

# VADEQ Monitoring in the Chowan and Dismal Swamp Basins

Albemarle-Pamlico National Estuary  
Program

February 1, 2006

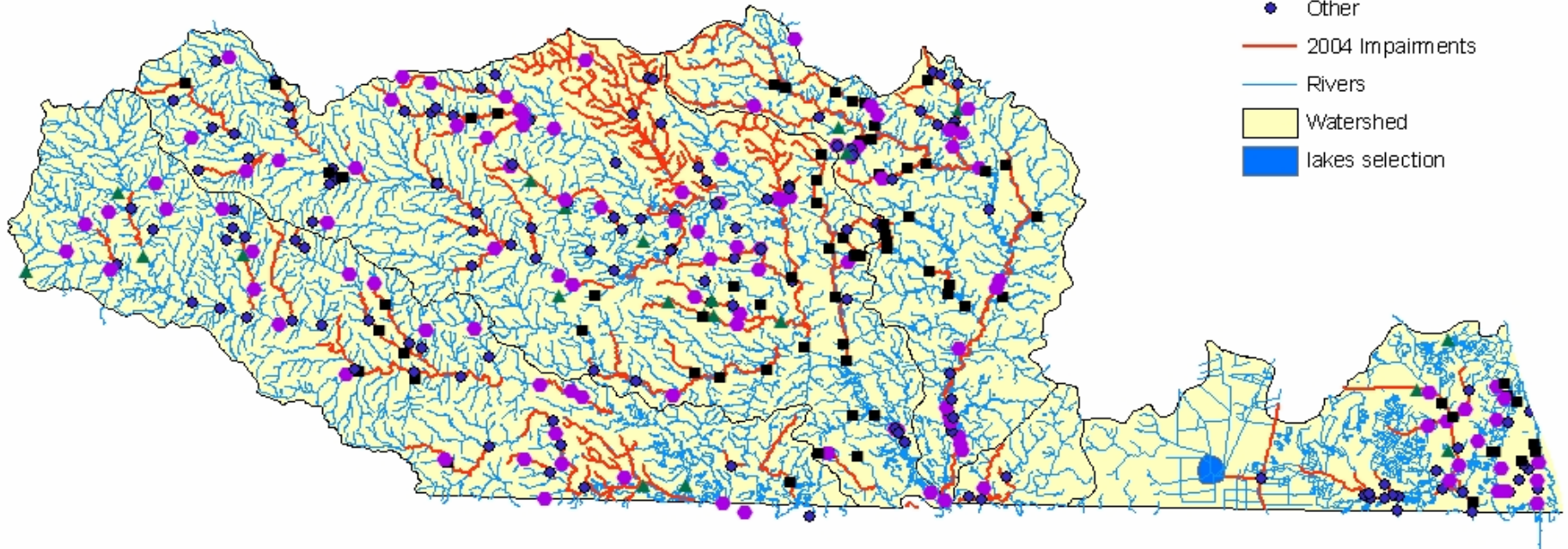


# Chowan and Dismal Swamp River Basins Monitoring Stations and 2004 Impaired Waters



## Legend

- Ambient Watershed
- ▲ Probabilistic
- TMDL
- ◆ Other
- 2004 Impairments
- Rivers
- Watershed
- lakes selection



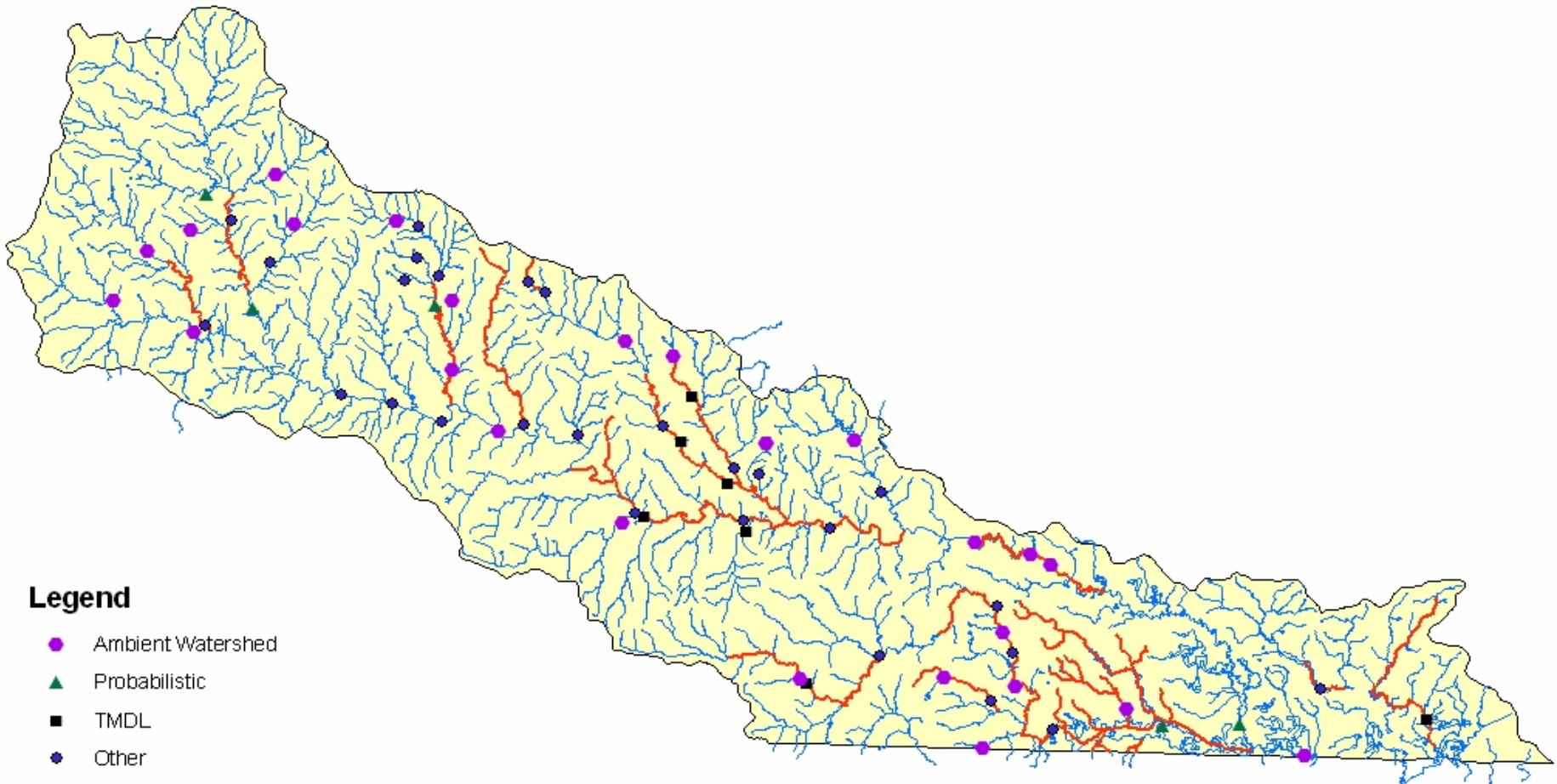
0 4.5 9 18 27 36 Miles

# VADEQ Monitoring Chowan and Dismal Swamp Basins








- Ambient Watershed
- Probabilistic
- NCA Coastal
- Total Maximum Daily Load Studies (TMDL)
- Others: Special Studies (CAFO, Fish Tissue, Low pH WQS)

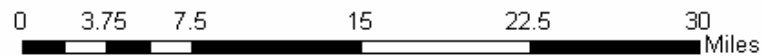


# Meherrin River Basin Monitoring Stations and 2004 Impaired Waters



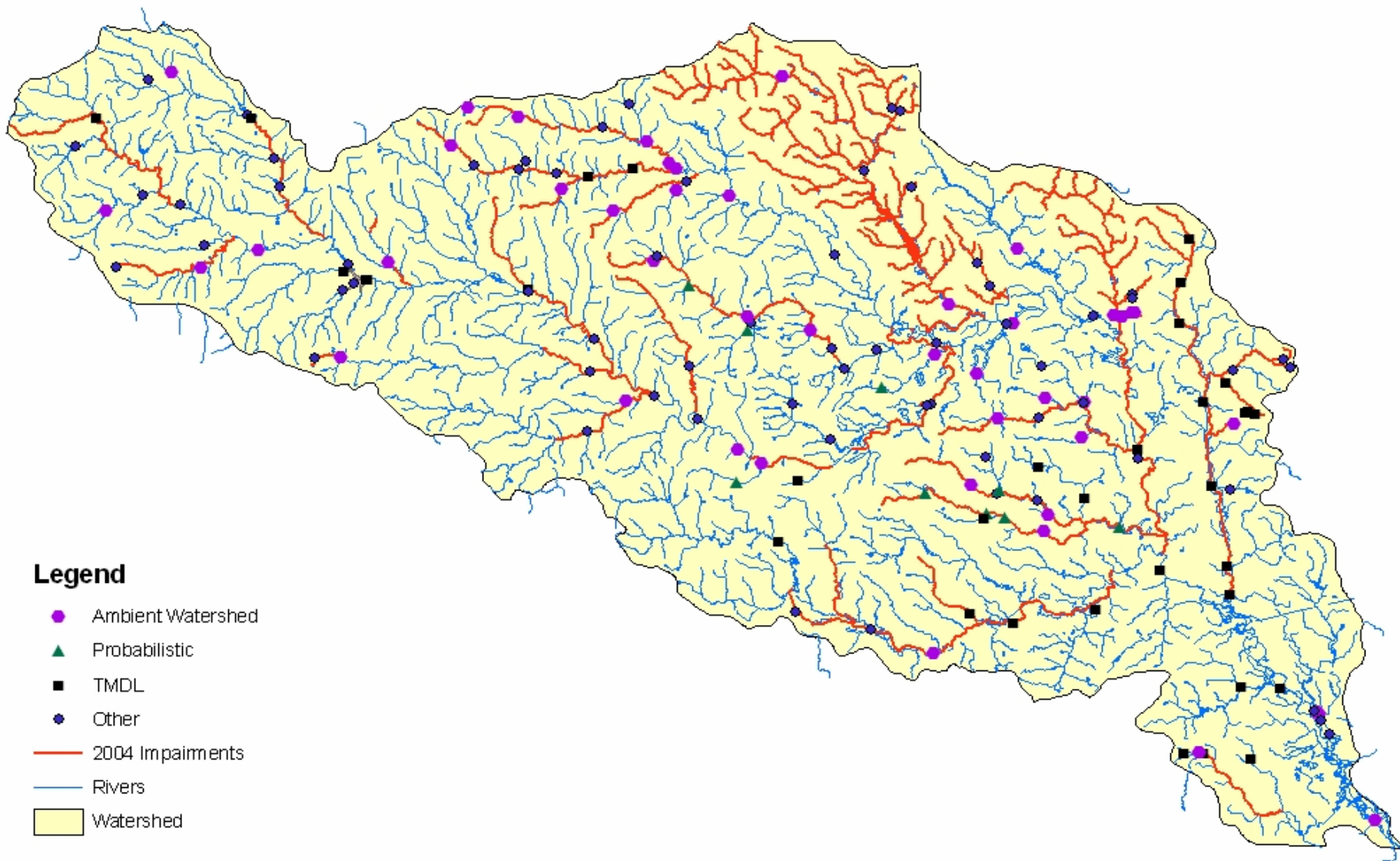
## Legend

-  Ambient Watershed
-  Probabilistic
-  TMDL
-  Other
-  2004 Impairments
-  Rivers
-  Watershed





# Nottoway River Basin Monitoring Stations and 2004 Impaired Waters



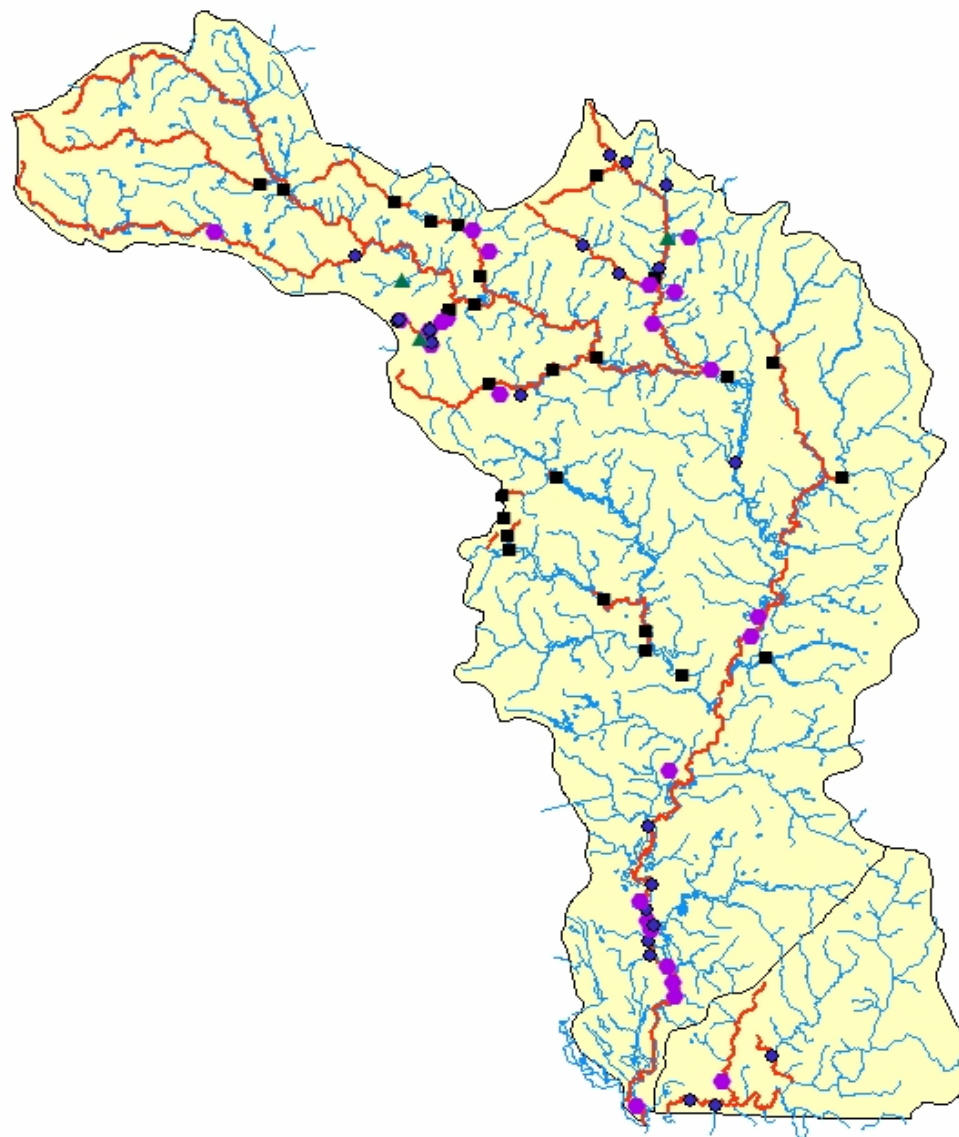
## Legend

- Ambient Watershed
- ▲ Probabilistic
- TMDL
- ◆ Other
- 2004 Impairments
- Rivers
- Watershed








0 2 4 8 12 16 Miles



# Blackwater and Chowan River Basins Monitoring Stations and 2004 Impaired Waters



## Legend

-  Ambient Watershed
-  Probabilistic
-  TMDL
-  Other
-  2004 Impairments
-  Rivers
-  Watershed

0 1 2 4 6 8  
Miles

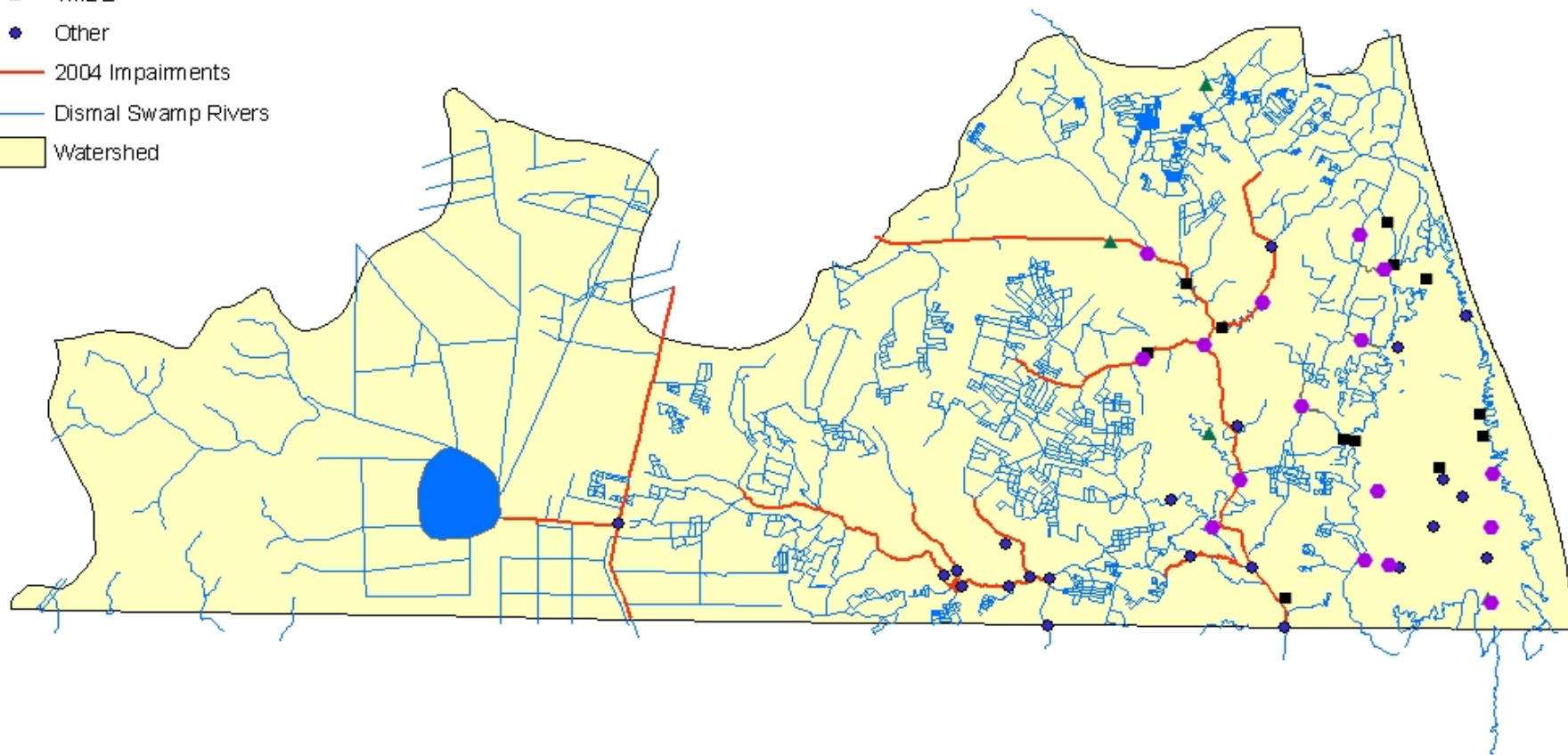


# Dismal Swamp River Basin Monitoring Stations and 2004 Impaired Waters



## Legend

- Ambient Watershed
- ▲ Probabilistic
- TMDL
- Other
- 2004 Impairments
- Dismal Swamp Rivers
- Watershed



0 2 4 8 12 16 Miles

# Ambient Watershed

- 106 stations in all DCR watersheds, with number determined by DCR predicted NPS runoff problems (higher NPS problems = more stations)
- Composed of long term trend stations and two year rotational stations
- Sampled bi-monthly
- Analytes: Nutrients, solids, fecal coliform, E. coli, hardness, Temp, pH, DO, Cond.



# MHN, NTW, BLW, Northwest R

## Avg Total & ortho Phosphorus, mg/l

Meherrin Rt. 301 Emporia	Nottoway Rt 258, SW of Franklin	Blackwater Rt. 189, S of Franklin	Northwest River NC Line
TP=0.066 (275)	0.087 (273)	0.098 (285)	0.107 (48)
o-P=0.029 (134)	0.050 (117)	0.053 (117)	0.052 (33)

# MHN, NTW, BLW, Northwest R

## Avg TKN & Nitrate, mg/l

Meherrin Rt. 301 Emporia	Nottoway Rt 258, SW of Franklin	Blackwater Rt. 189, S of Franklin	Northwest River NC Line
TKN=0.43 (261)	0.49 (260)	0.70 (272)	1.26 (33)
NO3=0.15 (262)	0.21 (260)	0.31 (273)	0.16 (33)

# MHN, NTW, BLW, Northwest R

## Avg Fecal Coliform, cfu/100mL

Meherrin Rt. 301 Emporia	Nottoway Rt 258, SW of Franklin	Blackwater Rt. 189, S of Franklin	Northwest River NC Line
FC=557 (279) 23 WQS viol.	129 (266) 4 WQS viol.	289 (281) 15 WQS viol.	139 (49) 3 WQS viol.
EC=226 (15) 2 WQS viol.	49 (20) 1 WQS viol.	64 (20) 1 WQS viol.	93 (21) 2 WQS viol.

# MHN, NTW, BLW, Northwest R

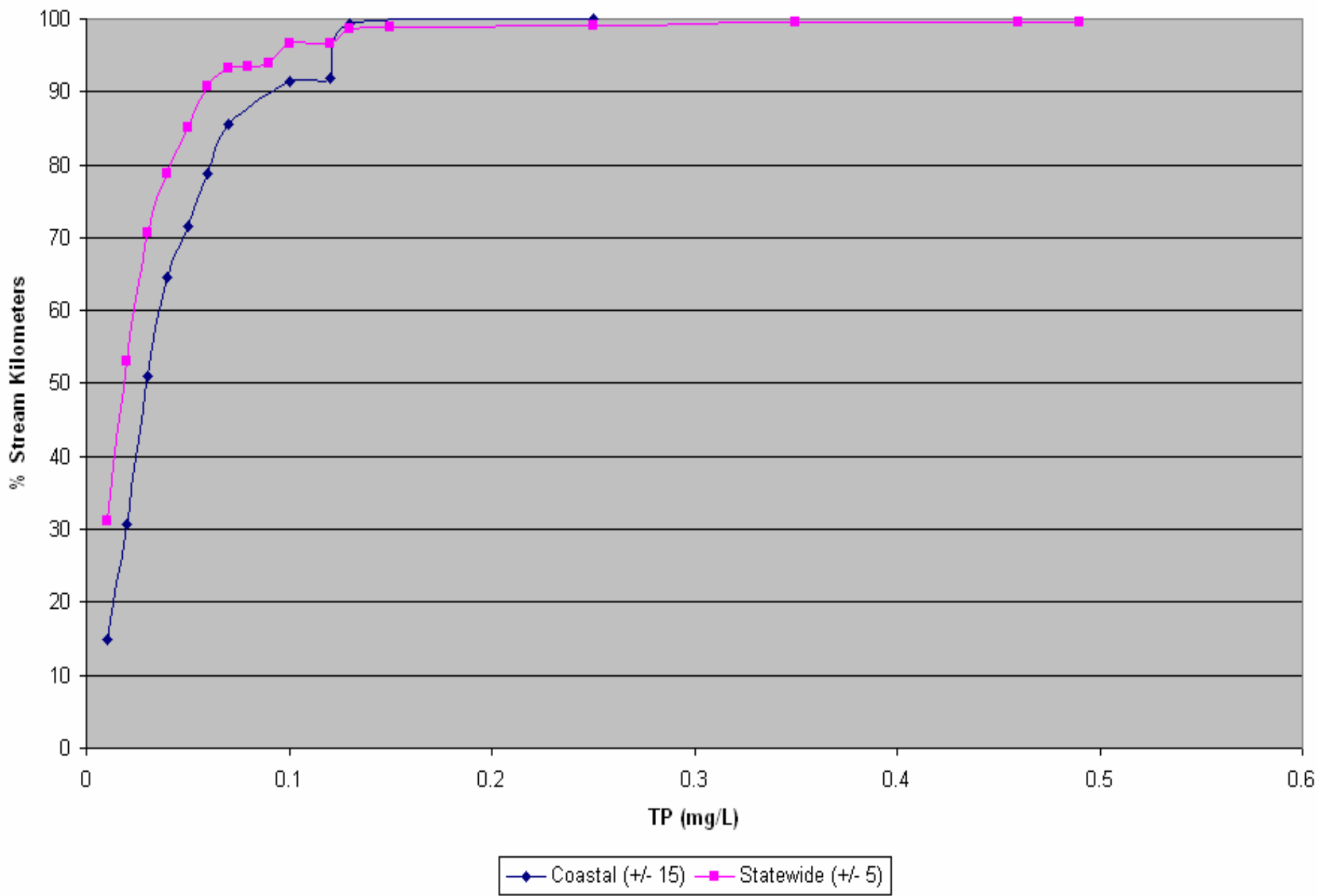
## Avg TSS, mg/l & Turbidity, FTU

Meherrin Rt. 301 Emporia	Nottoway Rt 258, SW of Franklin	Blackwater Rt. 189, S of Franklin	Northwest River NC Line
TSS=17.0 (276)	4.5 (276)	4.3 (286)	8.4 (48)
TURB=20.9 (92)	8.6 (92)	8.1 (92)	9.1 (30)

# Probabilistic Monitoring (Probmon)

- 19 stations randomly chosen by USEPA
- 5 BLW, 8 NTW, 6 MHN
- 5 year program
- Stations sampled Spring and Fall one year
- Analytes: Nutrients, Fecal Coliforms, E. coli, dissolved metals, sediment metals, sed organics, particle size, Temp, DO, pH, cond, RBPII or MACS macroinvertebrates, benthic habitat

### Total Phosphorus Values Statewide vs Coastal Regions



# NCA Coastal Program (Tidal Probmon)

- 12 stations in Back Bay randomly chosen by USEPA
- Part of National Coastal Assessment program
- 5 year program 2001 - 2005, continuing 5 more years
- Stations sampled June - September one time
- Analytes: Nutrients, Fecal Coliforms, Enterococci, dissolved metals, chlorophyll, sediment metals, sed organics, sed tox, particle size, Temp, DO, pH, cond, macroinvertebrates, fish community structure

# TMDL Monitoring

- 73 current TMDL stations, mostly fecal coliform, and Class VII Swampwater sites for low pH and DO
- **91 Impaired Waters with TMDLs in Chowan and Dismal Swamp basins due by 2016**
- **55 Fecal coliform**, E. coli, Enterococci
- 2 low DO Lakes (Nottoway Falls L. and Ft Pickett Res.)
- 1 Benthic (Spring Branch in Waverly, VA, trib to BLW)
- 1 NH<sub>3</sub> Toxicity (CAFO runoff, Sussex Co.)
- 1 dissolved mercury (BLW below Zuni),
- 2 fish tissue (mercury, As, Benzo(k)fluouranthene in MHN below Emporia and mercury in Great Dismal Sw Canal and feeder ditch)
- **Will add fish tissue for mercury in BLW from Dendron to VA/NC line in 2006**
- 49 natural low pH and DO swamps to be re-classified to Class VII Swampwater with pH 4.3 and lower DO WQS



# Special Studies

- CAFO storm runoff at 11 facilities, 18 stations (fecals IDed by BST, high nutrients, BOD5, TSS, NH3 tox, low DO)
- Fish Tissue network - 2004 9 BLW, 8 Dismal Sw; 2002 4 BLW, 4 Dismal Sw, 6 NTW, 4 MHN sites, resulting in 3 VDH consumption advisories:
  1. MHN, 28 mi below Emporia Dam, PCBs, Gizz shad
  2. BLW, 66 mi from Dendron to NC line, Hg, LMB, Redear & 4 species
  3. Great Dismal Sw Canal, 18 mi from Deep Cr Lock to NC line & L. Drummond & Feeder ditch, Hg, Pickerel & bowfin
- 140 Low pH stations in BLW, NTW MHN watersheds to show how low natural swampwater pH WQS limit should be (min pH 3.7 to date) – New in 2006

# Questions and Comments?

Go To

[https://www.deq.virginia.gov/webapp/wqm\\_station.get\\_parm2](https://www.deq.virginia.gov/webapp/wqm_station.get_parm2)

for DEQ water quality data by stream name.

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