



Virginia's Benthic Stressor Identification Procedure

Comparison with CADDIS and Chesapeake-Wide Applications

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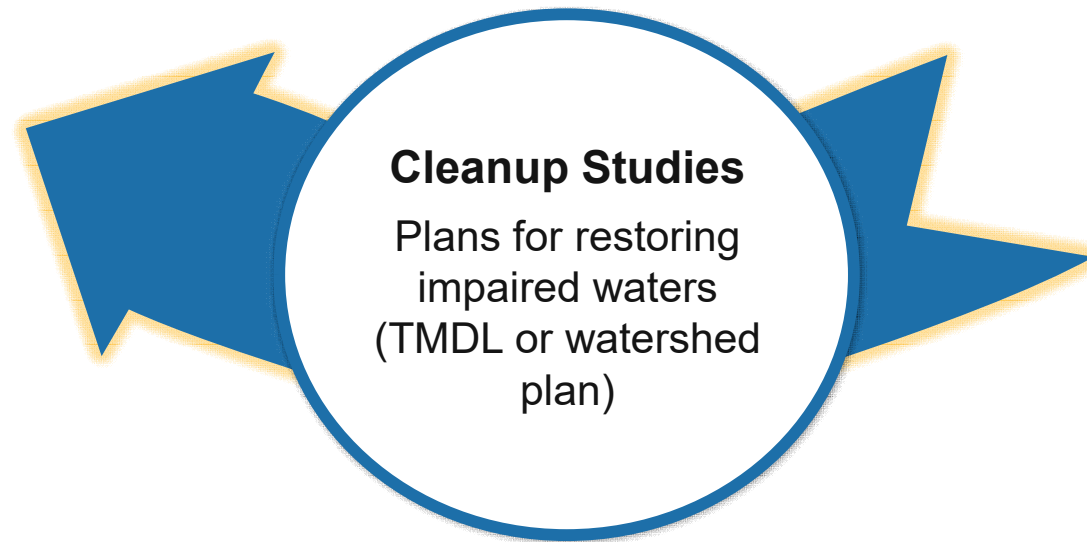
Virginia Department of Environmental Quality

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Virginia's Development of a Benthic Stressor Analysis



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- Identify additional data needs (diurnal dissolved oxygen cycles, benthic algae, etc.) and collect.
- Analyze water quality data, habitat data, and benthic data
 - Virginia uses family-level multimetric indices of biotic integrity (IBIs), Virginia Stream Condition Index (VSCI) for non-coastal streams and two adaptations of the Coastal Plain Macroinvertebrate Index (CPMI) in the coastal plains. Development of a genus-level IBI is underway.
 - Virginia has studied and published statistical stressor thresholds for benthic macroinvertebrates within Virginia waterways, using analysis of probabilistic monitoring sites around the state to determine probable stressor thresholds for numerous water quality and habitat parameters

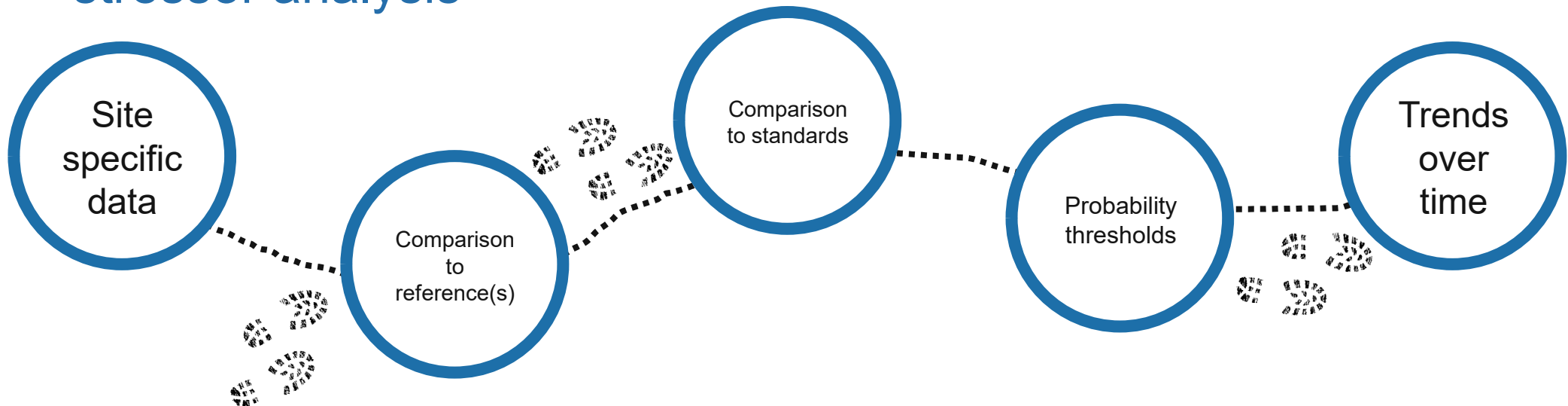
Plans for restoring
impaired waters
(TMDL or watershed
plan)



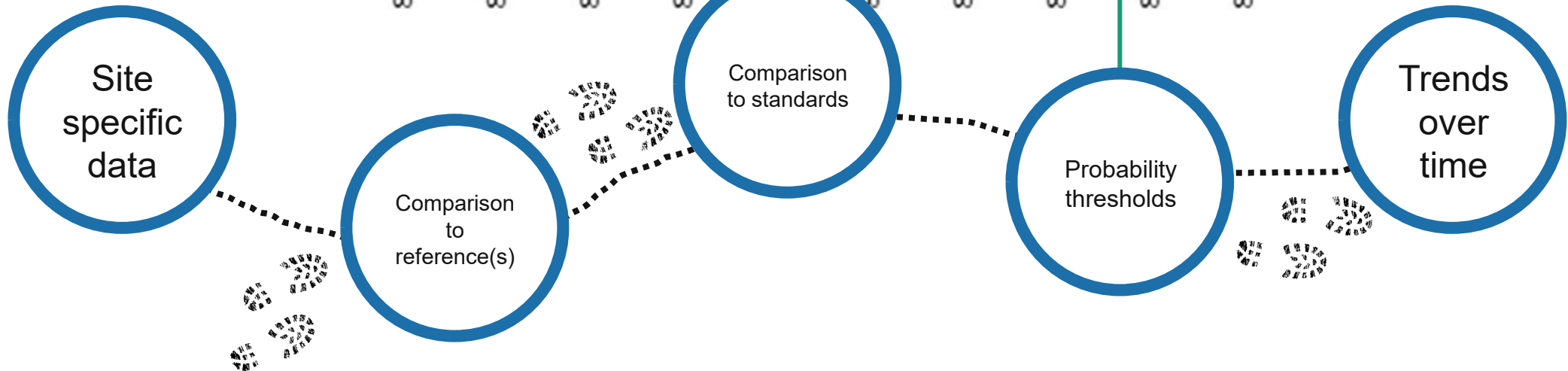
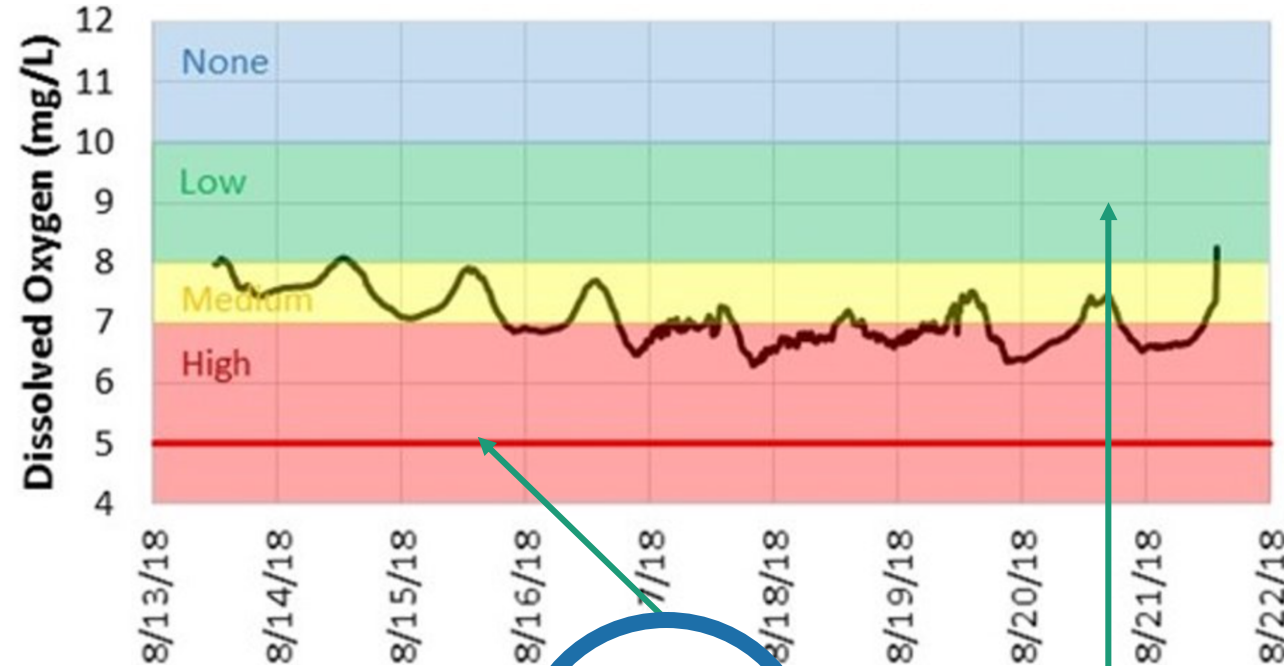
Application of the CADDIS Framework

Causal Analysis/Diagnosis Decision Information System (CADDIS) is a “Weight of Evidence” framework to identify stressors

- EPA provides 18 lines of evidence that could be evaluated
- Virginia commonly uses 10 of these to evaluate data in a benthic stressor analysis



Application of the CADDIS Framework



Procedures Applicable Chesapeake-Wide

Use of multiple indices to account for mid-Atlantic regional complexity

Use of probabilistic data to determine stressor thresholds that may differ from standards

Using the applicable pieces of CADDIS streamlined for the CB rather than reinventing a different weight of evidence approach

Prior to analysis and identification, fill data gaps, collecting data relevant to determining stressors

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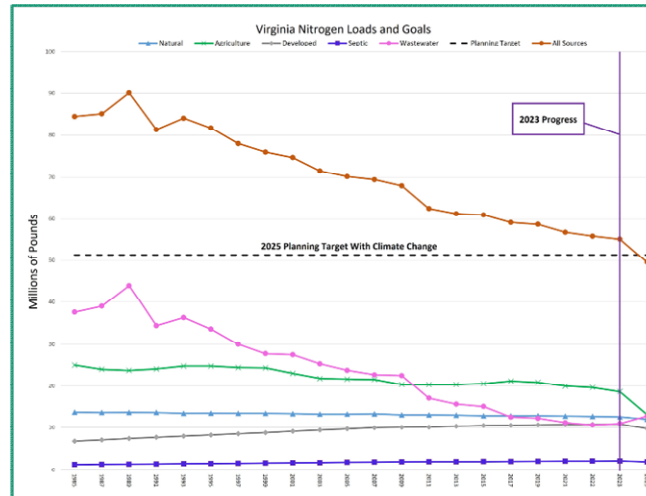
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Challenges and Future Steps to Consider

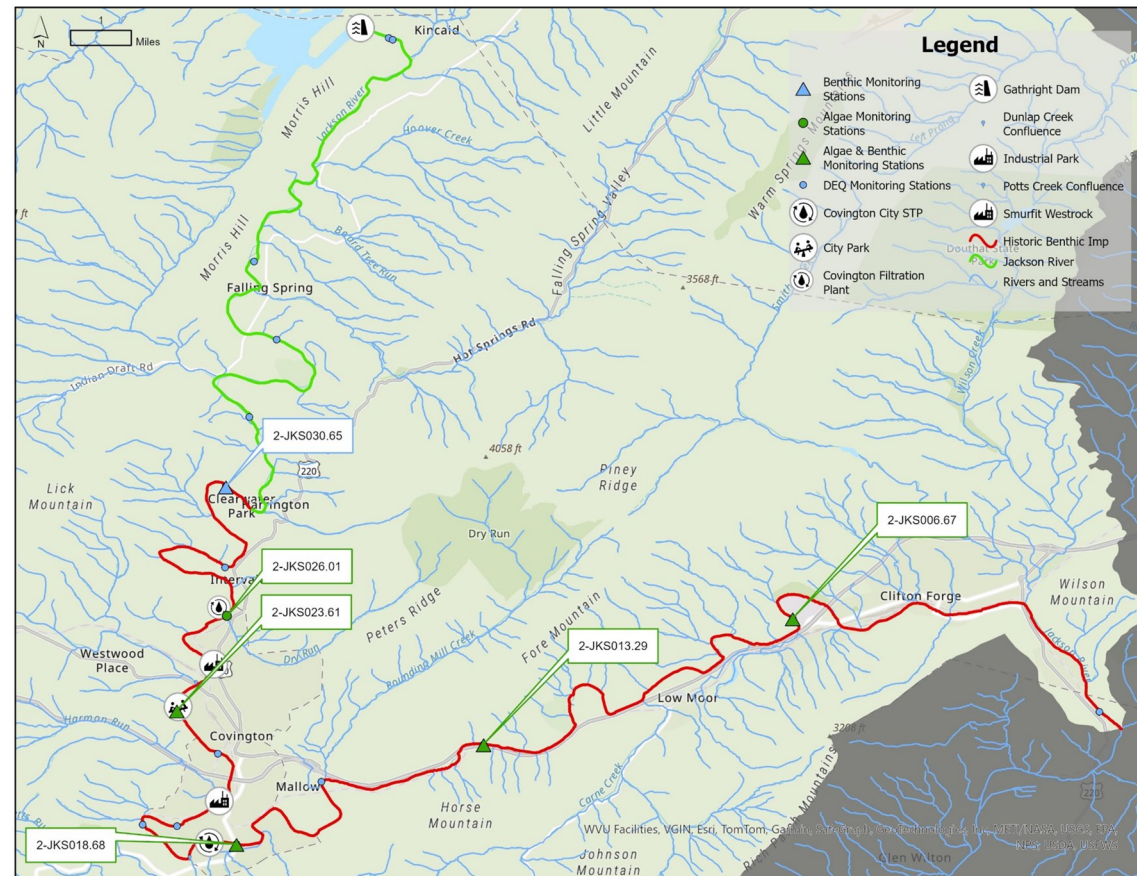
- State specific indices, genus vs species
- Standard collection procedures
- Data collection, submission, and storage
- Defining scales and success



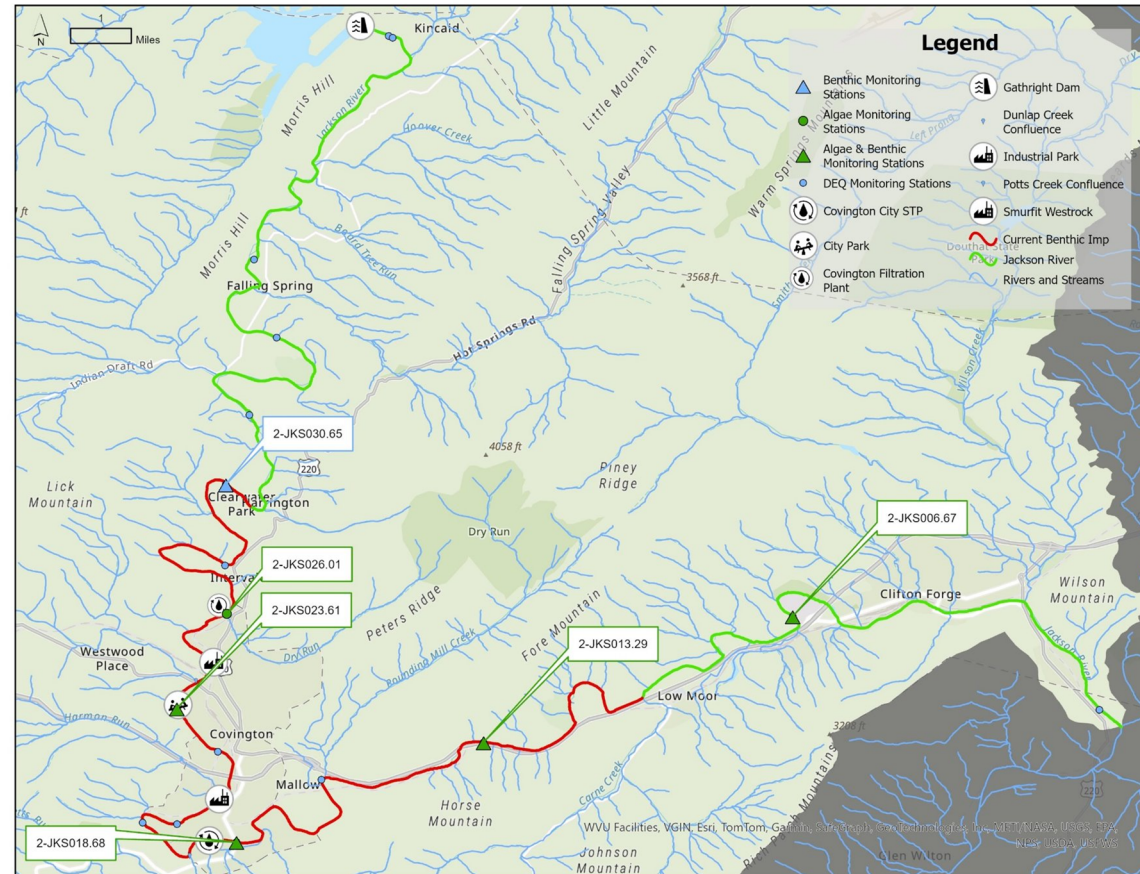
Conclusion

- Benthic macroinvertebrates continue to be very important in evaluating water quality
- Multi-jurisdictional cooperation will be necessary to developing a Chesapeake Bay Stressor Identification Procedure
- When stressors are identified accurately and addressed, water quality does improve!

Conclusion



Conclusion



Thoughts & Questions



Please feel comfortable to reach out to me in with any follow up questions at aerin.l.portner@deq.virginia.gov