Attaining 185,000 Acres of SAV for a Restored Chesapeake Bay

Part 2: Historic and Current Tidal Water Quality

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Designing Sustainable Coastal Habitats Workshop
Scientific and Technical Advisory Committee
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MARYLAND DEPARTMENT OF NATURAL RESOURCES

Part 2:

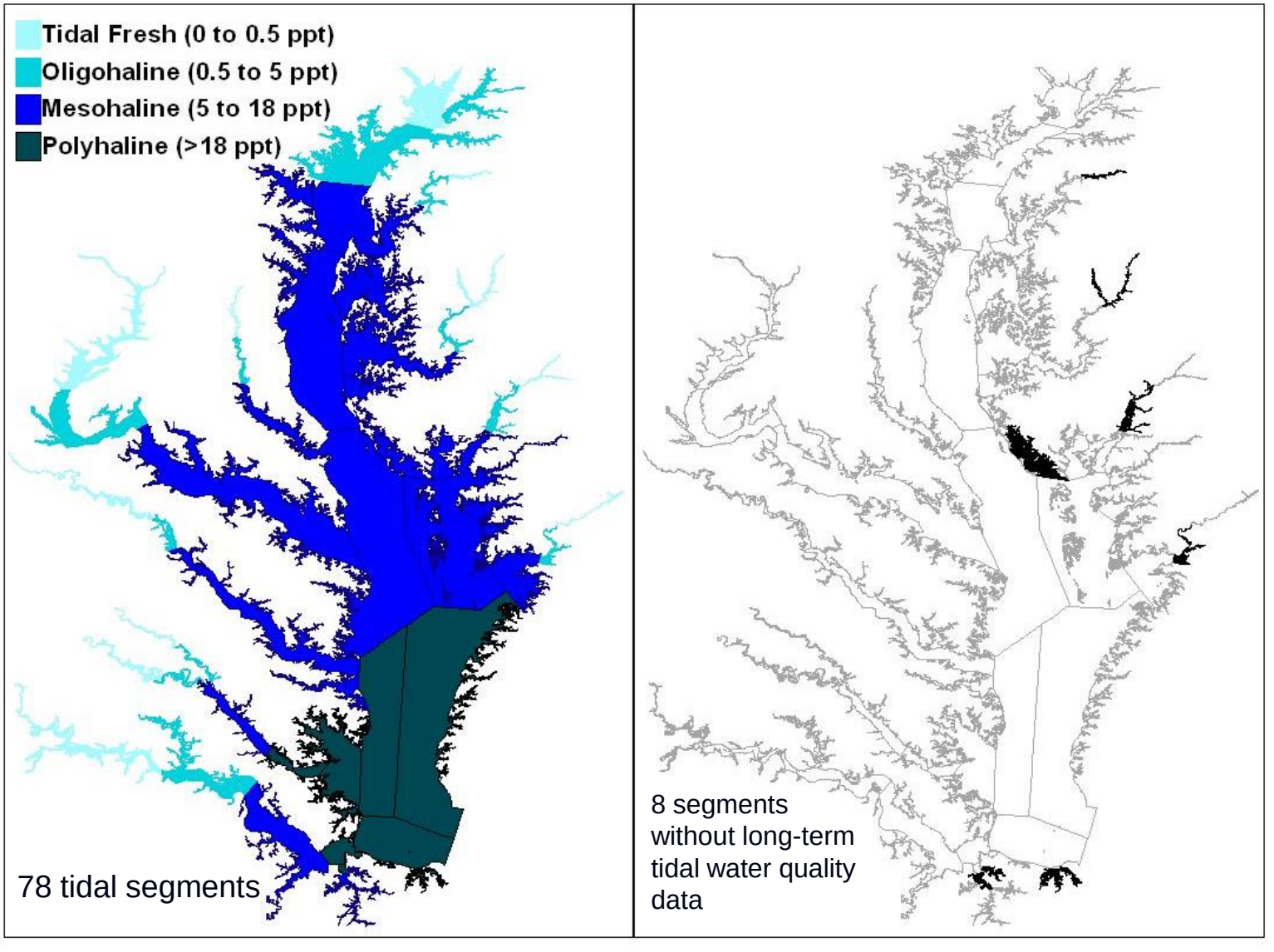
- Historic and current tidal water quality data to assess habitat quality for SAV
- Impact of changes in water quality on the presence of SAV throughout the Bay

SAV Habitat Requirements

- **Surface data, SAV growing season**

- **Light-**
  - **Secchi depth (water clarity)**
  - **Chlorophyll a**
  - **Total Suspended Solids**

- **Nutrients-**
  - **Dissolved Inorganic Phosphorus**
  - **Dissolved Inorganic Nitrogen (MH and PH only)**



SAV Habitat Requirements and growing season are determined by salinity zone

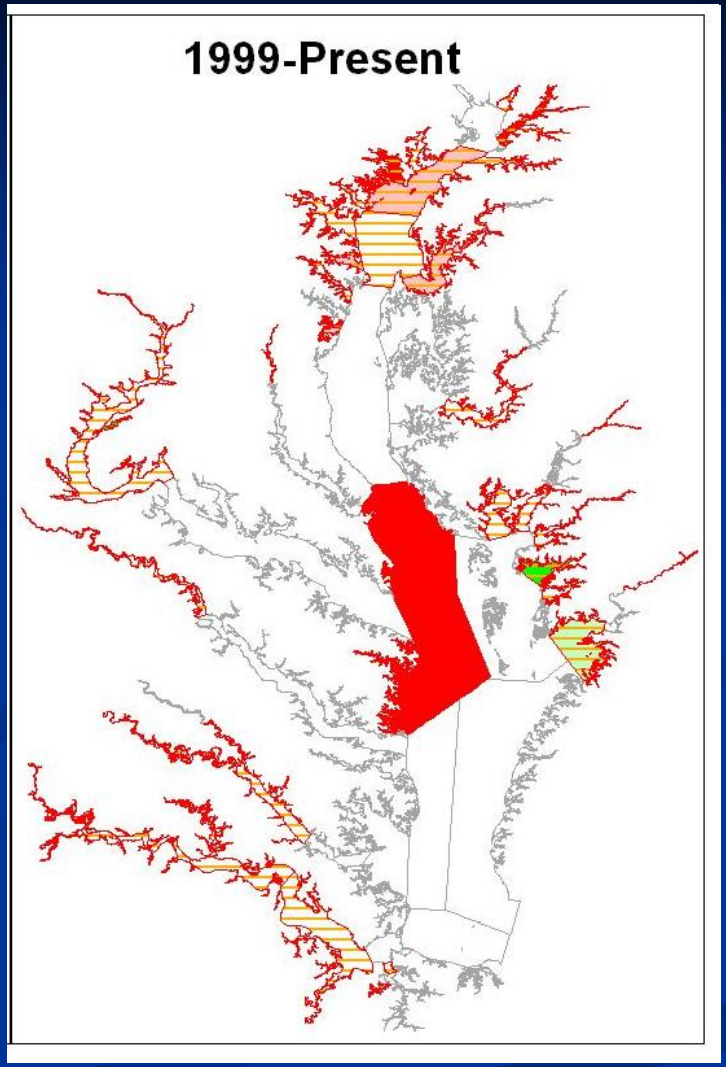
Baywide Results

Trends for 1999-present
(2011 in VA, 2012 in MD)

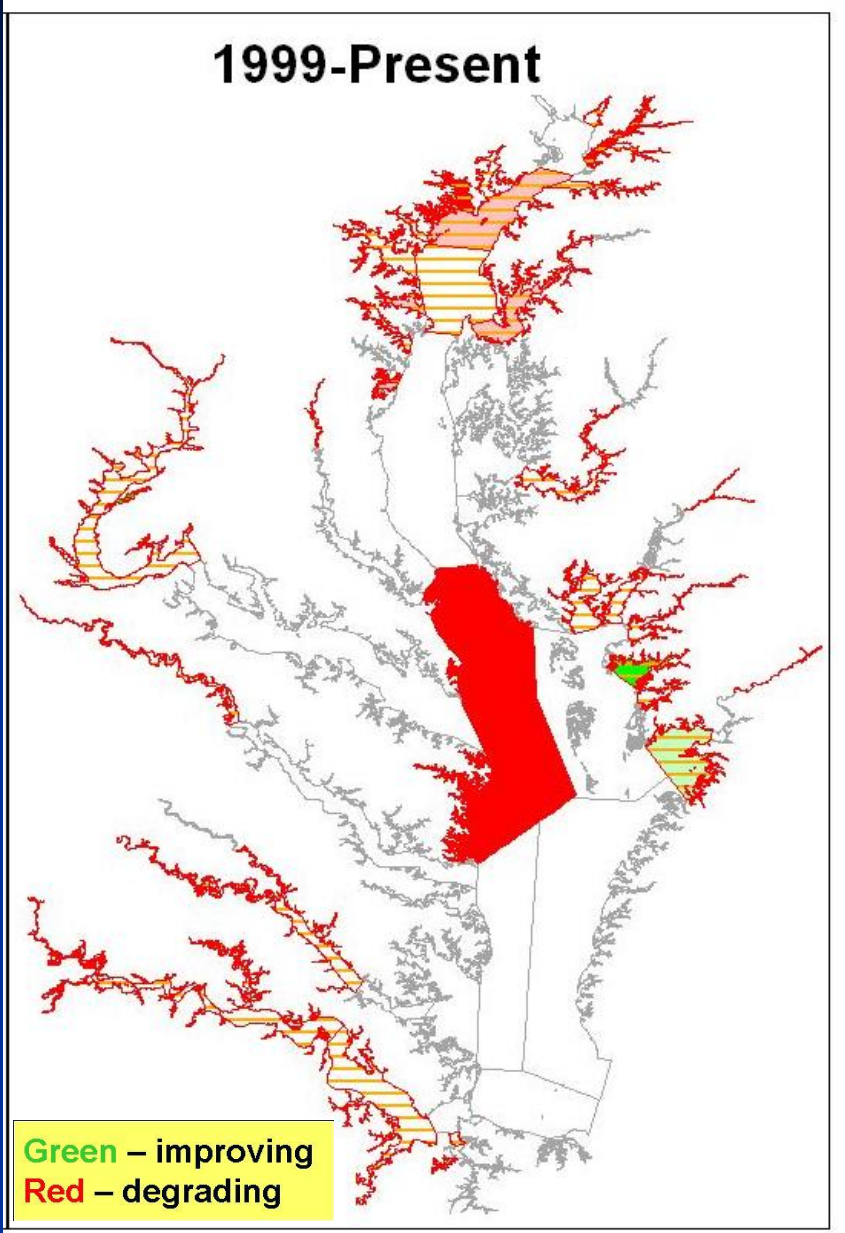
VA trends provided by Mike Lane, ODU

Green – improving
Red – degrading

Fail SAV Habitat Requirements for 2010-2012



Secchi Depth



Trends

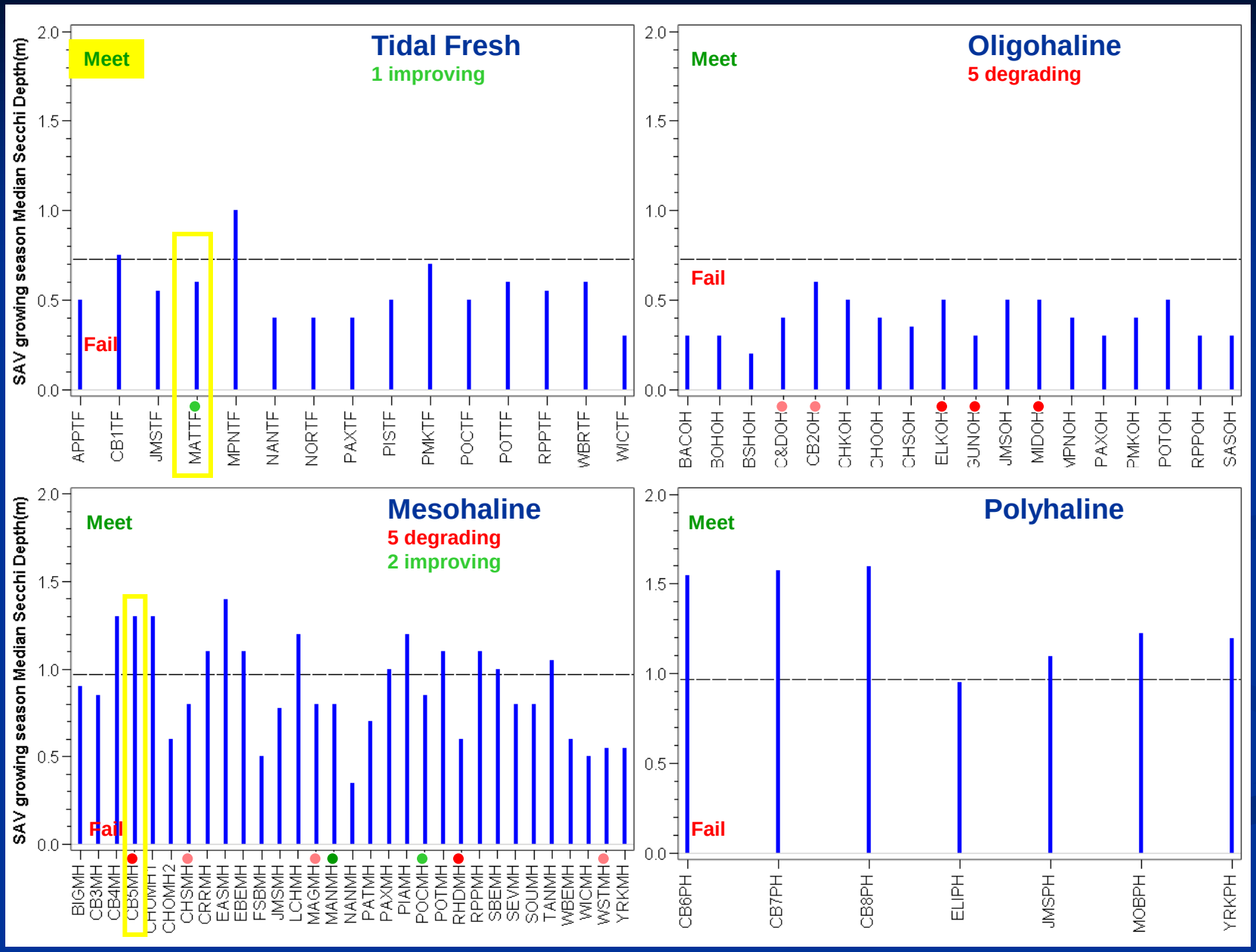
- Degrading in upper and lower Mainstem, smaller rivers
- Improving in some smaller rivers

Not meet HR in:

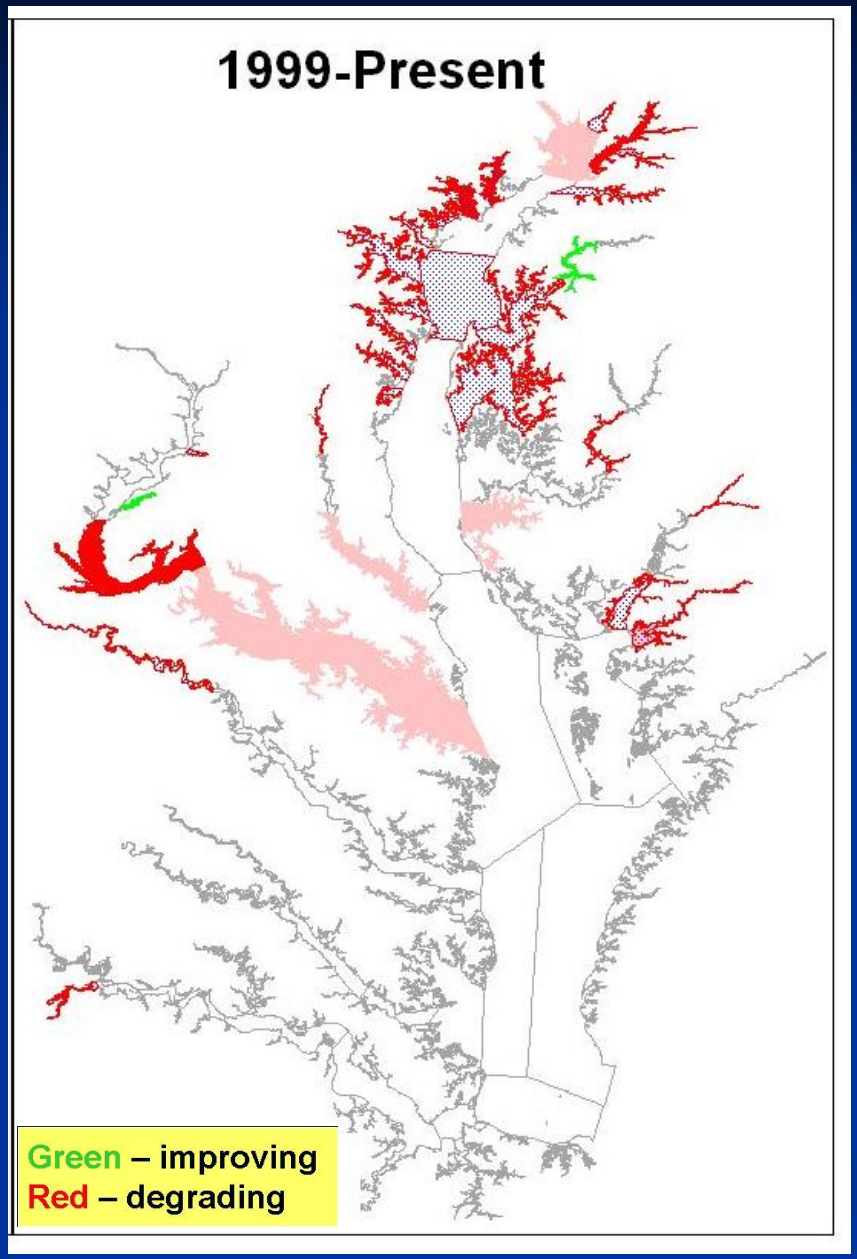
- upper and middle Potomac
- upper Rappahannock
- upper and middle York
- James
- middle Mainstem
- smaller rivers

Secchi Depth

2010-2012 growing season medians



Chlorophyll *a*



Trends

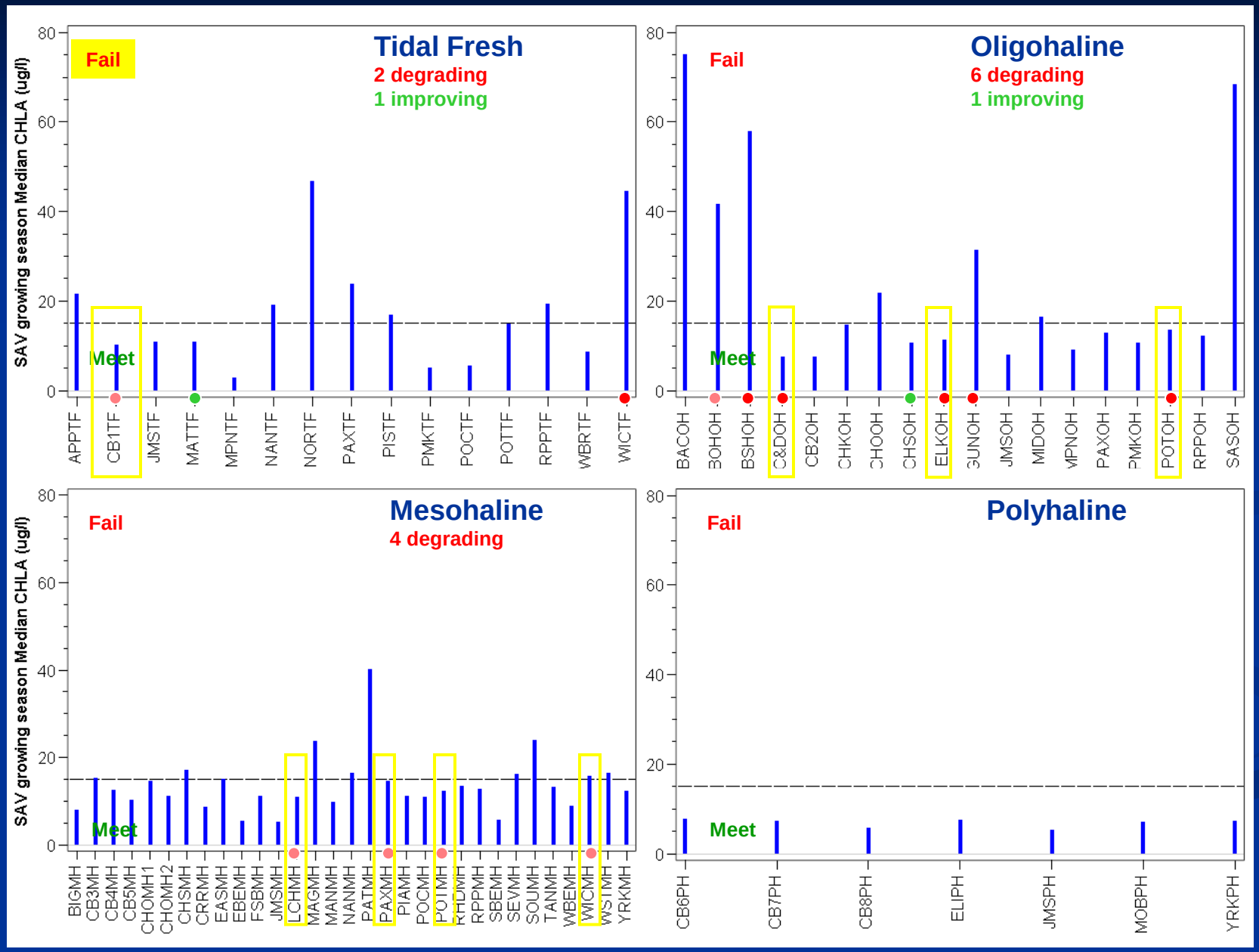
- Degrading in lower Patuxent, middle Potomac, lower Potomac, upper Mainstem, smaller rivers
- Improving in smaller rivers

Not meet HR in:

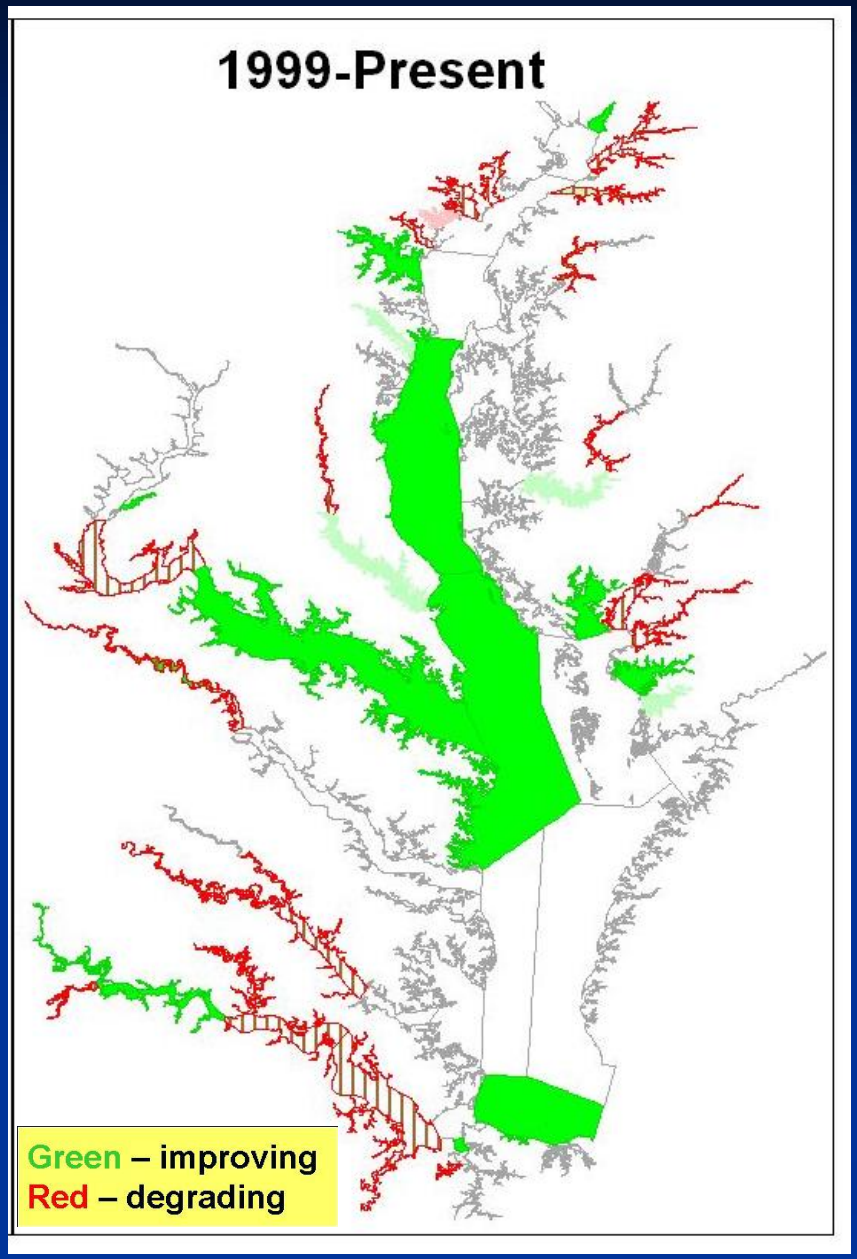
- upper Rappahannock
- upper James
- middle Mainstem
- smaller rivers

Chlorophyll *a*

2010-2012 growing season medians



Total Suspended Solids



Trends

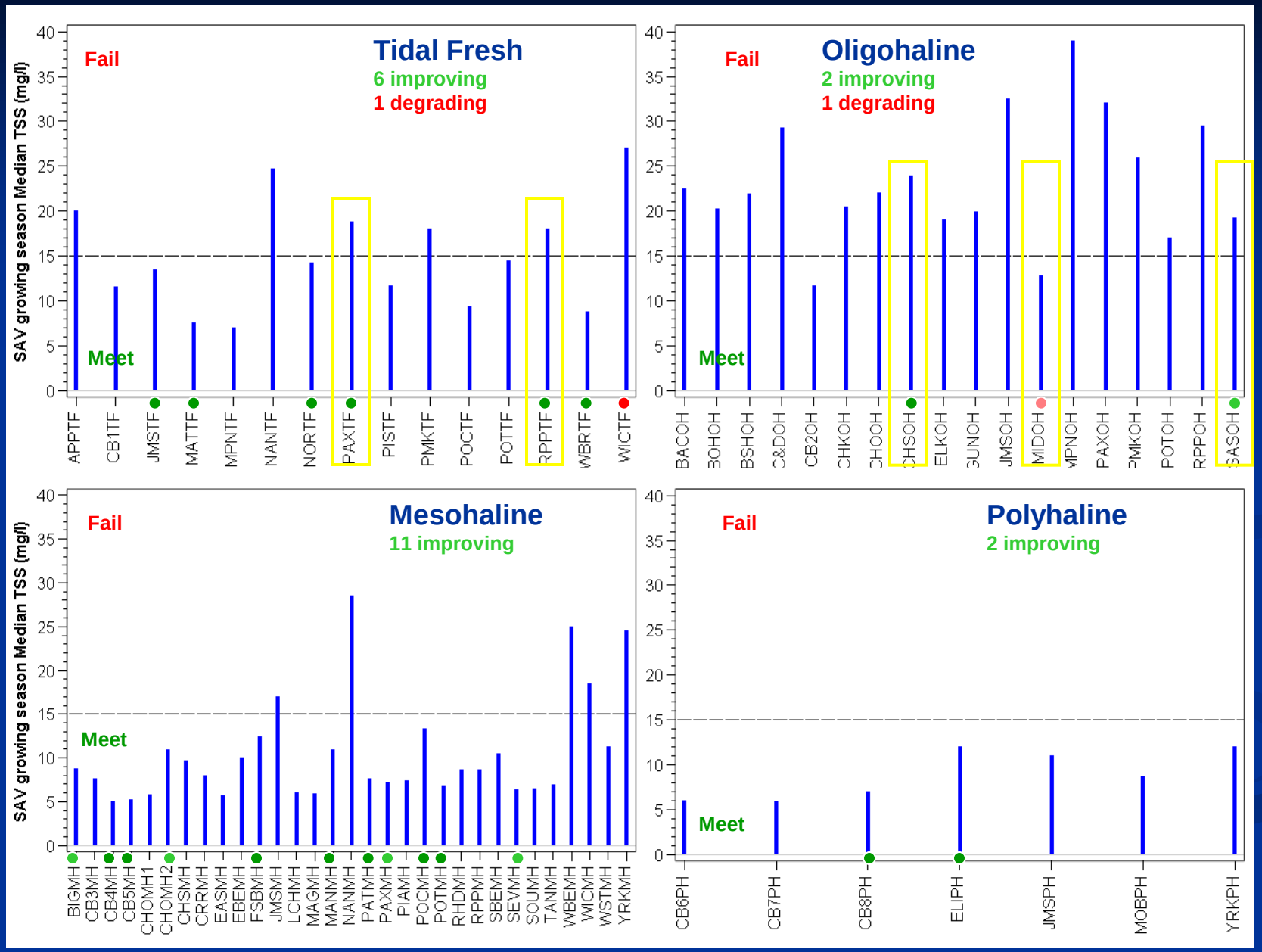
- Improving in Patuxent, lower Potomac, upper Rappahannock, upper James, lower Choptank, lower Mainstem

Not meet HR in:

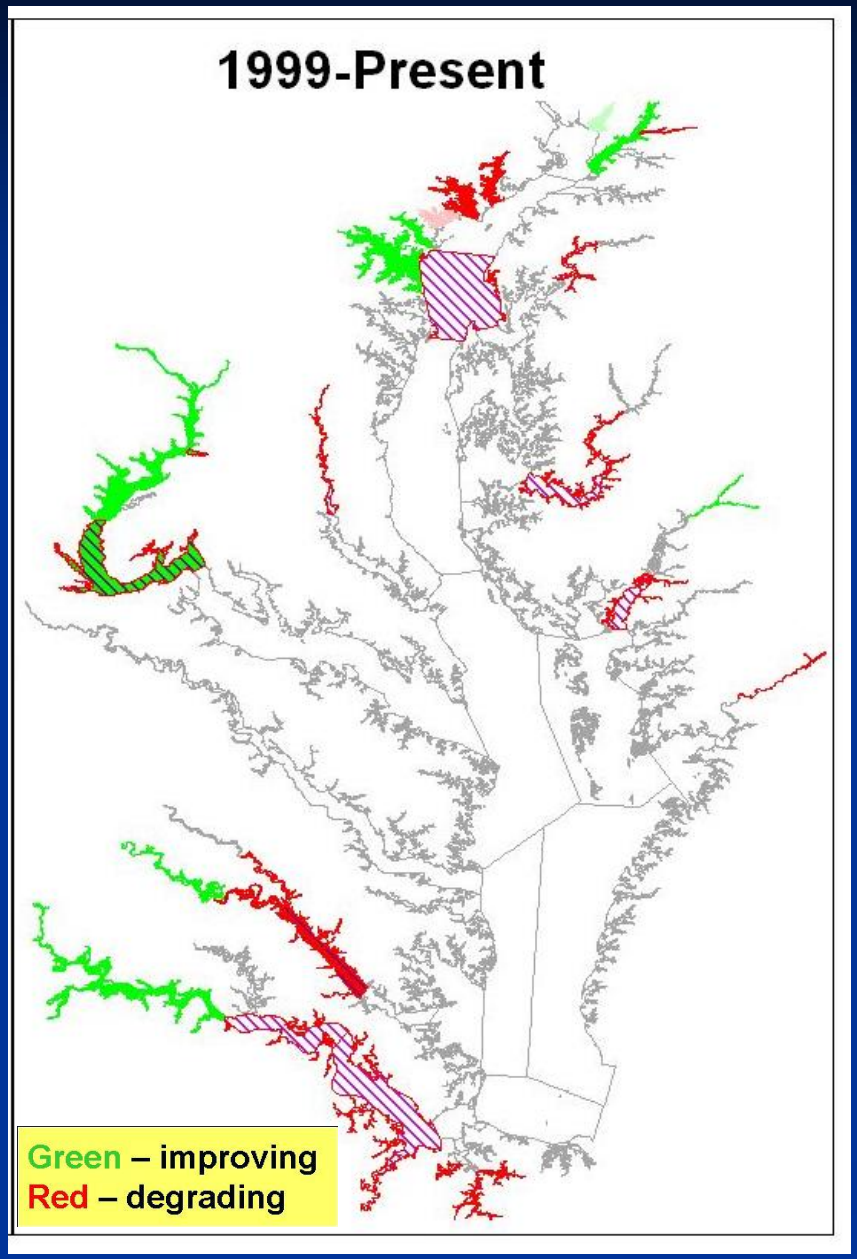
- middle Potomac
- upper Rappahannock
- upper and middle York
- upper and lower James
- smaller rivers

Total Suspended Solids

2010-2012 growing season medians



Dissolved Inorganic Phosphorus



Trends

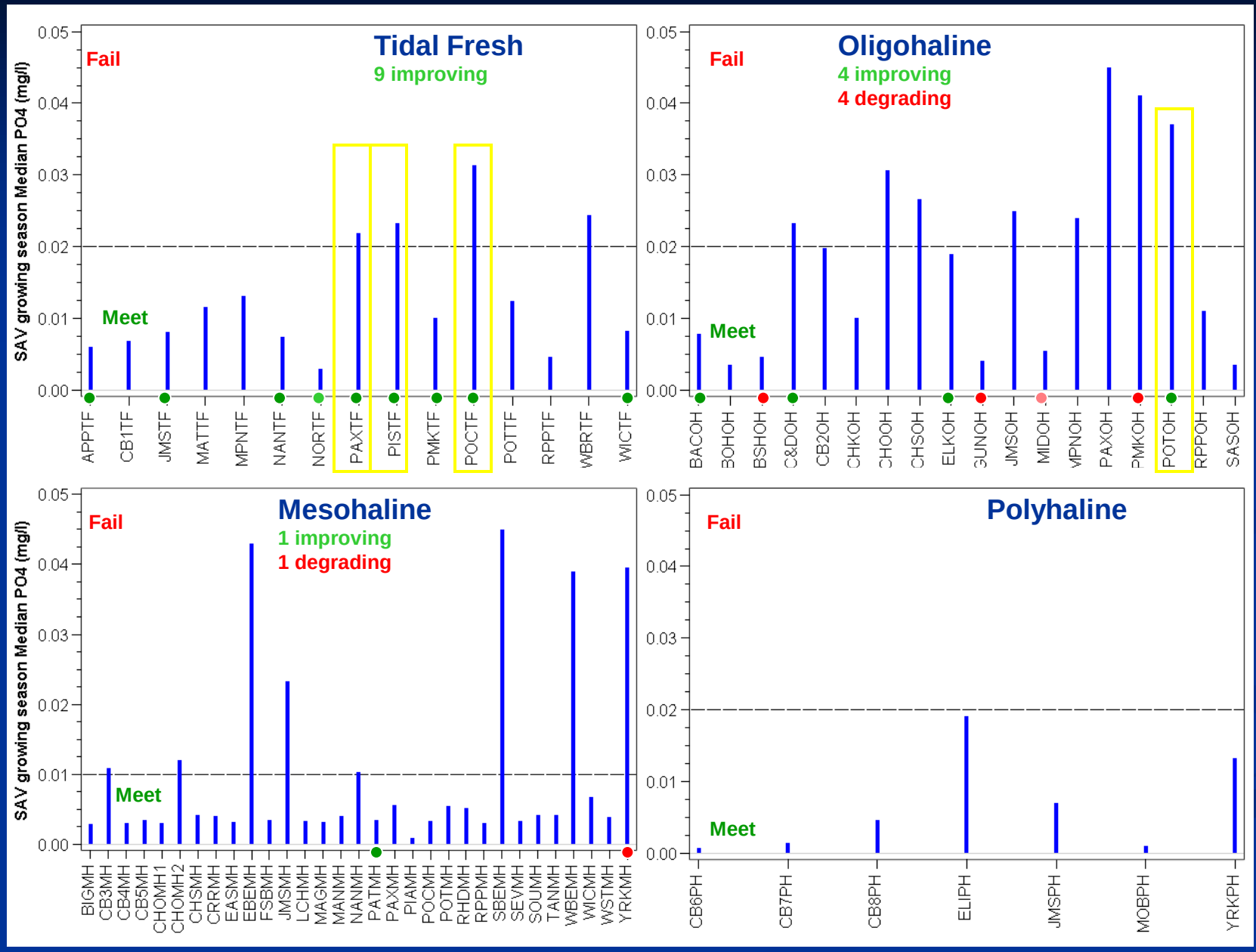
- Improving in upper Patuxent upper and middle Potomac, upper York, upper James
- Degrading middle York, smaller rivers

Not meet HR in:

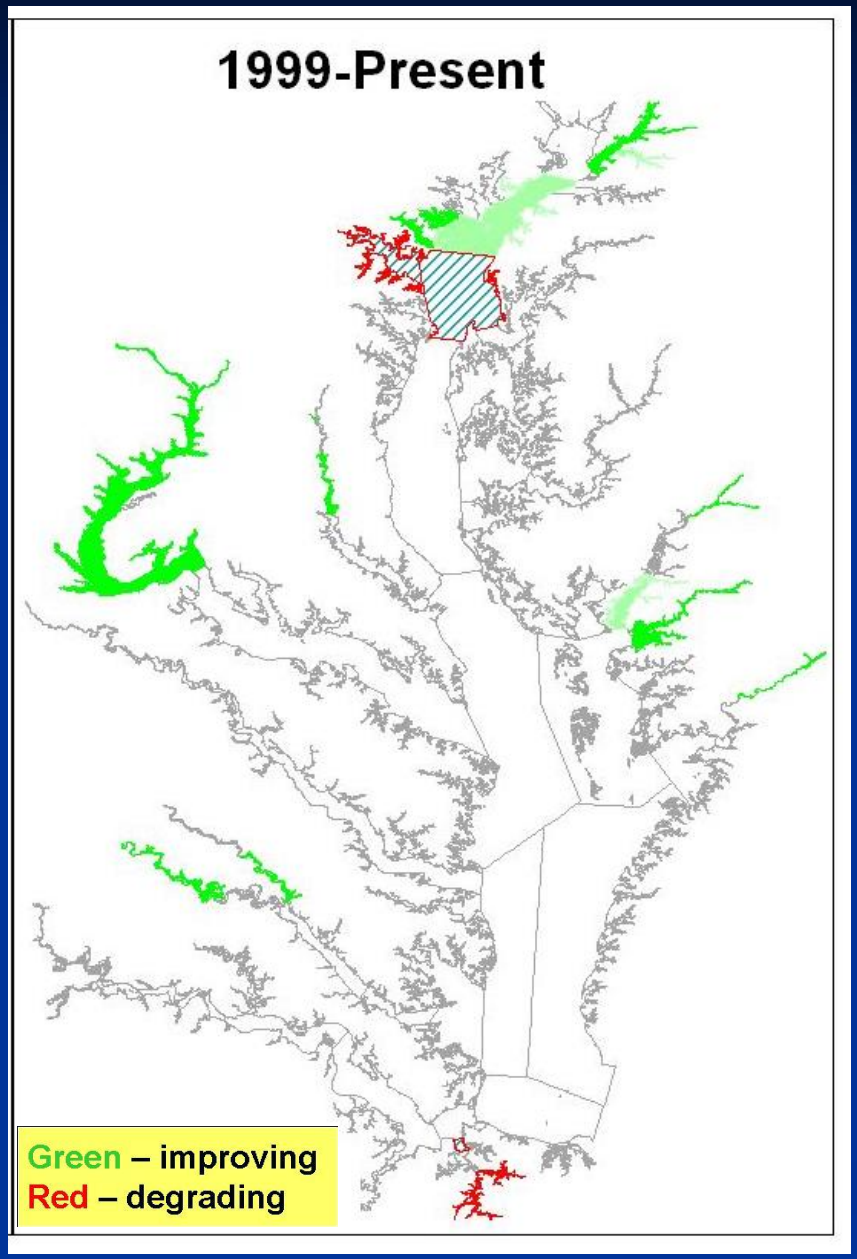
- upper and middle Patuxent
- middle Potomac
- middle York
- lower James
- middle Choptank
- middle Mainstem

Dissolved Inorganic Phosphorus

2010-2012 growing season medians



Dissolved Inorganic Nitrogen



Trends

- Improving in upper Patuxent, upper and middle Potomac, upper York

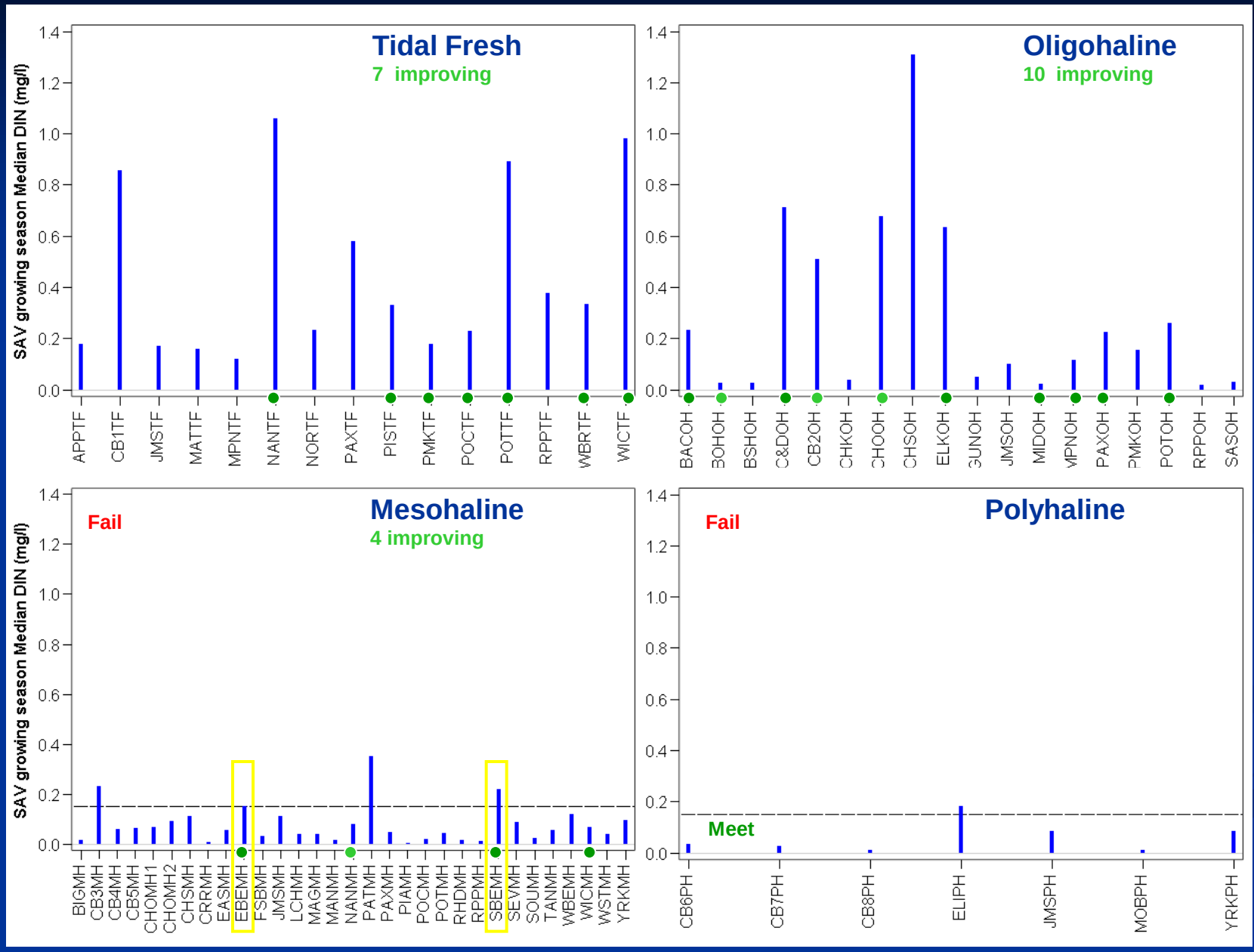
Not meet HR in:

(not apply to TF and OH)

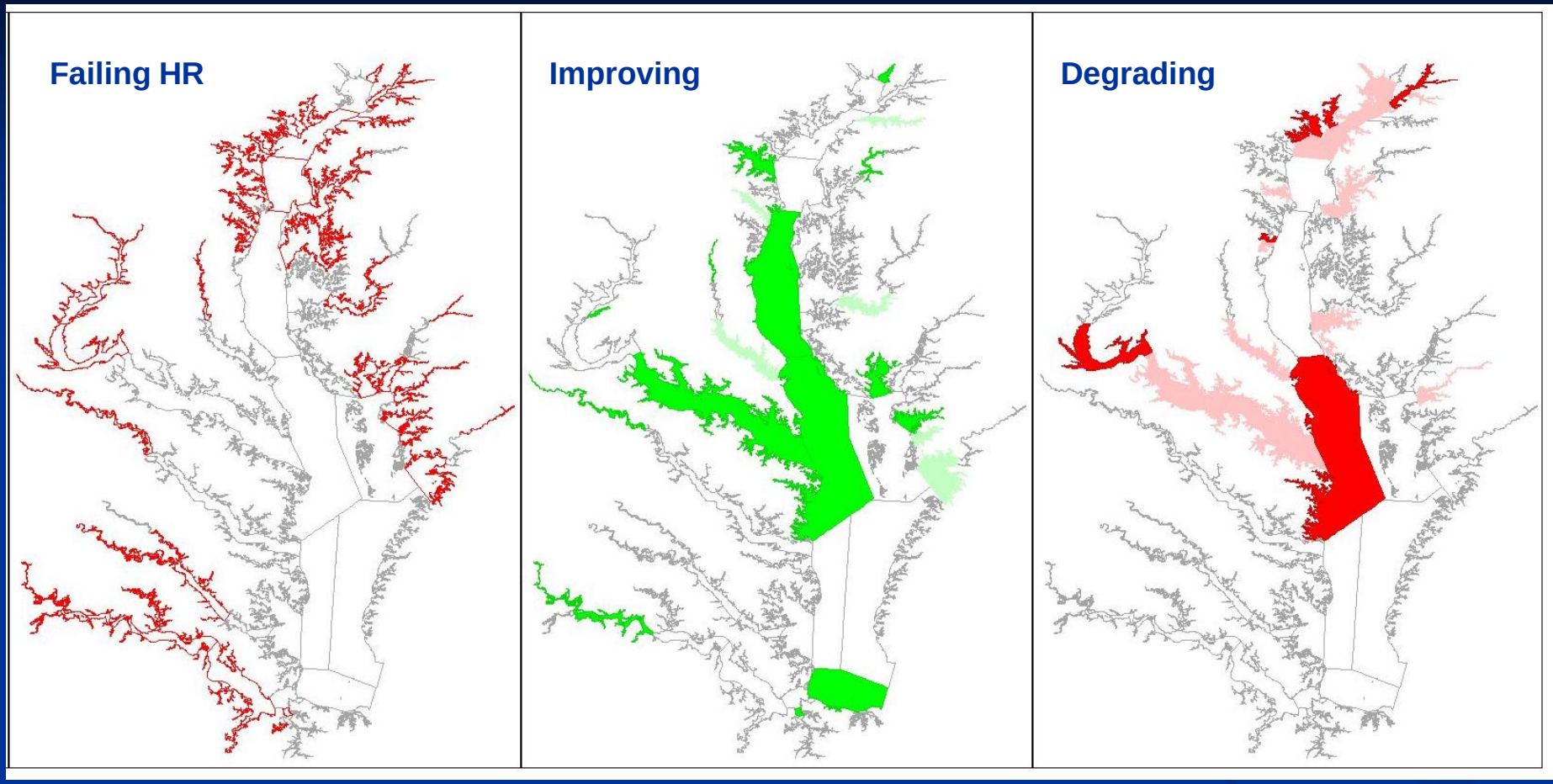
- middle Mainstem

Dissolved Inorganic Nitrogen

2010-2012 growing season medians



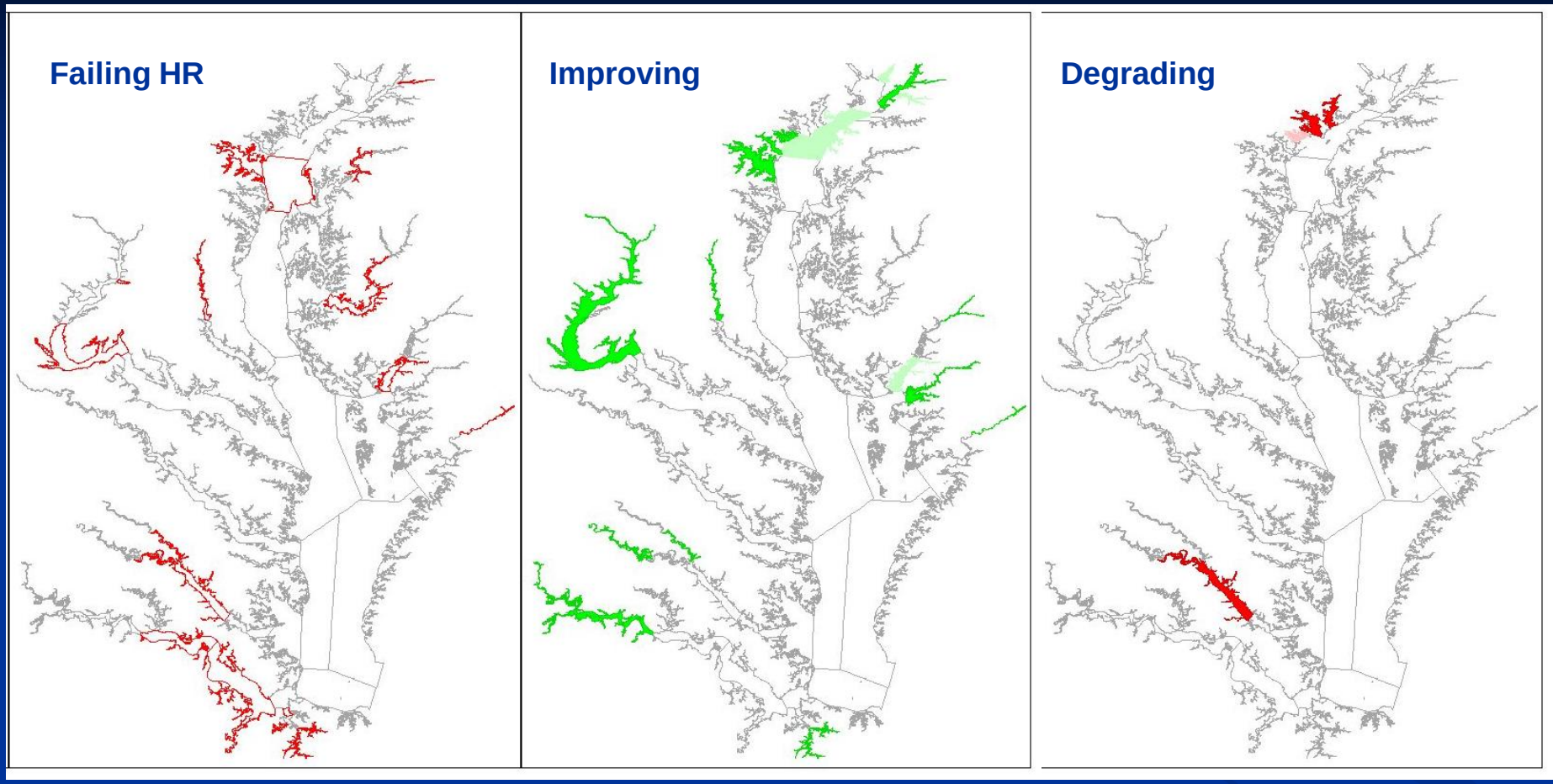
Light (Secchi, TSS, Chl *a*)



Insufficient light in almost all rivers and middle Bay; almost all of tidal fresh and oligohaline areas fail habitat requirements for Secchi and TSS

Sediments improving, but degrading trends for Secchi and chlorophyll *a*, especially in oligohaline and mesohaline segments

Nutrients (DIN, PO_4)



- Nutrients still too high in larger rivers and some parts of the eastern shore rivers
- Improving in many rivers, though phosphorus degrading in some rivers

Key challenges over the next decade

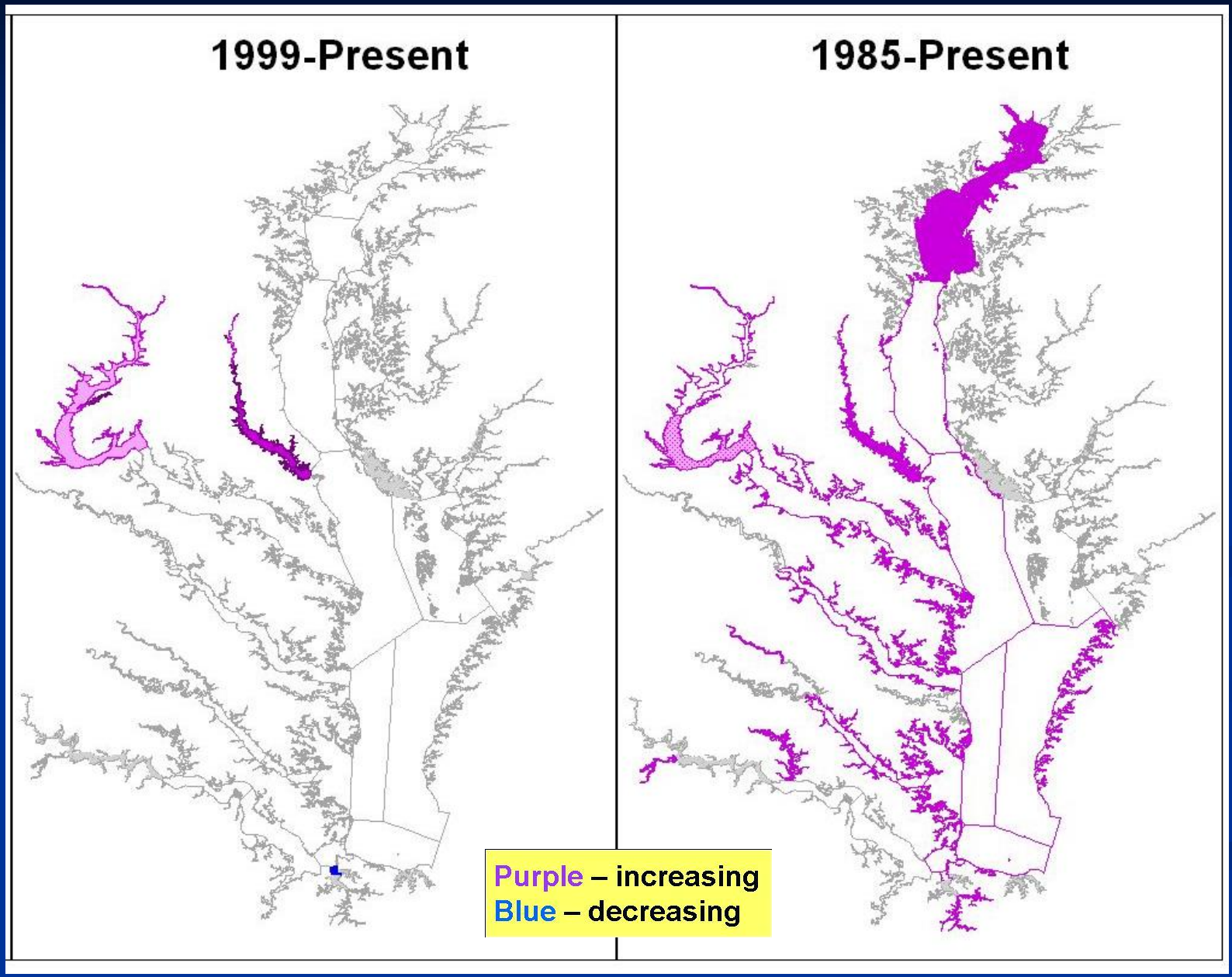
- Analytical tools for integrating long-term tidal water quality data with short term and shallow water monitoring data; new trend analysis methods to better include flow and multiple parameters

- Shallow water monitoring in largest Mainstem segments (funding, logistical issues), re-sampling of completed segments (funding)

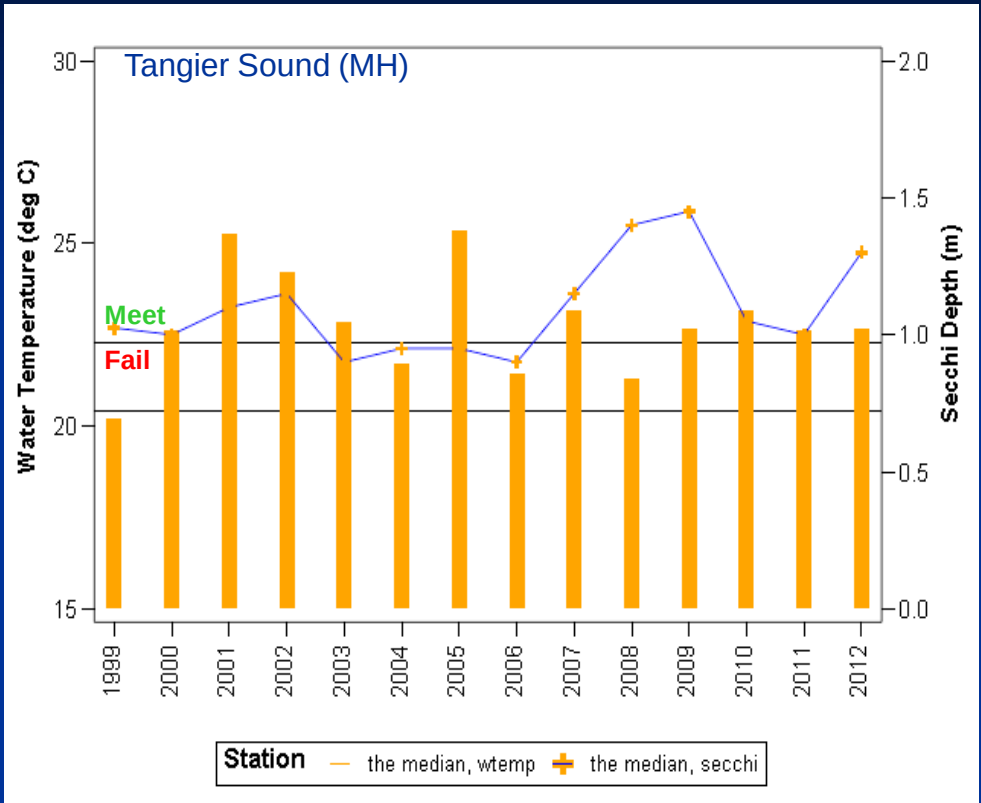
- SAV Tech Synthesis III: interactions between parameters (water temperature & light) and new parameters (total dissolved C)

Future conditions- Part 3

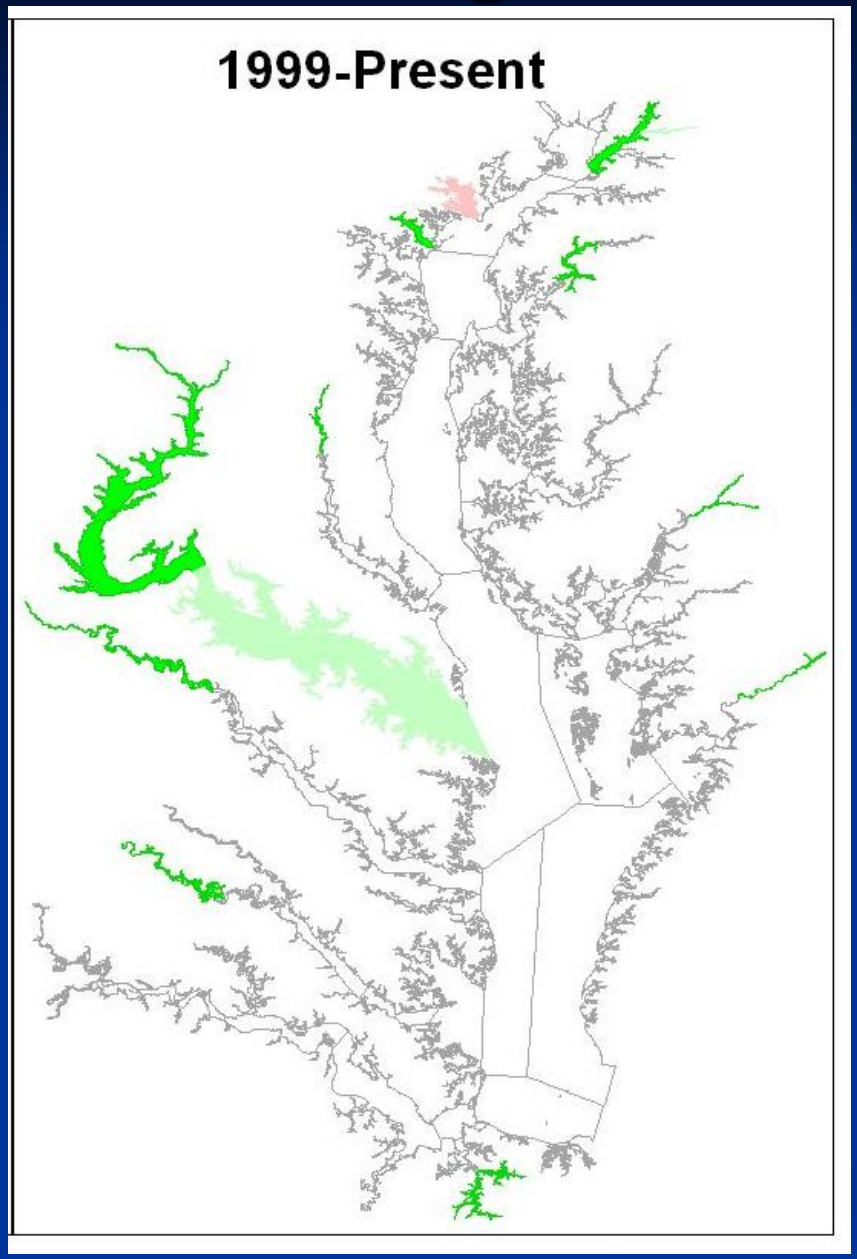
Water Temperature



Water Temperature & Light



Total Nitrogen



Total Phosphorus