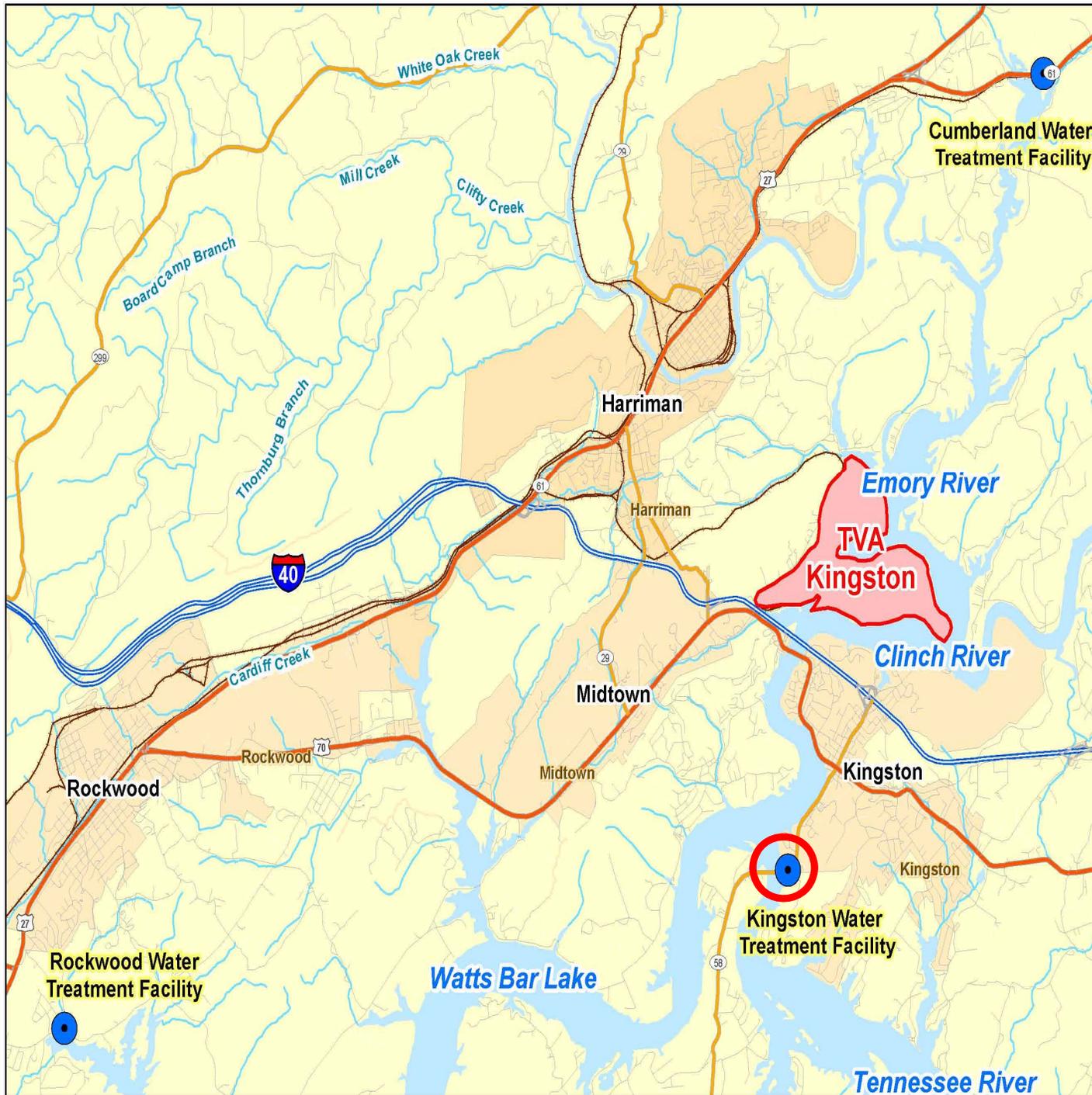
Tennessee Valley Authority
OE&R - ER
Geographic Information & Engineering

- ▲ Continuous Hydrolab Monitors
- Stationary Air Monitoring Locations
- River Auto Sampler
- Embayment Auto Sampler
- Embayment Sampling Locations
- Monitoring Well Locations
- Fixed Surface Water Sample Locations
- Plume Surface Water Sample Locations

0 500 1000 1500 2000
1:44
Project: Wknpptp16\KIE-EMT\GIS\Kingston_Ash_Slide.mxd
mxd\KIF_Ash_Recovery_Environment_Monitoring_200911025_8x11.mxd

Ash Migration during Highest Flow Events





**Kingston Drinking
Water Quality
Remains
Protective of
Public Health Even
During High Flow
Events**

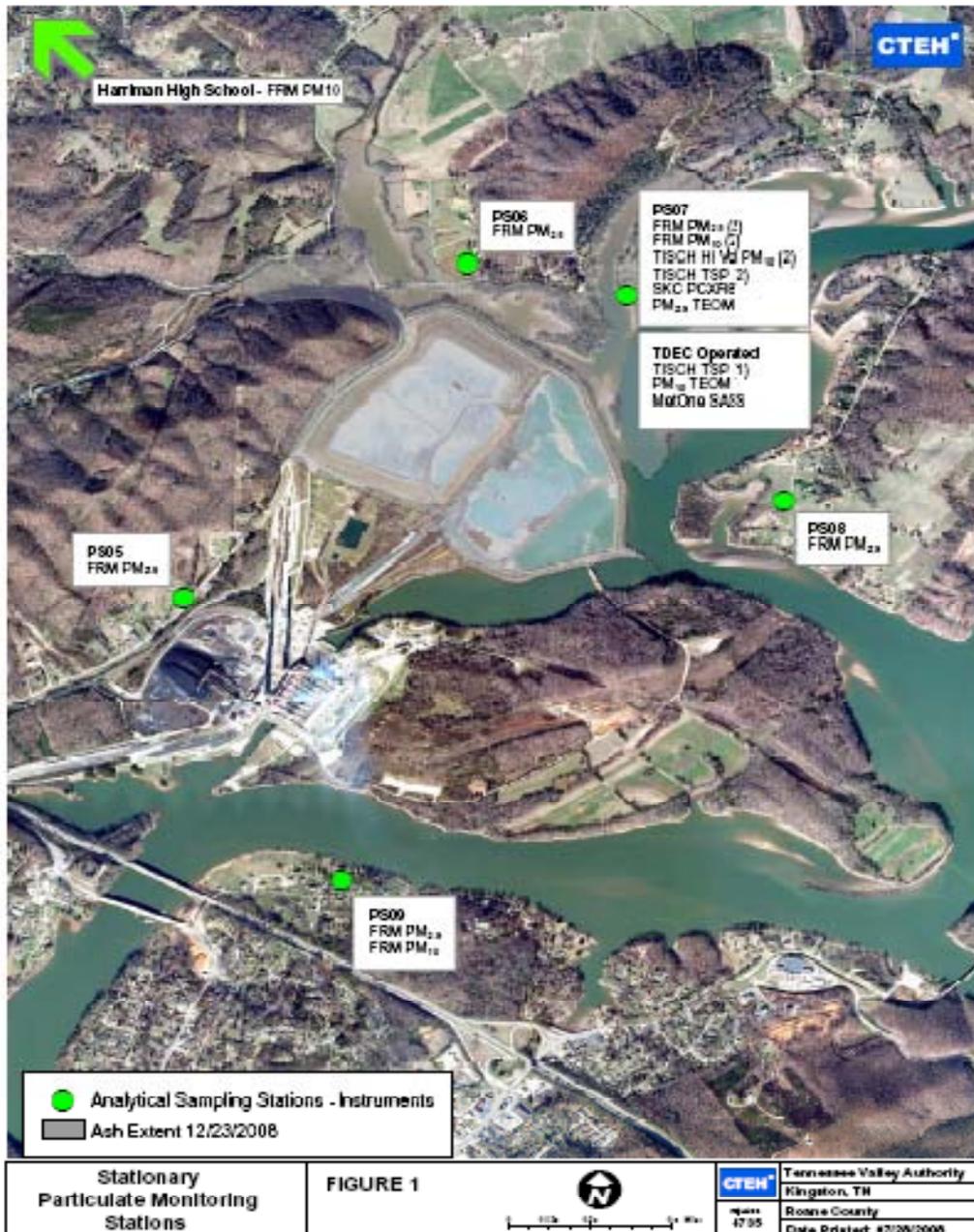
What Does This Mean ?

- Water adjacent to the Site has elevated metals concentrations (data based).
- Migration does occur during highest flow events.
 - May event approx 100,000 – 150,000 CYS
 - December event approx 10,000 – 20,000 CYS
 - January event approx 10,000 – 20,000 CYS
 - At the request of the CAG, TVA has installed a custom built event based sampler to capture highest flow contaminant data during the peaks of the events.
- Drinking water continues to meet public health protective criteria.

Recent EPA Multimedia Audit

- Air, sediment, soil, water, biota evaluated.
- No significant deficiencies were found with soil, sediment, water and biota sampling.
- Air findings are as follows:
 - Silica and metals air data met QA.
 - TEOM PM2.5 and PM10 real-time air network and PM10 mobile monitoring met QA.
 - Biweekly PM2.5 and PM10 particulate filter media recommended for rejection due to incorrect lab method from mid Sept to mid January.

Particulate Monitoring Stations



- Five stations ring the Site
- PS07 is the primary station due to prevailing wind.
- Real time TEOMs are located at PS07 and meet QA.
- All stations have filter based particulate monitoring. They are sampled every 3 to 6 days.
- The data from these filter based monitors has been recommended for rejection for the mid-September to mid-January time period.
- Silica and metals results meet QA as well as TEOM data.

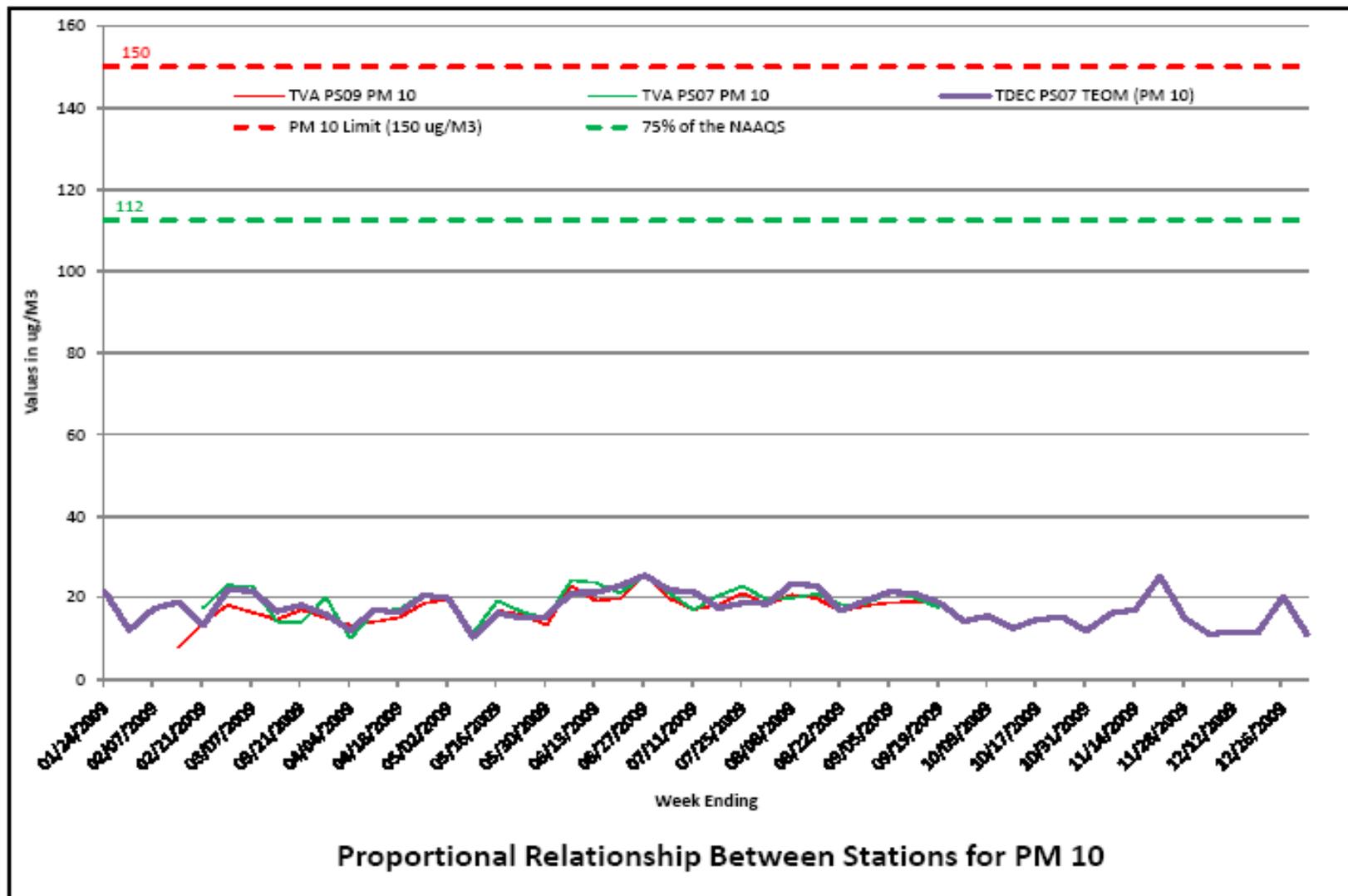
Was the Public Put at Risk Due to Unacceptable Particulate Matter Data?

- The Agency is confident that the public was not put at risk during this period.
- The redundant nature of the air monitoring system coupled with environmental conditions make us confident.
- The following slides will briefly discuss these redundant systems.



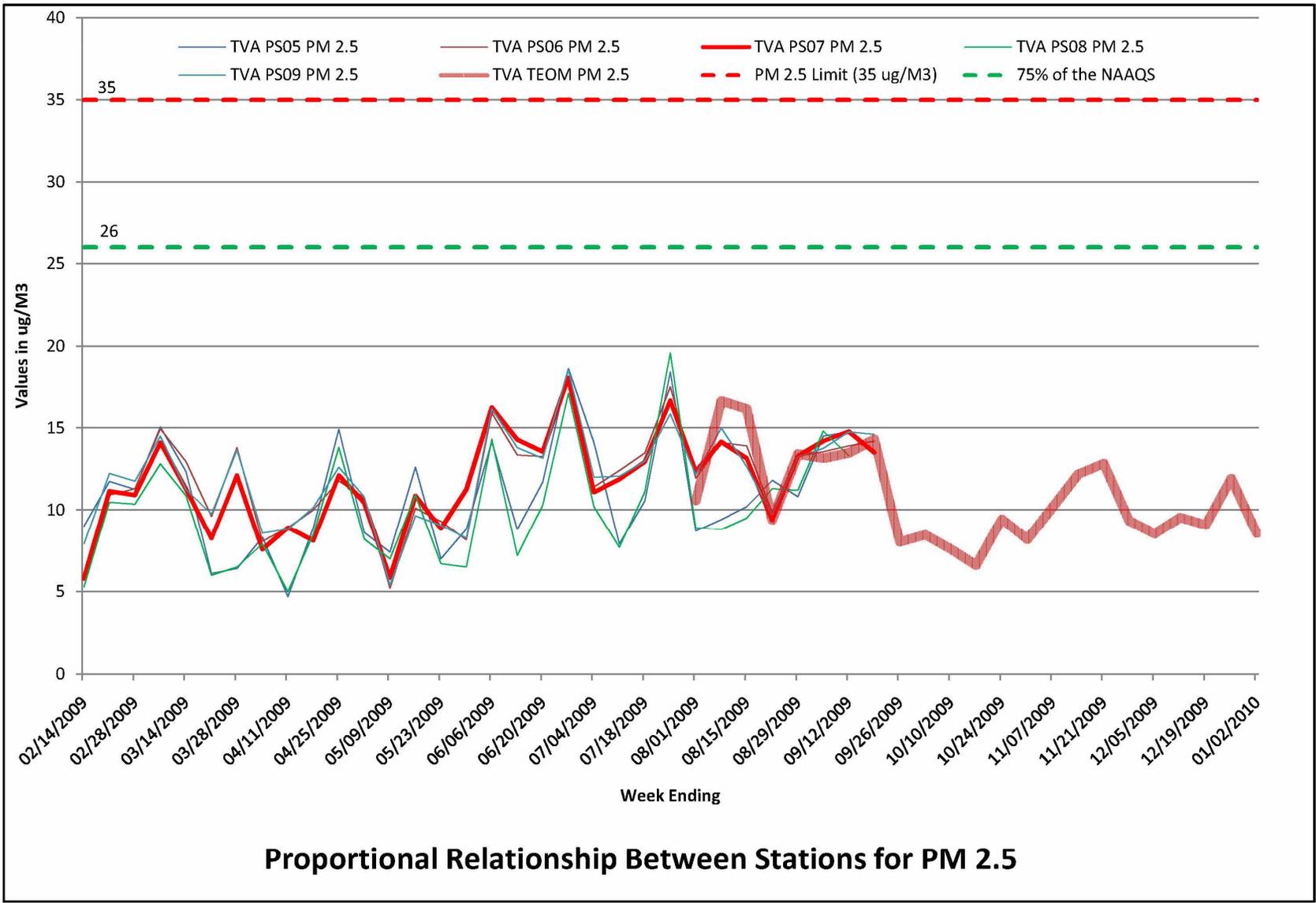
What's the Weight of Evidence ?

- The TEOMs provide continuous monitoring which capture the worst case air monitoring conditions. It is located at PS07.
 - Concentrations were far below the National Ambient Air Quality Standards.
 - Months of good quality data demonstrate that the TEOMs are excellent predictors of air quality surrounding the Site.
 - Lets look at a few graphs.



Proportional Relationship Between Stations for PM 10

Graph 4

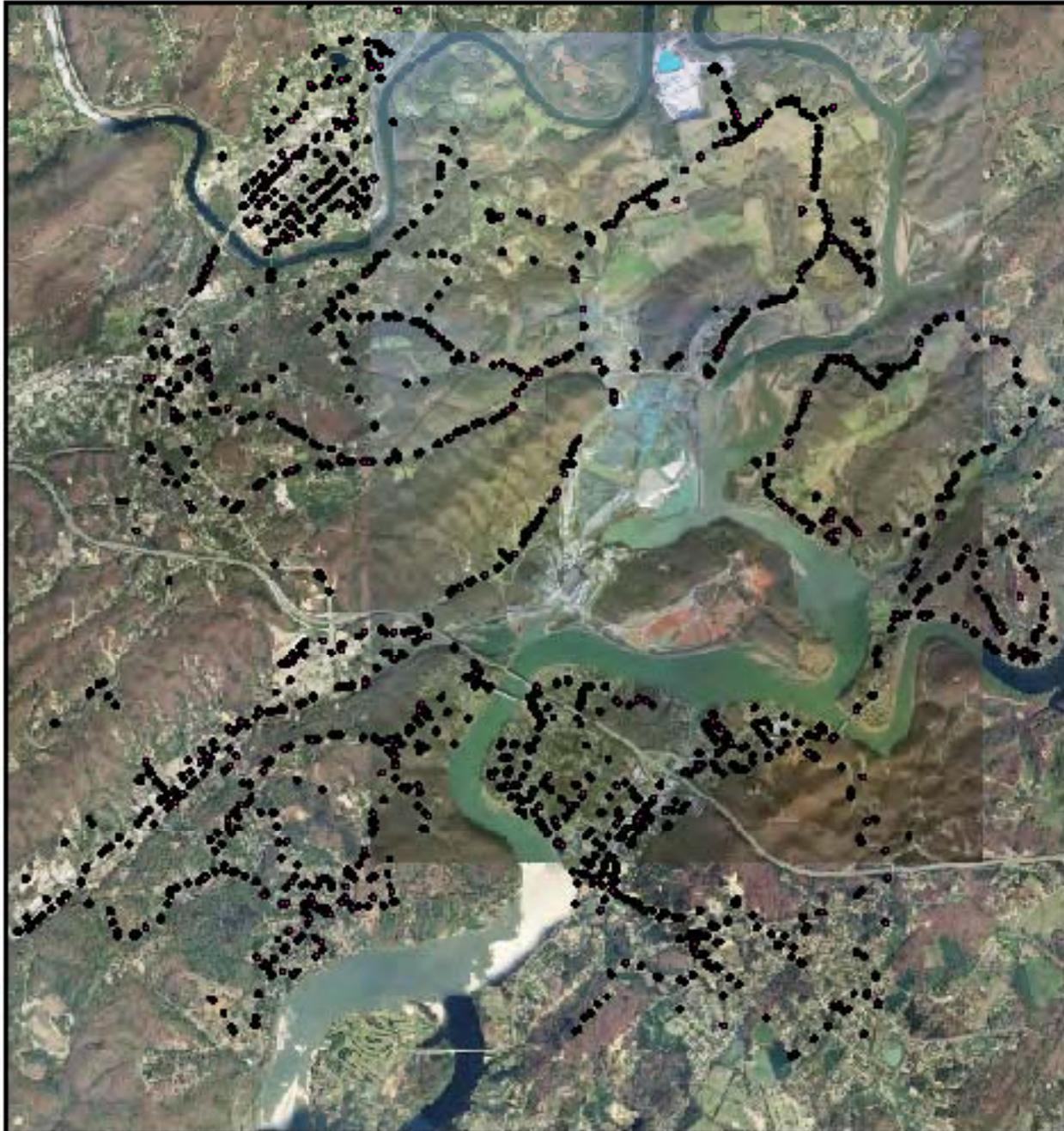


Proportional Relationship Between Stations for PM 2.5

Graph 3

Additional Weights of Evidence ?

- Thousands of mobile PM10 readings support this conclusion
- Industrial hygiene samples within the exclusion zone also support this conclusion
- During the period in question it rained 40% of the time.



PM10 Mobile Monitoring

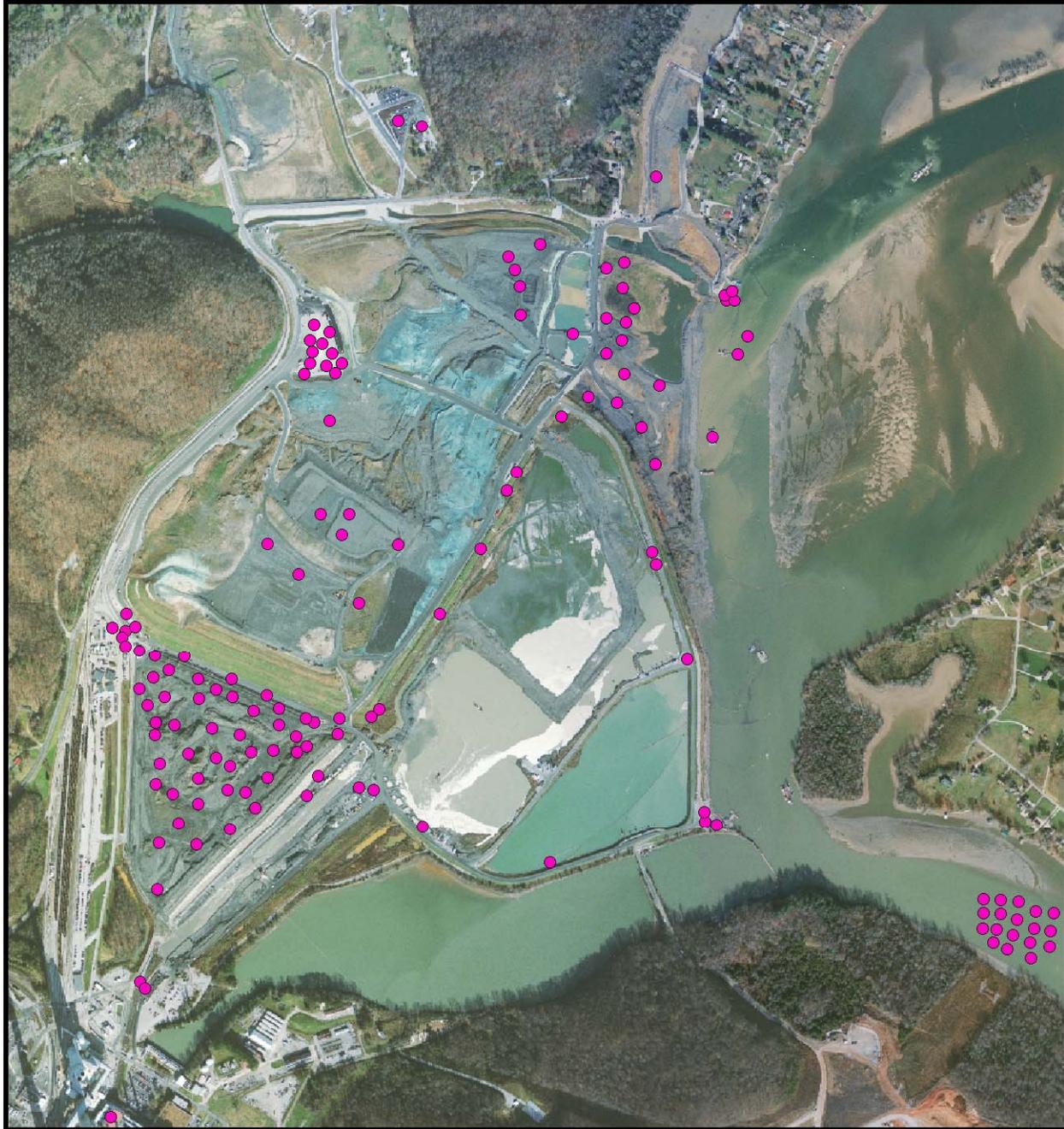
• Real Time PM10 Mobile Monitoring Samples
(10/01/09 - 10/06/09)

- 200 to 400 instantaneous readings daily
- Thousands over this 2 week period
- Tens of thousands over 4 months



Date of Imagery:
Plant Area: 12/01/2009
Other Area: 2008

Tennessee Valley Authority
EDT - Environmental Resources
Geographic Information & Engineering



Industrial Hygiene Monitoring

• Industrial Hygiene Monitors

**Over 150 individual
workday samples
taken during the
mid September to
mid January period**



Date of Imagery: 12/01/2009

Tennessee Valley Authority
E&T - Environmental Resources
Geographic Information & Engineering

Corrective Actions

- TVA will submit an investigative report.
- EPA audit staff will participate in TVA's QA weekly conference calls with its analytical laboratories.
- EPA audit staff will conduct audits of TVA contract laboratories on a periodic basis.
- EPA will continue to conduct periodic independent sampling and performance audits of TVA's air monitoring network.
- EPA requires TVA to submit a Corrective Action Plan and schedule for accelerating the validation of raw data in order that it can be released for review on a more timely basis.
- EPA requires TVA to submit a Corrective Action Plan for upgrading its perimeter stations to include additional TEOM monitors.
- EPA notes that TVA has already replaced the laboratory conducting filter media based particulate monitoring.

Conclusions

- On track to remove the overwhelming majority of coal ash from the Emory by May and dispose by November.
- River closure to be extended.
- Ballfield to rise temporarily to 30 feet.
- Metals are elevated next to the Site in the Emory River.
 - Drinking water continues to meet protective levels.
 - Highest flows continue to migrate ash.
- Audit found acceptable data except for PM filter based samples for a 4 month period.
 - Public was not exposed to unacceptable risk.
 - TVA will execute corrective actions.