

# Environmental Monitoring Past and Present around Savannah River Site

Barty Simonton, Acting Manager  
Environmental Radiation Program  
Georgia Department of Natural Resources  
Environmental Protection Division  
4220 International Parkway, Suite 100  
Atlanta, GA 30354  
(404) 362-2675  
[Barty.Simonton@dnr.state.ga.us](mailto:Barty.Simonton@dnr.state.ga.us)



# Environmental Radiation Program

- Maintains environmental radiation monitoring networks around nuclear facilities in or affecting Georgia (currently limited to no environmental monitoring)
- Lead state agency for radiological emergency response
- Issues permits for radioactive waste disposal (none issued to date)



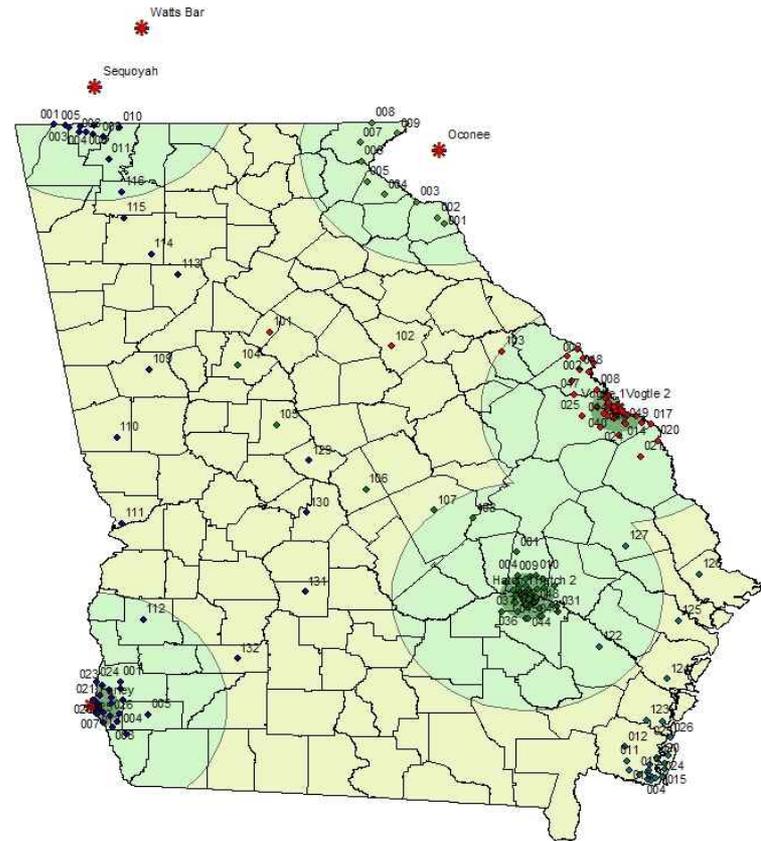
# Where we're located

- Environmental Radiation Program (Past)
  - 6 management / technical staff in Atlanta
  - 2 staff in Augusta District Office
  - 1 staff member in Savannah District Office
- Environmental Radiation Program (Present)
  - 4 management / technical staff in Atlanta (2 currently assigned to Drinking Water Program for laboratory analysis, only available for emergency purposes)
  - 1 staff member in Augusta District Office



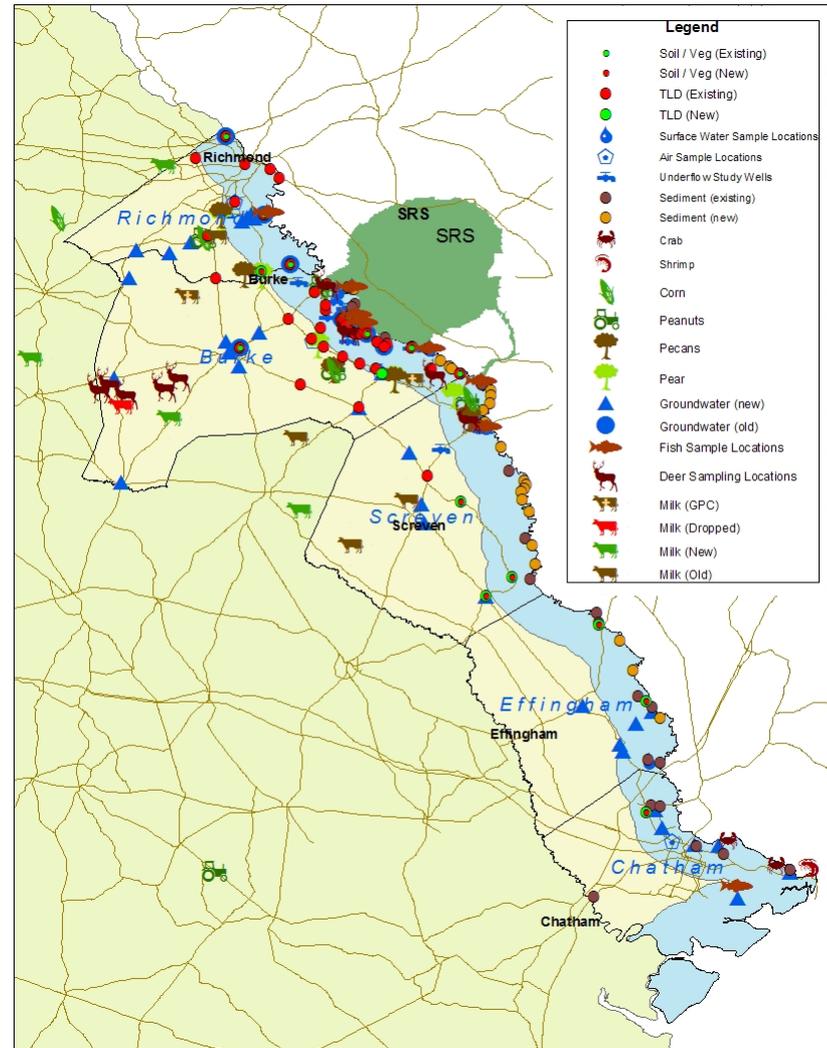
# Where we monitored

- Southern Nuclear
  - Farley Nuclear Plant
  - Hatch Nuclear Plant
  - Vogtle Electric Generating Plant
- Tennessee Valley Authority
  - Sequoyah Nuclear Plant
  - Watts Bar Nuclear Plant
- Duke Power Company
  - Oconee Nuclear Plant
- Defense Related
  - Naval Submarine Base, Kings Bay
  - Savannah River Site

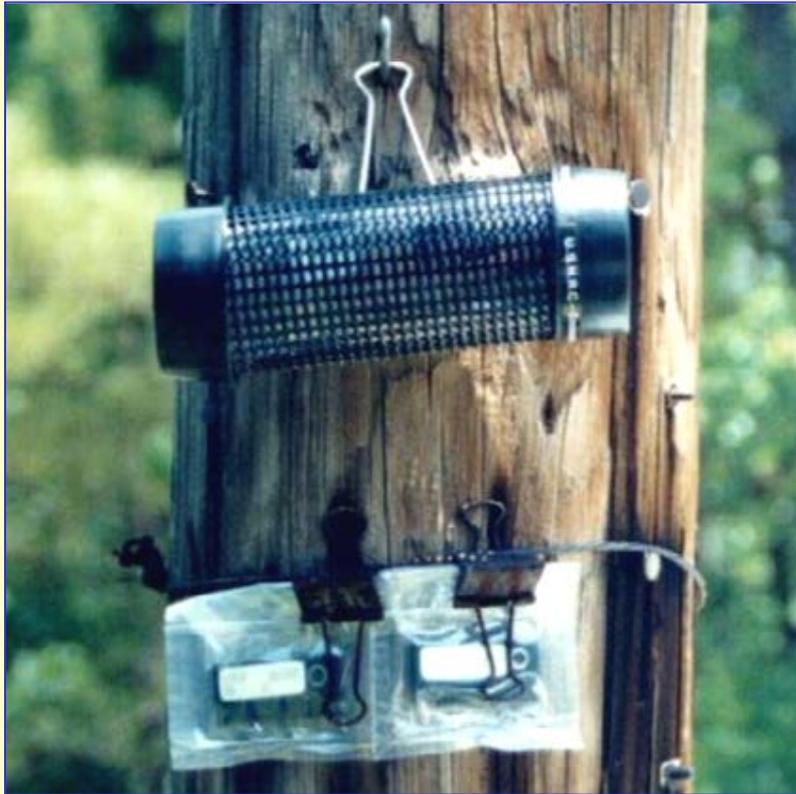


# Close Up on Savannah River

- Five Georgia Counties
  - Richmond
  - Burke
  - Screven
  - Effingham
  - Chatham
- SRS and Vogtle
- Limited network through 1983
- Vogtle pre-op network in 1983
- SRS AIP in 1993
- Enhanced monitoring in 2001
- AIP discontinued 2004
- GT Contract reduced in 2006
- GT Contract discontinued 2010



# Radiation Monitoring with TLD's



TLD Placement in the Environment



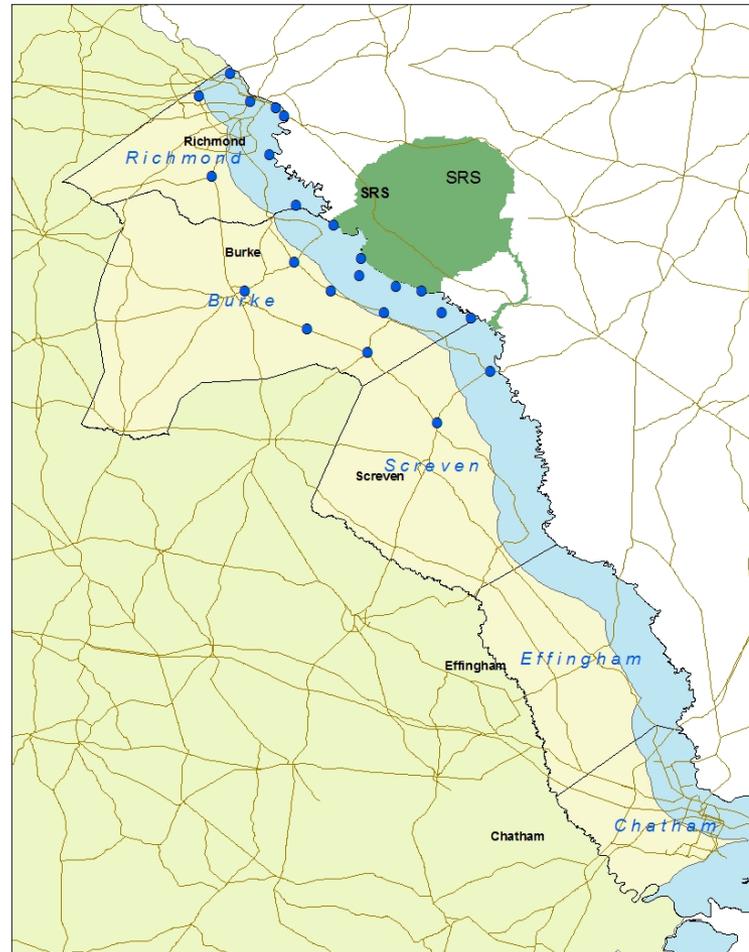
TLD Testing in Lab



# Radiation Monitoring with TLD's

## TLD Stations

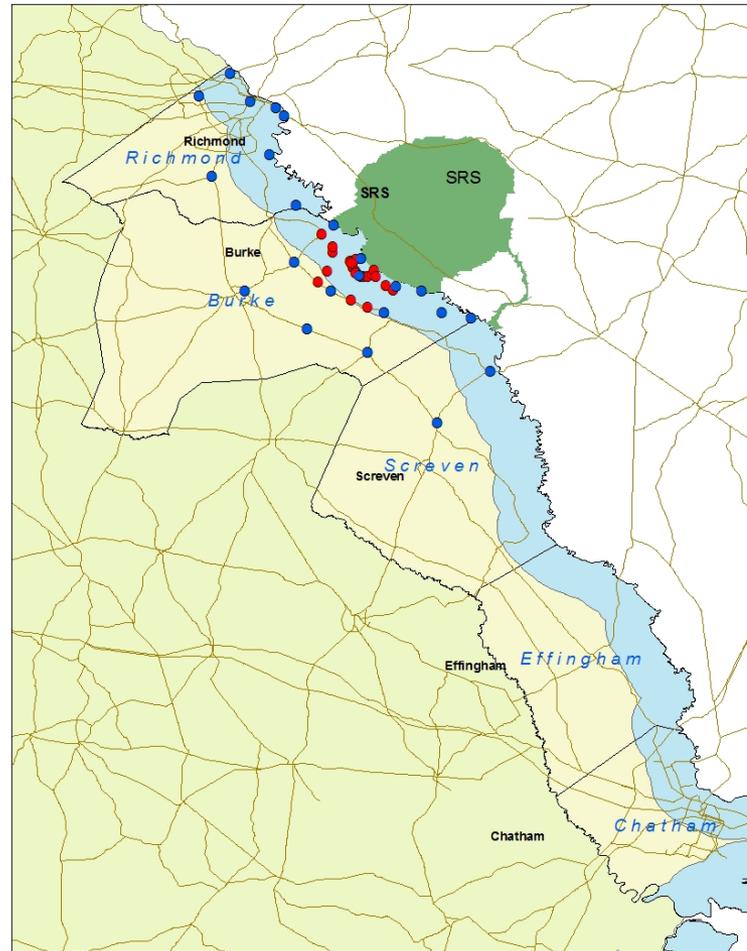
- 25 stations prior to 1985



# Radiation Monitoring with TLD's

## TLD Stations

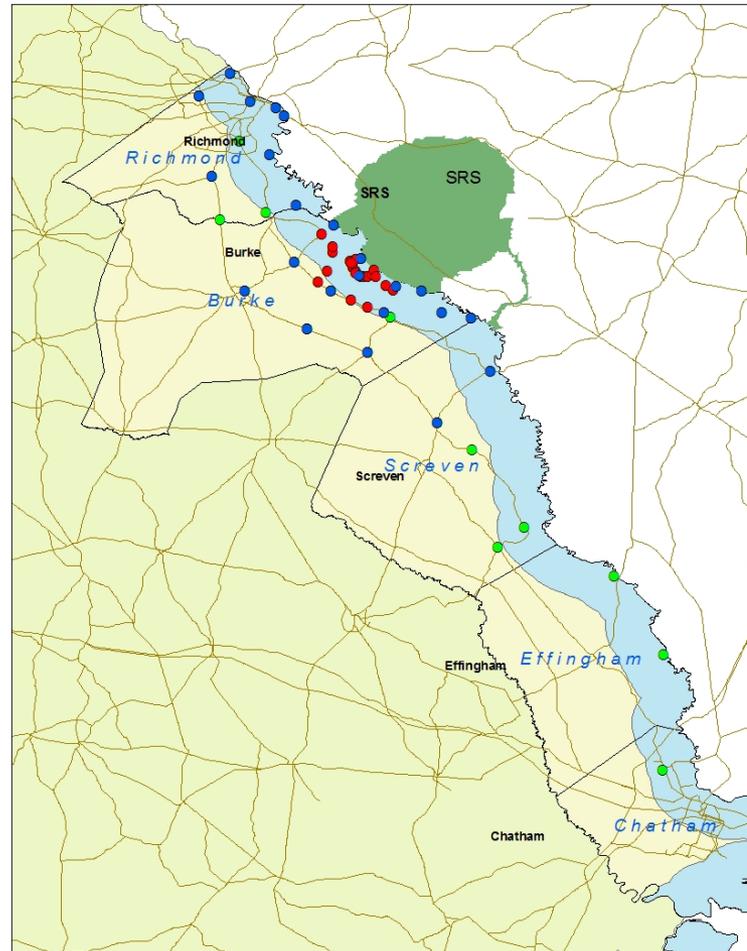
- 25 stations prior to 1985
- Added 24 stations in 1985 as part of pre-op monitoring around Plant Vogtle



# Radiation Monitoring with TLD's

## TLD Stations

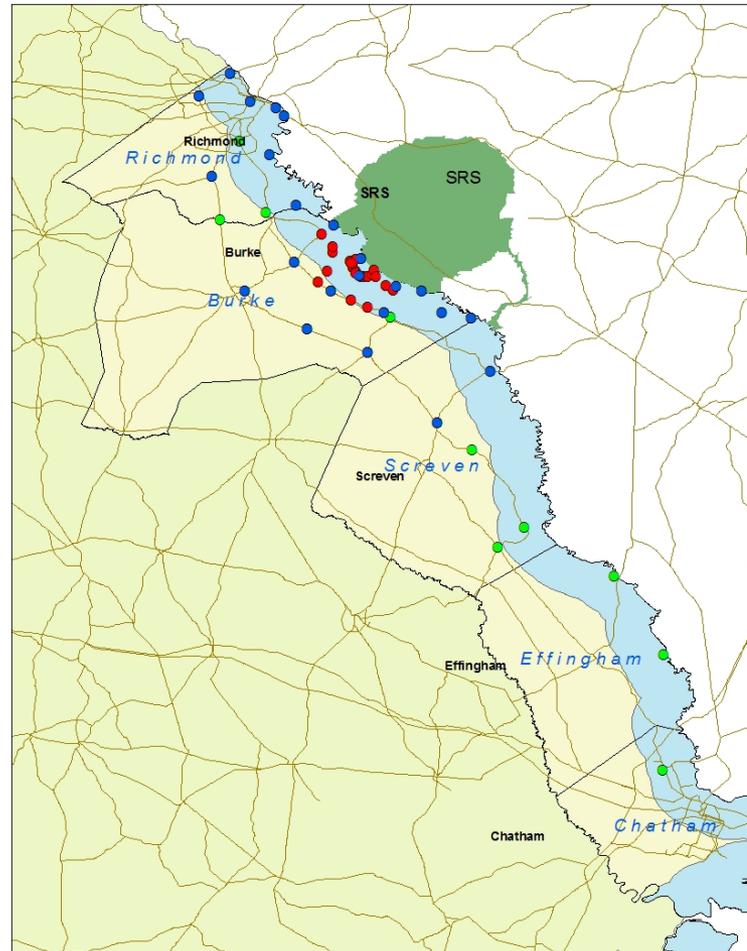
- 25 stations prior to 1985
- Added 24 stations in 1985 as part of pre-op monitoring around Plant Vogtle
- Added 9 stations in 2002



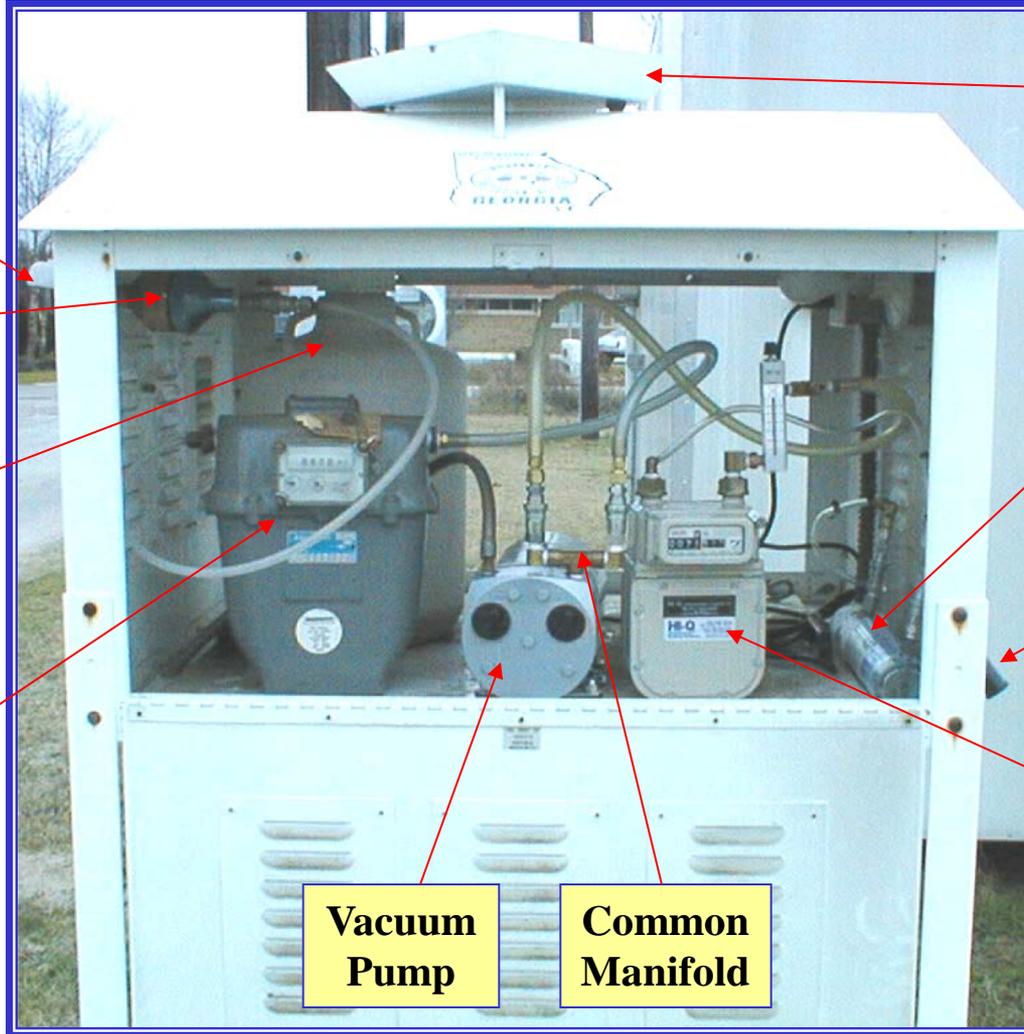
# Radiation Monitoring with TLD's

## TLD Stations

- 25 stations prior to 1985
- Added 24 stations in 1985 as part of pre-op monitoring around Plant Vogtle
- Added 9 stations in 2002
- All stations discontinued in 2010.



# Air and Rain Sampling



**Air Inlet 1**

**Rain Pan**

**Filter and Charcoal Head**

**Silica Gel Cartridge (H-3)**

**Bottle for Rain**

**Air Inlet 2 (H-3)**

**Air Volume Meter for Filter and Charcoal**

**Air Volume Meter for H-3**

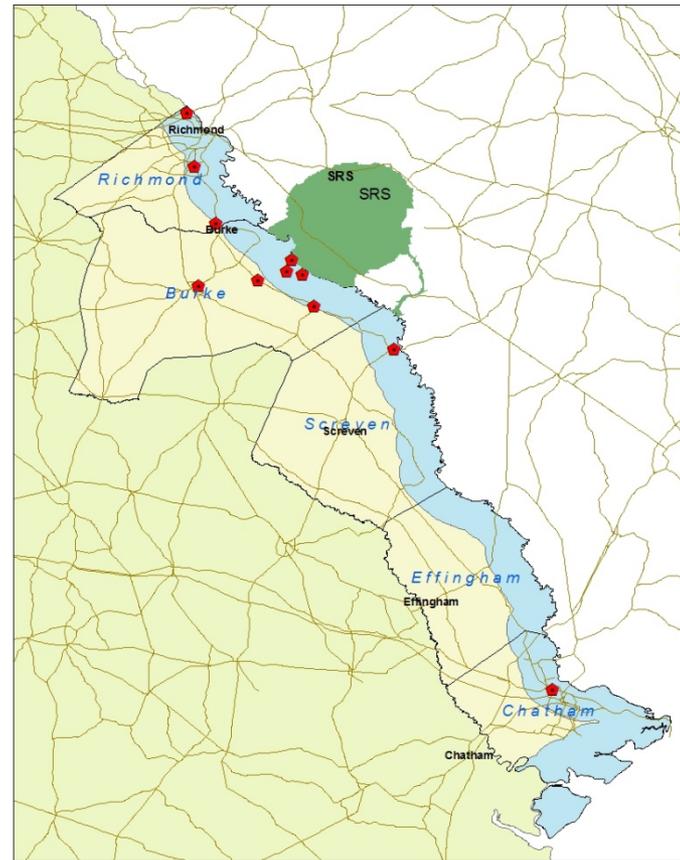
**Vacuum Pump**

**Common Manifold**



# Air Monitoring

- 5 stations prior to 1994
- 6 stations added in 1994



# Air Monitoring

- 11 stations
  - Included background station in Savannah
  - Air, tritium-in-air and rain
  - Reduced to 10 stations and tritium discontinued in 2004.
  - Reduced to 4 stations in 2010. Analysis capability reduced to abilities of Mobile Radiation Lab,



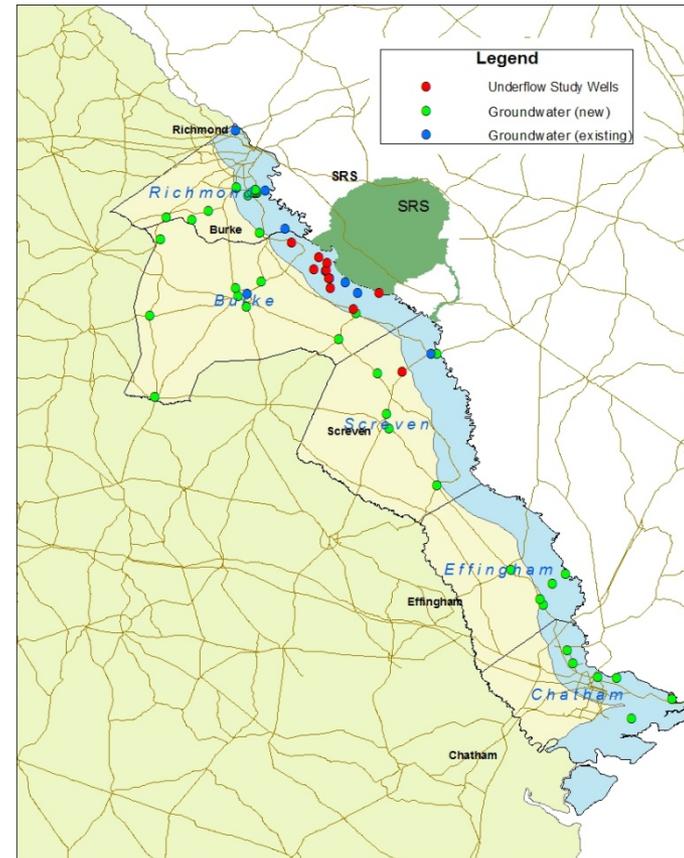
# Groundwater Monitoring

- 9 stations prior to 2002
  - Mostly driven by NRC requirements around Vogtle
  - Grab samples from tap
- 42 new routine locations added in 2002
- Cooperatively sample USGS and GGS underflow study wells
  - 40 samples from 8 well clusters in 2002
- Primary concern was  $^3\text{H}$



# Groundwater Monitoring

- Reduced to 9 stations in 2004
- All stations discontinued in 2010



# Surface Water Monitoring

- Prior to 1993:
  - Land based
  - Grab samples only
- 1993
  - Continuous samples at mouths of SRS effluent streams, Augusta and 301
  - Floating platforms



# Surface Water Monitoring

- Prior to 1993:
  - Land based
  - Grab samples only
- 1993 -2002
  - Continuous samples at mouths of SRS effluent streams, Augusta and 301
  - Floating platforms
  - Battery-powered ISCO automatic samplers



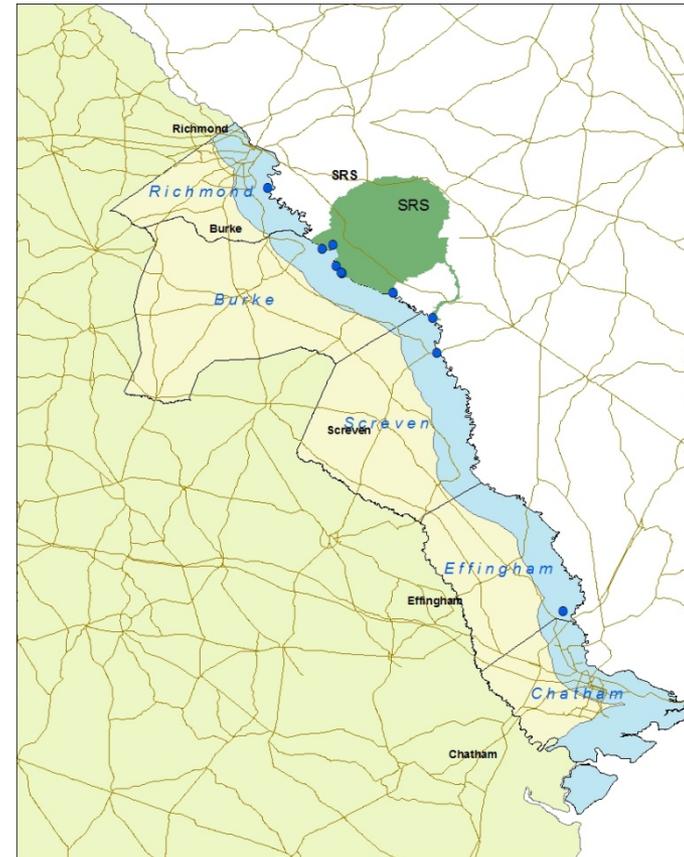
# Surface Water Monitoring

- Prior to 1993:
  - Land based
  - Grab samples only
- 1993 - 2002
  - Continuous samples at mouths of SRS effluent streams, Augusta and 301
  - Floating platforms
  - Battery-powered ISCO automatic samplers
- 2002
  - RM-160 and upstream / downstream of Vogtle



# Surface Water Monitoring

- 2004
  - Floating Platforms Removed from River
  - Upstream/Downstream Vogtle removed
  - Augusta and 301 samplers remain.
  - 28 day cycle for pick up.
  - Samples analyzed in Mobile Radiation Lab.



# River Sediment



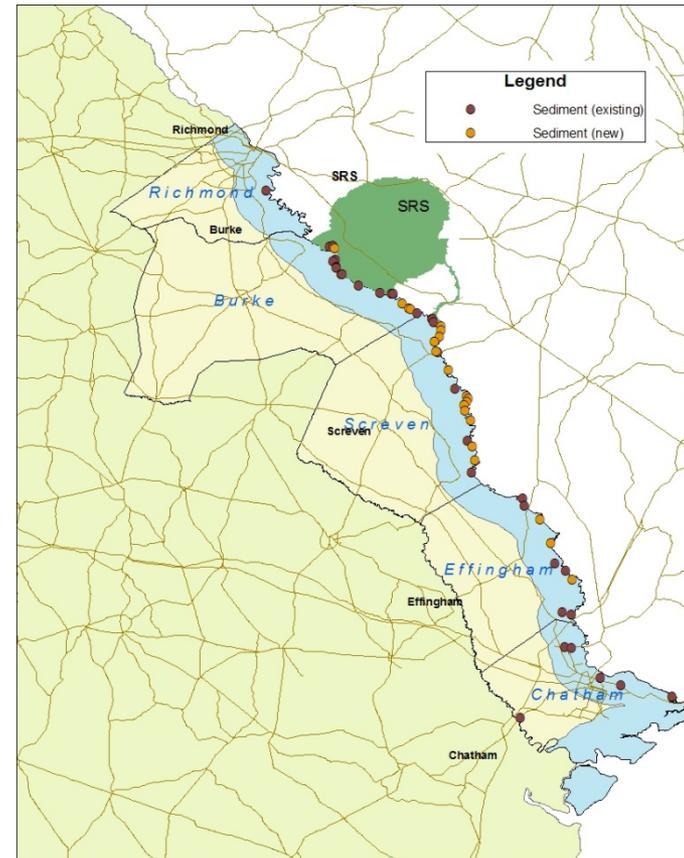
**Ponar  
Dredge**



- Sediment is usually collected with a Ponar dredge (illustrated).
- High clay-silt-content samples are preferred over sandy samples, due to better adsorption and retention characteristics.

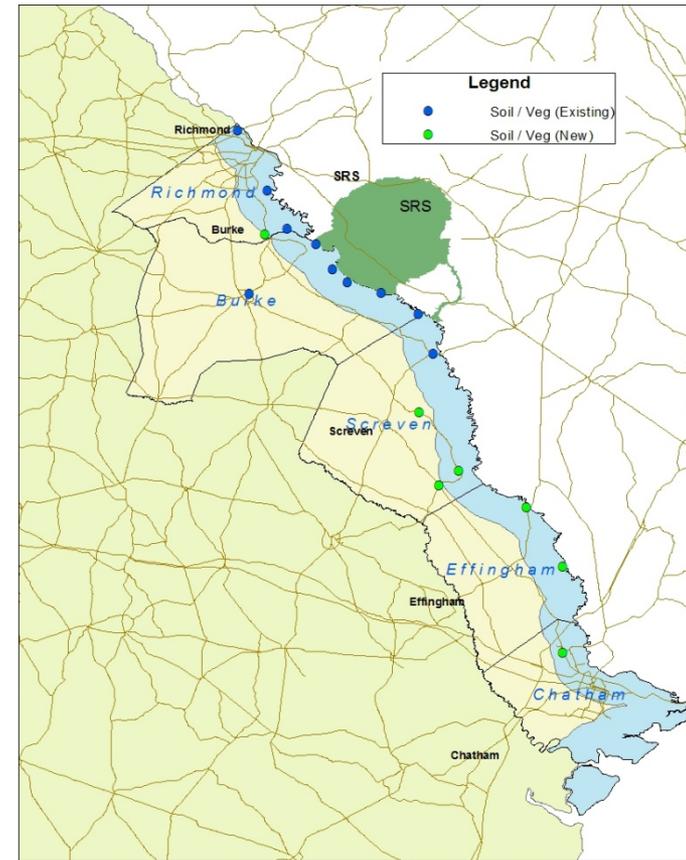
# Sediment Monitoring

- Prior to 2002
  - 22 locations
- 2002
  - Added 30 Locations
- 2004
  - discontinued 30 Locations
- 2010
  - Discontinued All Locations



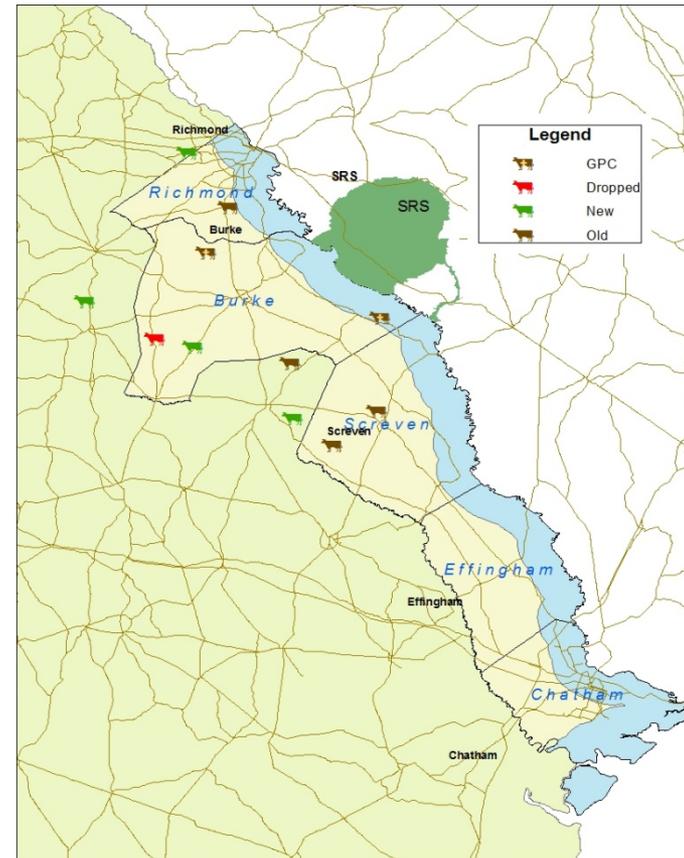
# Soil & Vegetation Sampling

- Prior to 2002
  - 10 locations, relatively unchanged since early 1980's
- 2002
  - Added 7 new locations, in conjunction with new TLD locations
- 2010
  - All Locations Discontinued



# Milk Monitoring

- Prior to 1993:
  - 3 dairies
  - Split samples provided by GPC or SRS
- 1993
  - Elimination of SRS split
  - 3 additional dairies
- 2002
  - Added 5 dairies
- 2003
  - Drop 1 dairy added in 2002, due to \$

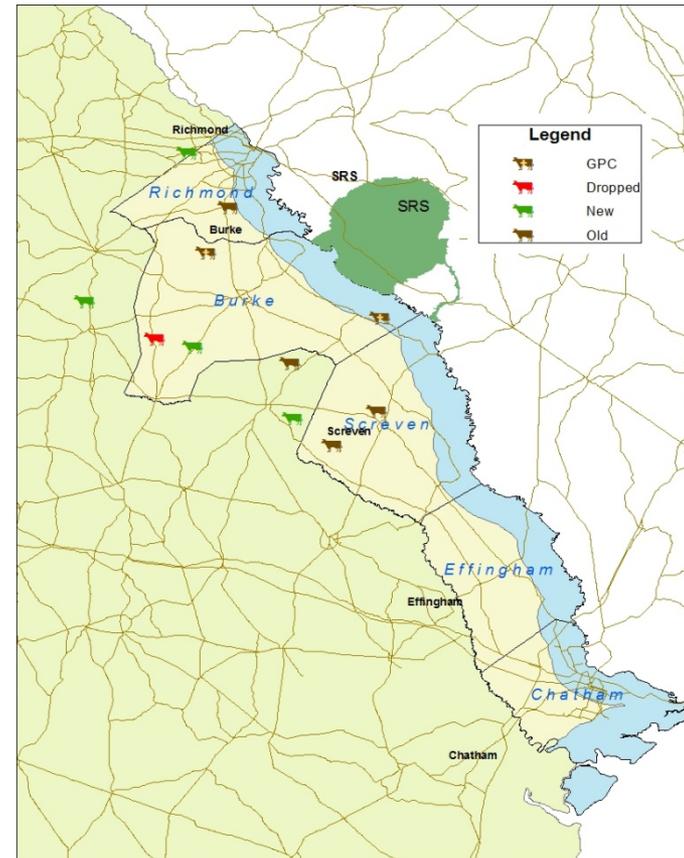


Samples collected by Ag

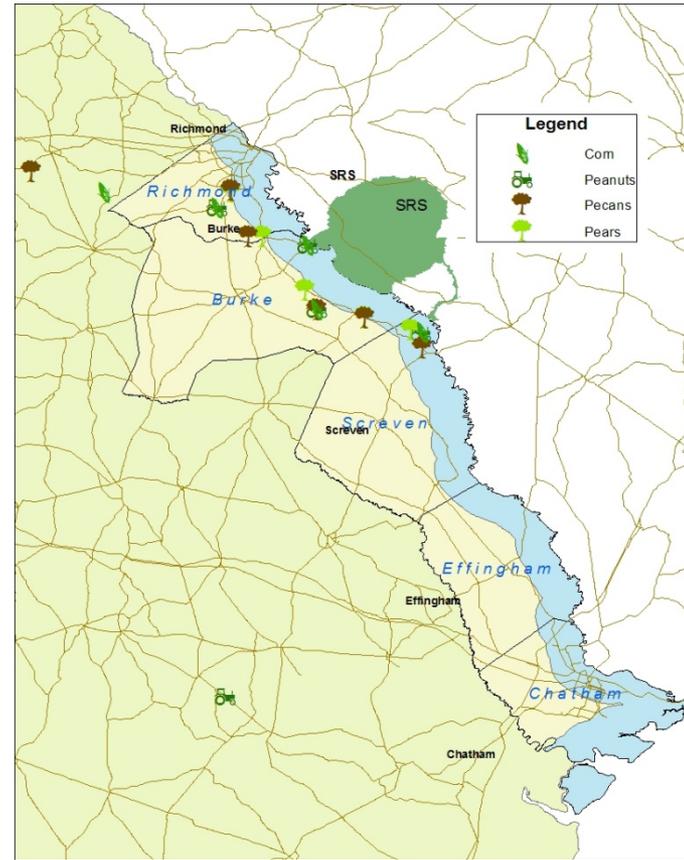
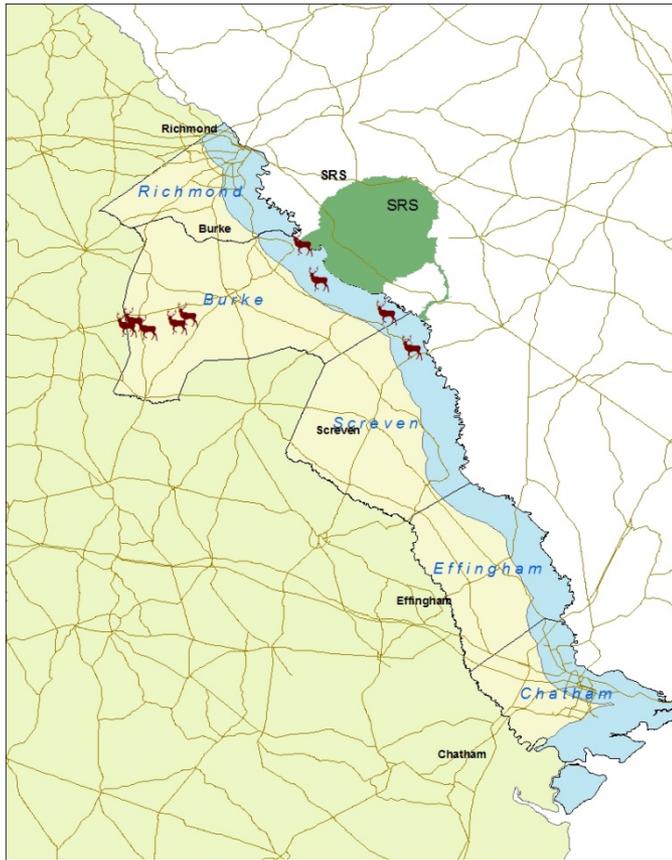


# Milk Monitoring

- 2004 Discontinued Samples.
- Continued split samples (2) with SNC until 2006
- 2010 All Samples discontinued.



# Crops and Deer

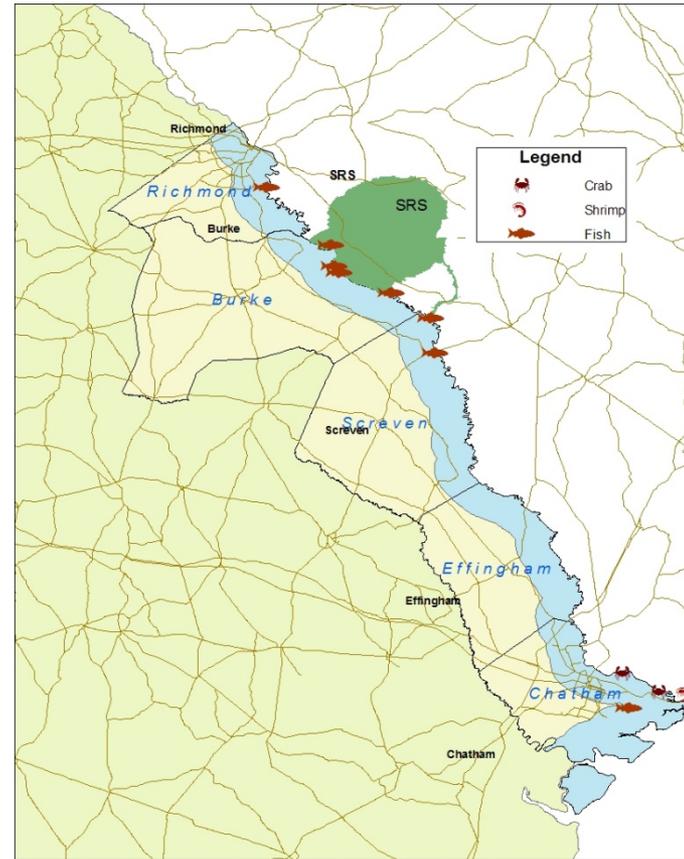


# Crops and Deer

- 5 General Stations, 1 Background
- Crops collected included Corn, Peanuts, Peaches, Pecans and Pears
- Deer legs taken from hunt clubs collected by EPD personnel
- Requested enhanced monitoring in 2003 due to some elevated Cs-137 levels, unsure of cause
- Discontinued after 2004



# Fish and Seafood



# Fish and Seafood



# Fish and Seafood

- 11 locations Total
- 8 Fish location – 3 species from each
  - Predator (Bass)
  - Bottom Feeder (Catfish or Sucker Fish)
  - Sunfish (Bream, Bluegill, etc)
- 2 crab locations along costal area
- 1 shrimp location from Savannah River Mouth
- Enhanced monitoring under AIP to include Sr-90 and Plutonium
- Discontinued after 2004



# Summary

- Around the SRS/Vogtle facilities EPD currently collects:
  - 4 air samples (low volume, 28 day cycle)
  - 4 rainwater samples (continuous collection 28 day cycle)
  - 2 surface water samples (hourly sample, weekly composite.)
- These are centered and arranged to monitor around the Vogtle Facility.
- No additional samples collected related to SRS



# Questions?



---

Georgia Environmental Protection Division