The Ripple Effect: Understanding Rhode Island Water Capacity & Availability

A Presentation to

The Special Legislative Commission To Study the Entire Area Of Land Use, Preservation, Development, Housing, Environment, And Regulation

May 2, 2024

Rhode Island's Water Managers

Federal Regulatory Agencies

LOCAL

RIEMA

WRB
manages sufficiency: is there enough water when and where it is needed?

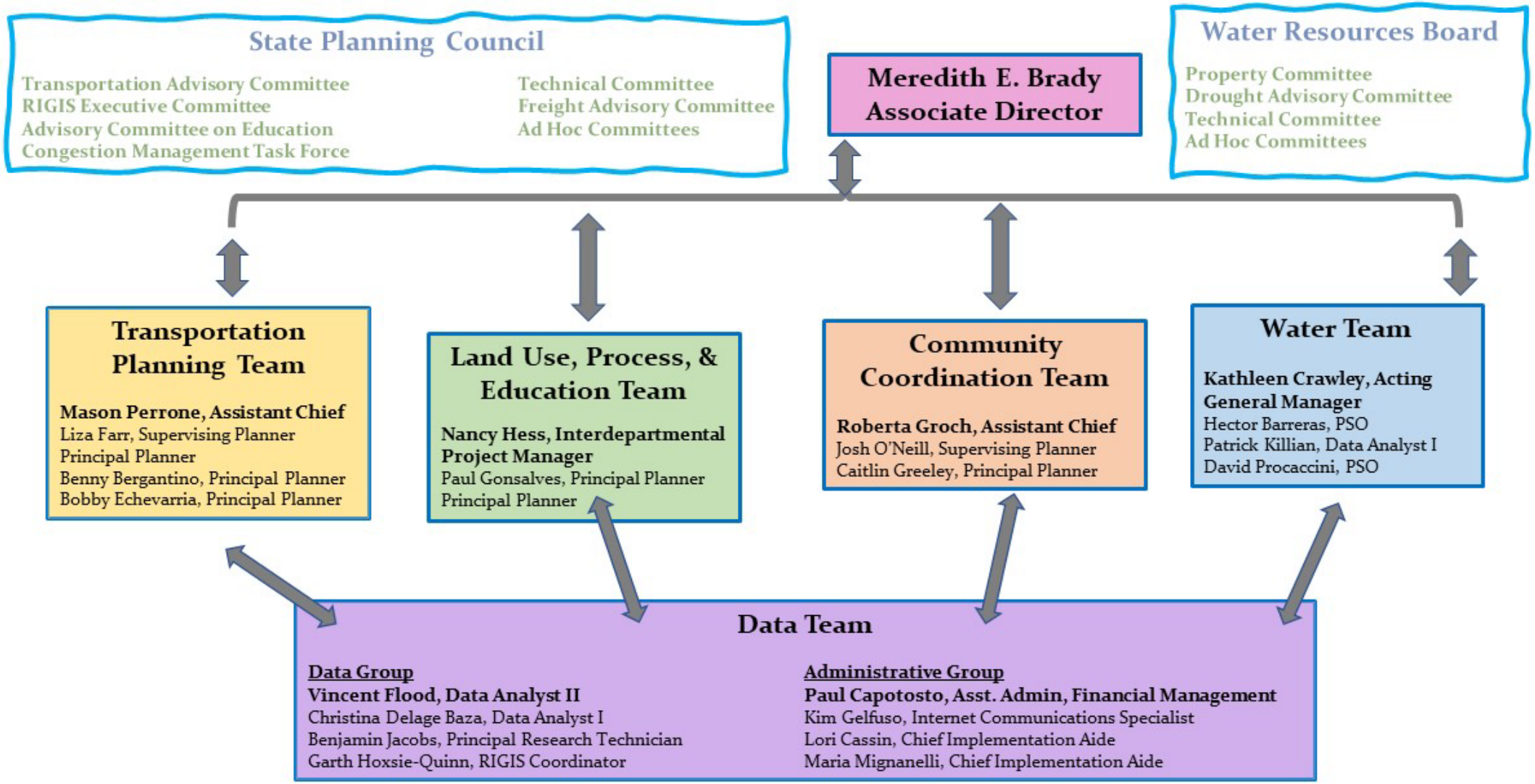
DEM
manages environmental impacts to water resources: is it safe from pollution?

Health
manages drinking water quality: is it safe to drink?

CRMC

LOCAL

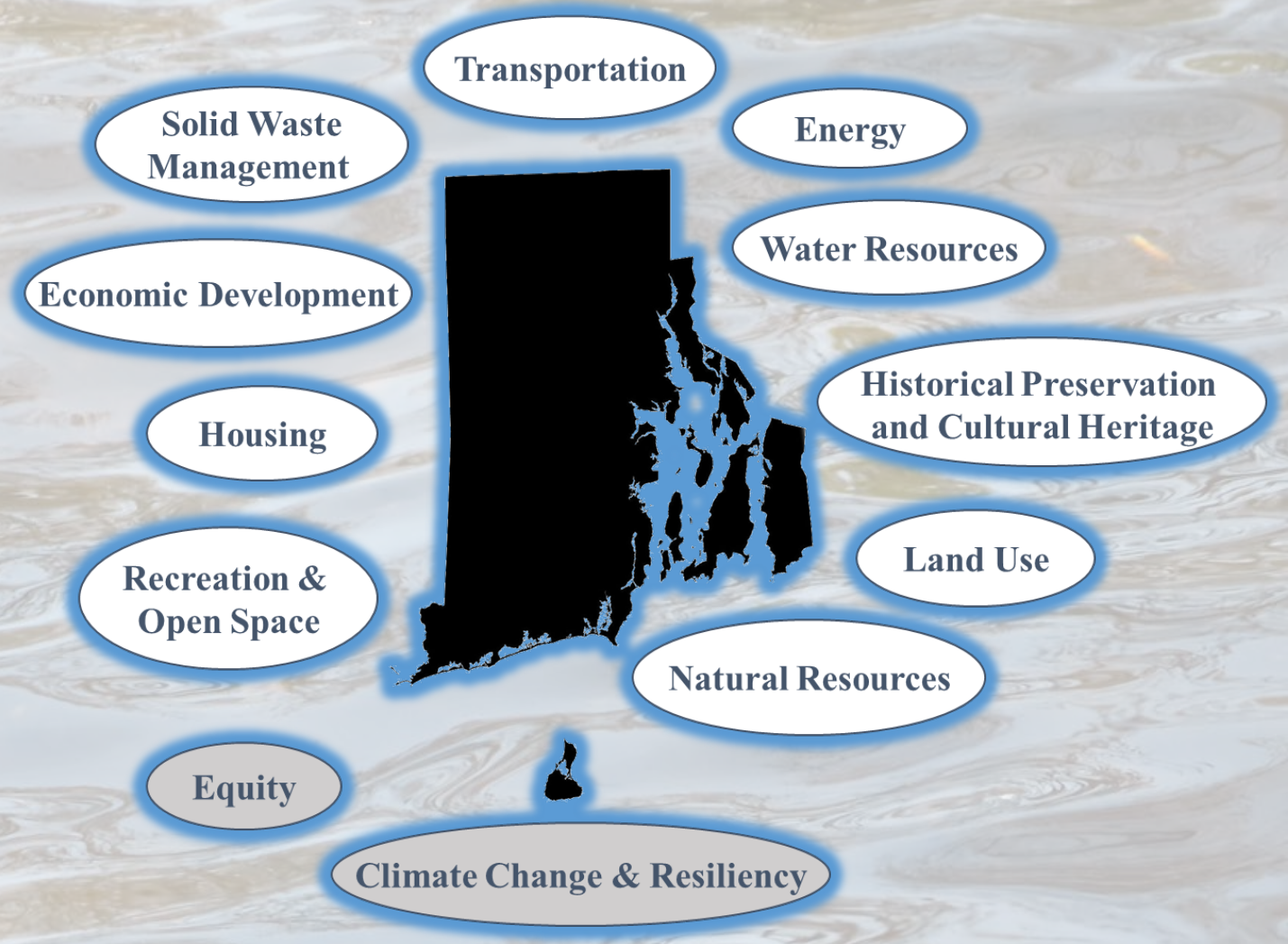
LOCAL


State Planning Council
Transportation Advisory Committee
RIGIS Executive Committee
Advisory Committee on Education
Congestion Management Task Force
Technical Committee
Freight Advisory Committee
Ad Hoc Committees
Meredith E. Brady
Associate Director
Water Resources Board
Property Committee
Drought Advisory Committee
Technical Committee
Ad Hoc Committees
Transportation Planning Team
Mason Perrone, Assistant Chief
Liza Farr, Supervising Planner
Principal Planner
Benny Bergantino, Principal Planner
Bobby Echevarria, Principal Planner
Land Use, Process, & Education Team
Nancy Hess, Interdepartmental Project Manager
Paul Gonsalves, Principal Planner
Principal Planner
Community Coordination Team
Roberta Groch, Assistant Chief
Josh O'Neill, Supervising Planner
Caitlin Greeley, Principal Planner
Water Team
Kathleen Crawley, Acting General Manager
Hector Barreras, PSO
Patrick Killian, Data Analyst I
David Procaccini, PSO
Data Team
Data Group
Vincent Flood, Data Analyst II
Christina Delage Baza, Data Analyst I
Benjamin Jacobs, Principal Research Technician
Garth Hoxsie-Quinn, RIGIS Coordinator
Administrative Group
Paul Capotosto, Asst. Admin, Financial Management
Kim Gelfuso, Internet Communications Specialist
Lori Cassin, Chief Implementation Aide
Maria Mignanelli, Chief Implementation Aide

Statewide Water Planning

The Division of Statewide Planning promotes and encourages best practices for the balanced growth and development of the State of Rhode Island.

The Water Resources Board's mission is to assure that Rhode Island has enough fresh, clean water, now and in the future.

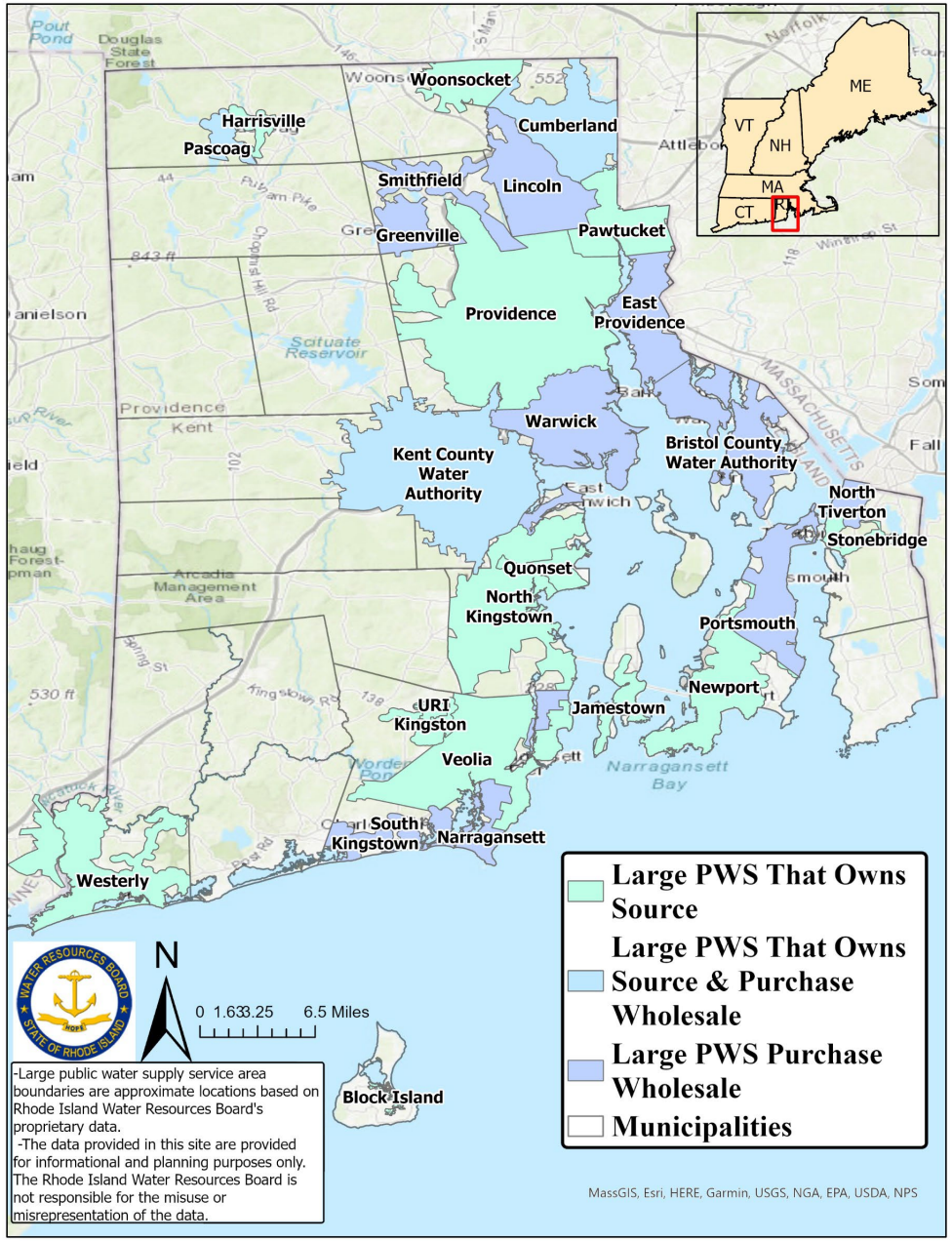



OLD NAVY
FOOD COURT


PROVIDENCE ST

Large Public Water Systems

- Large Systems, > 50 Million Gal./Yr.
- Locally Managed, Governance Varies
- Service Areas
- Sources and Source Protection
- Capacity
- 2019 Resiliency Survey

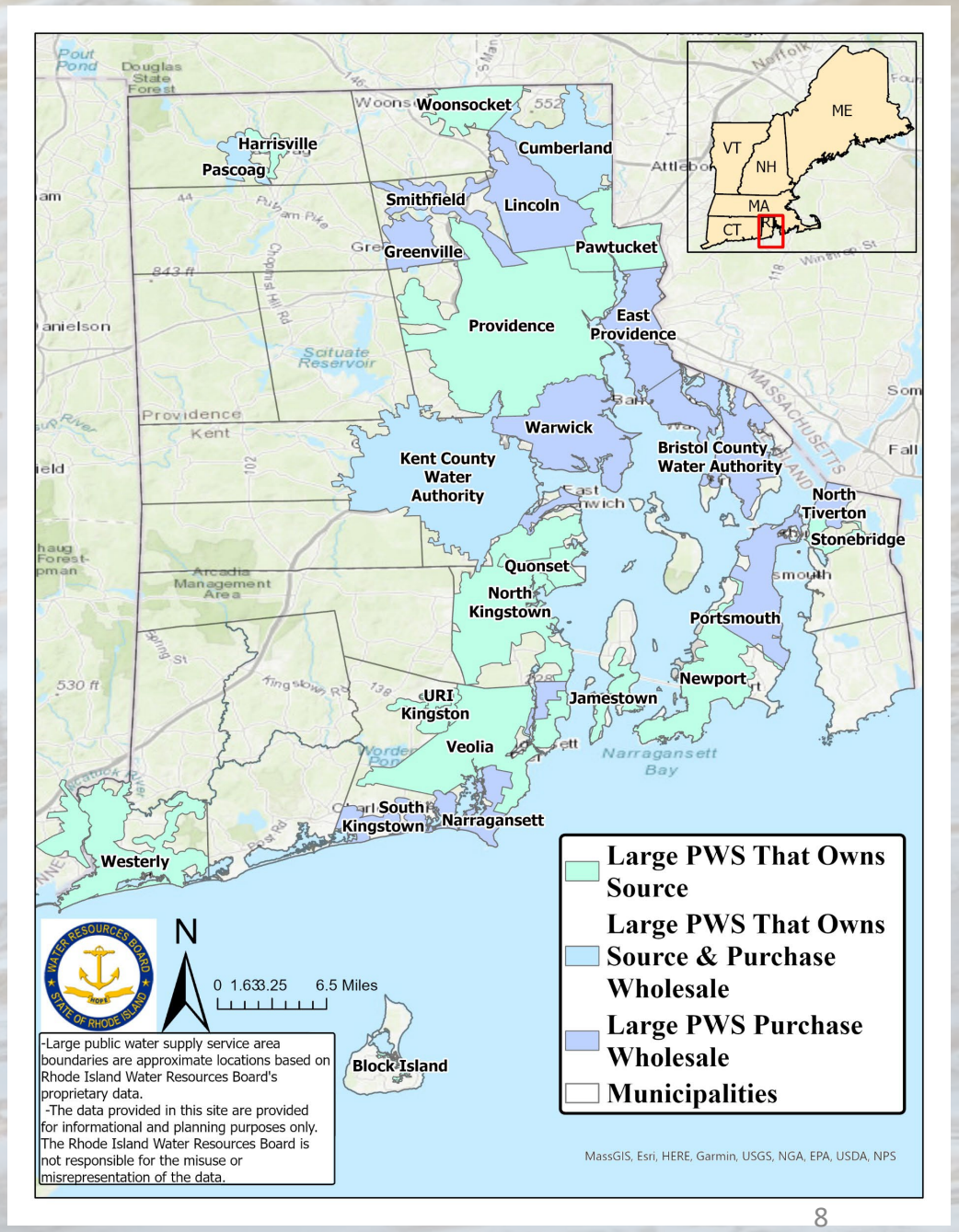


2019 Water Supplier Resiliency Survey

- There is a continuing need to invest in redundancy of sources and connections - expenses that are difficult to prioritize through existing rate structures and funding mechanisms.
- Investing in infrastructure and aging infrastructure is a priority.
- There is a need for system-wide resiliency to anticipate and adapt to our changing natural and regulatory environment.
- Reassessing safe yields, managing algal blooms, and addressing emerging contaminants such as PFAS/PFOA call for investments in data and adaptive management.

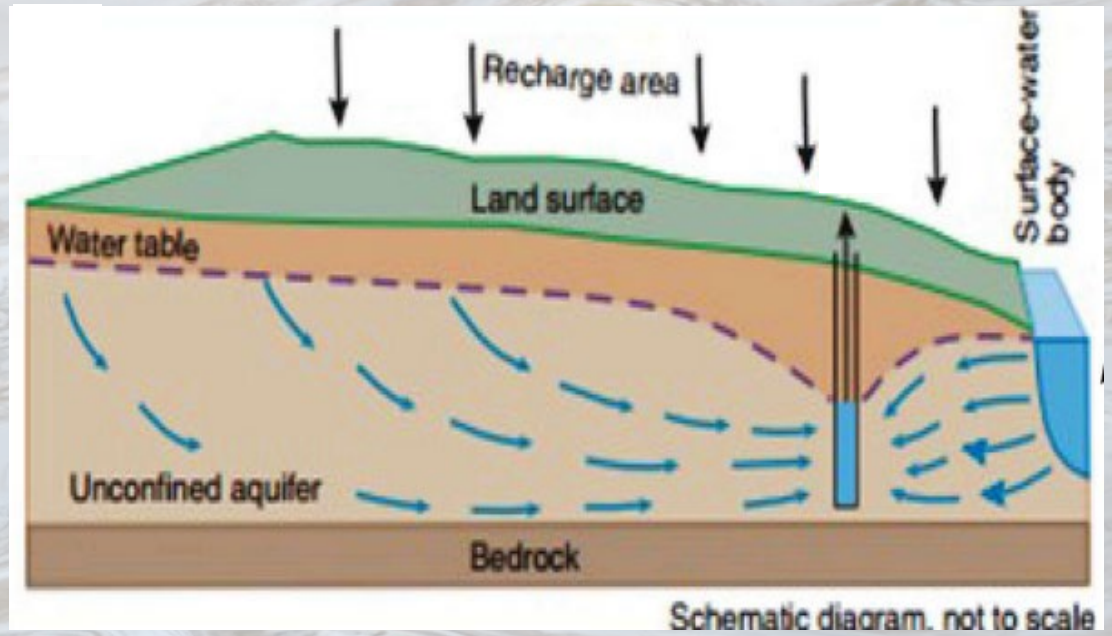
Outside the Large System Service Areas

- Small public water systems
- Private domestic wells



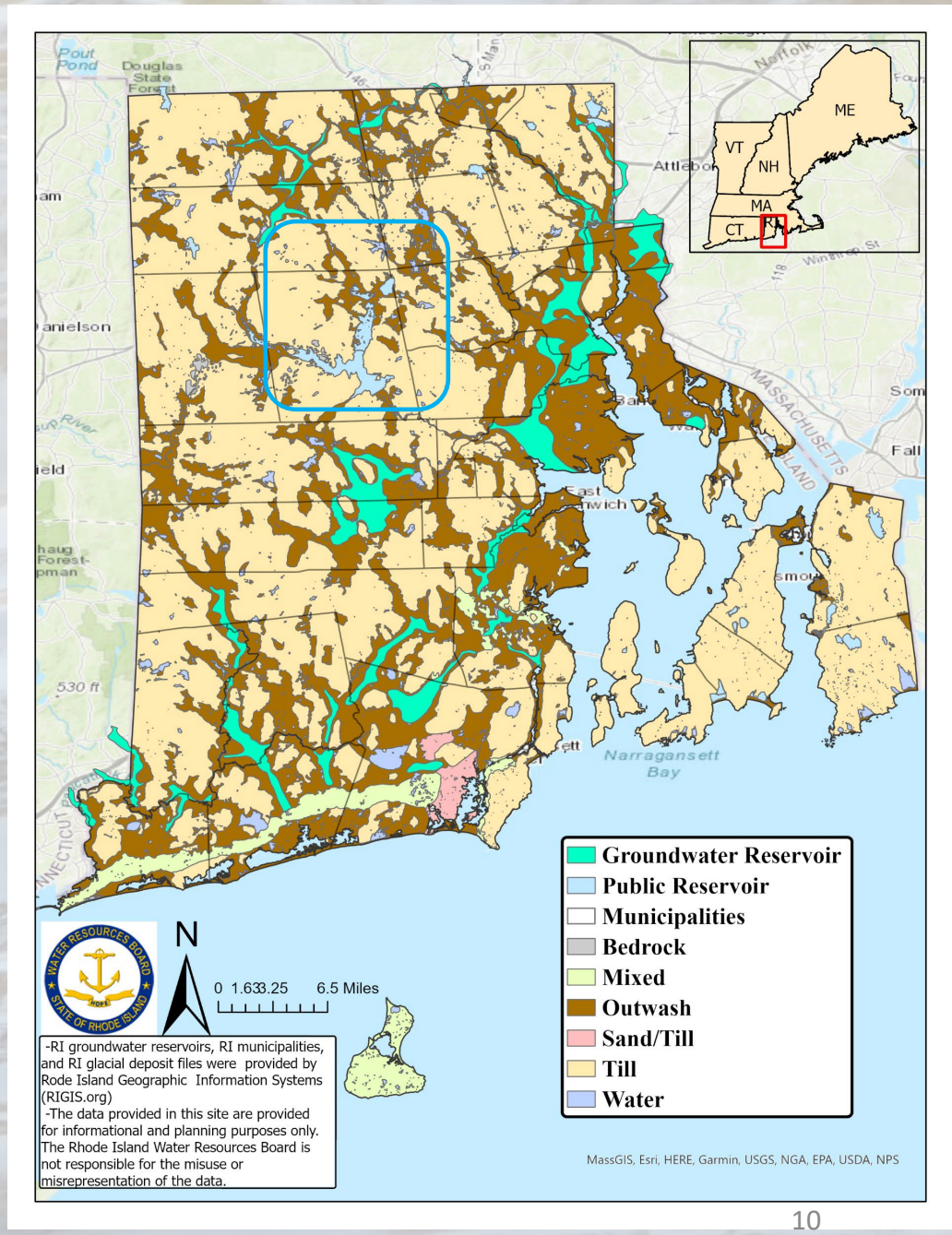
Water is a Finite Resource

- All of the State's waters are shared, interconnected natural resources.
  - Groundwater and Surface Water are part of the same natural system
- Impacts to one cause impacts to the other!
  - True for both water quantity and water quality.
- In RI, water is abundant but not infinite or equally available.



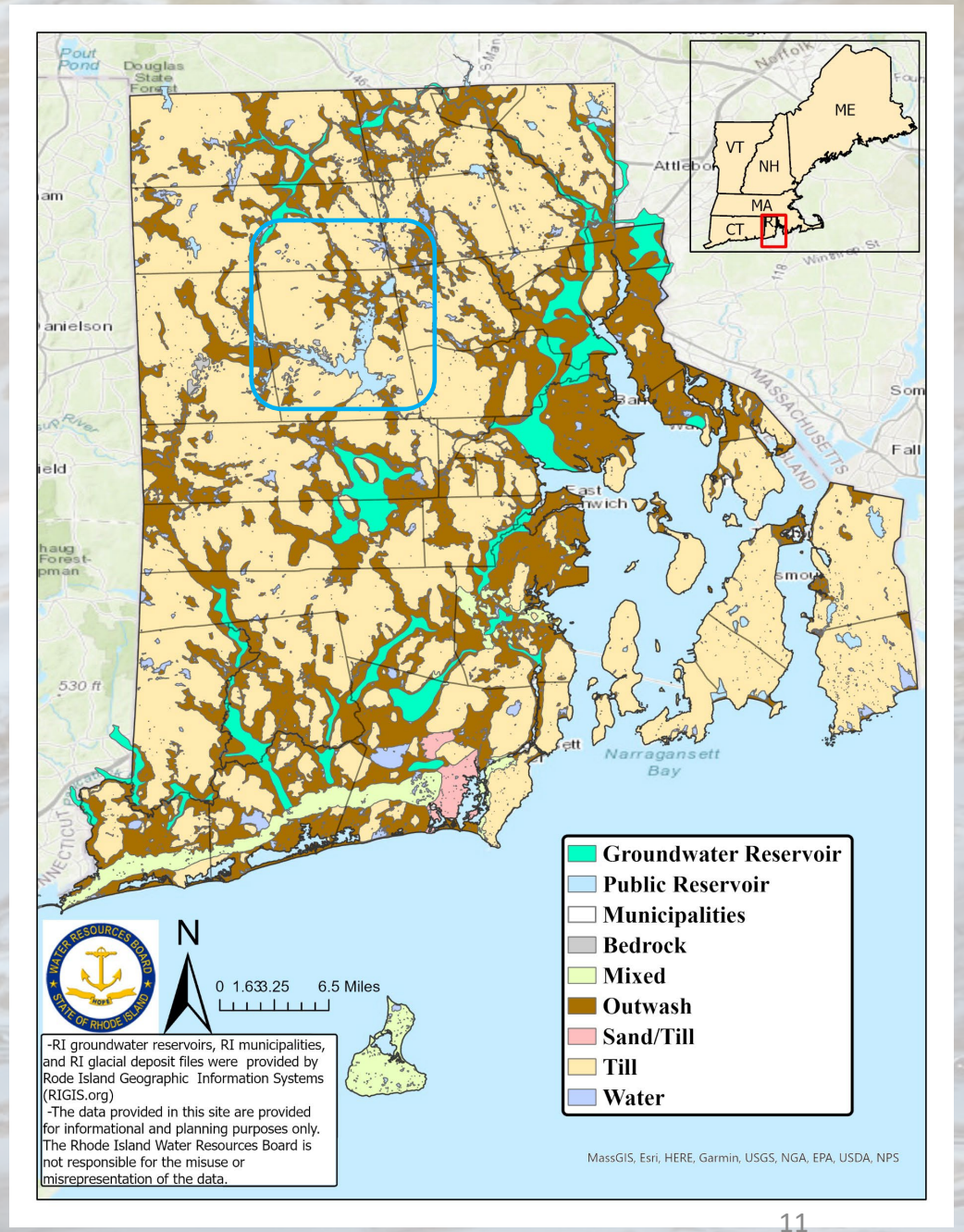
RI Water Resources

- Mix of Surface Water and Groundwater
  - Negligible at this time: Desalination
- Scituate Reservoir
  - Supplies >60% of RI with water
- Many parts of RI rely on groundwater
- Seasonal Variations (Use and Availability)
- Main threats
  - Over exploitation
  - Pollution
  - Saltwater intrusion

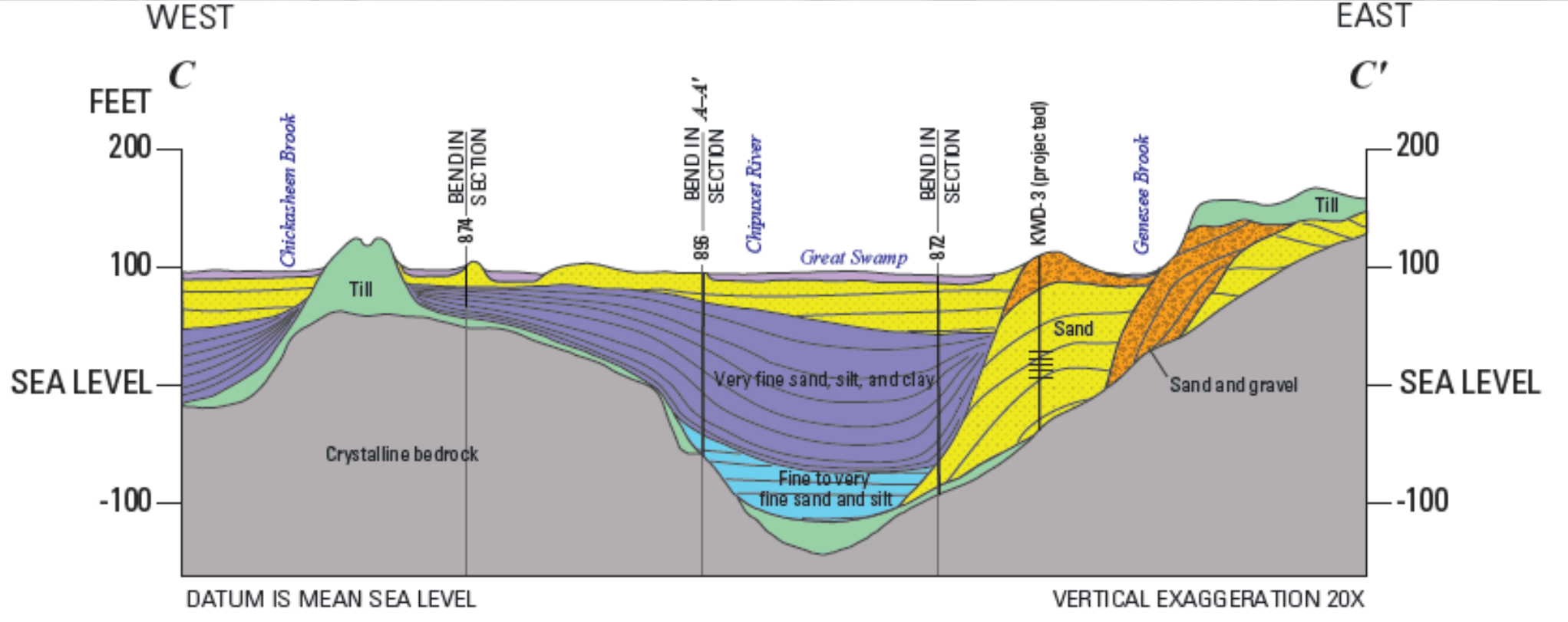


RI Water Resources: Groundwater

- Unconsolidated aquifers
  - Fluvial-Glacial deposits
    - Sand and Gravel (*Outwash)*
  - Till
    - Highly variable yields
- Fractured bedrock aquifer
  - Openings in otherwise solid hard rock
- Impacts on Water Quality and Quantity

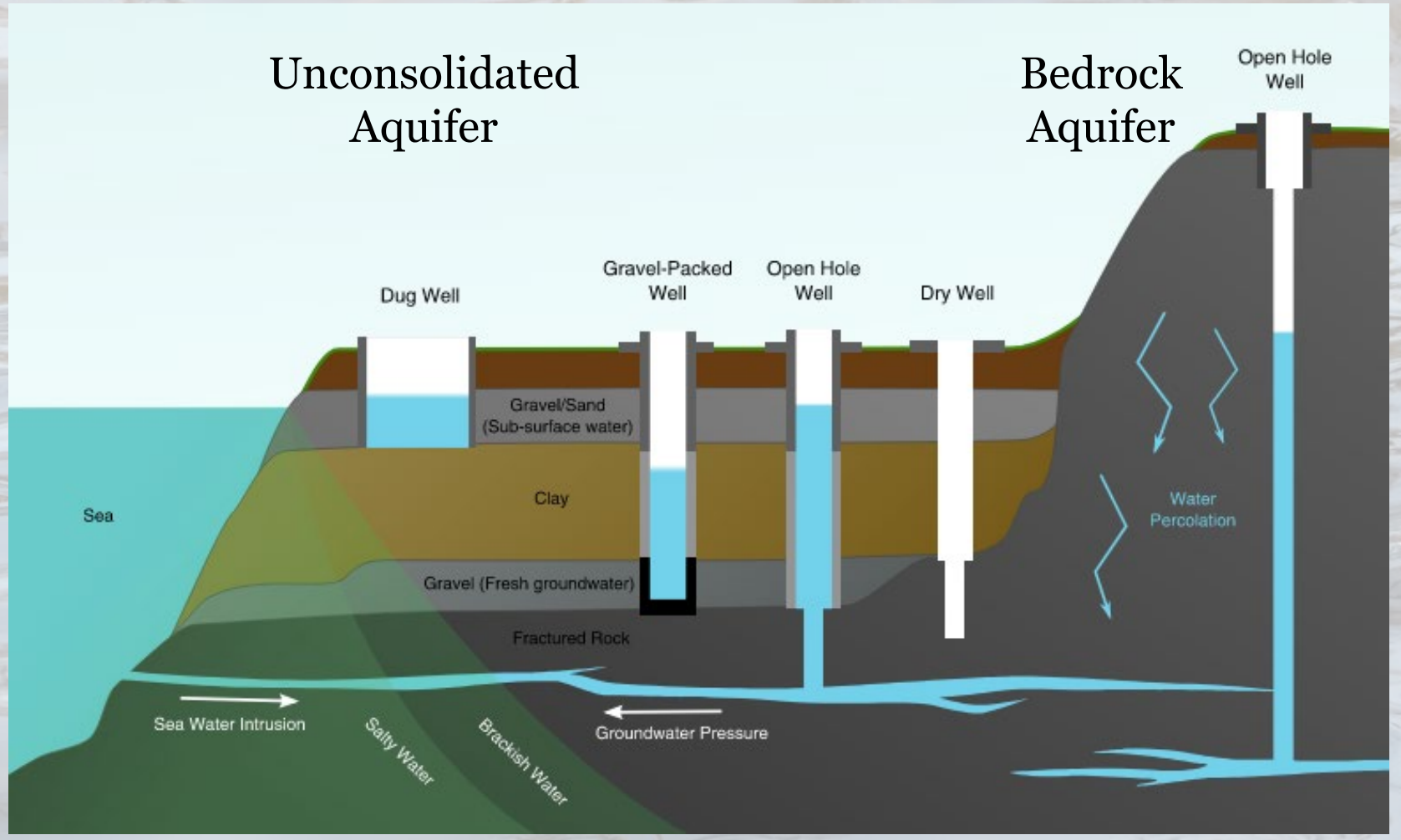


Geology and Types of Wells in RI



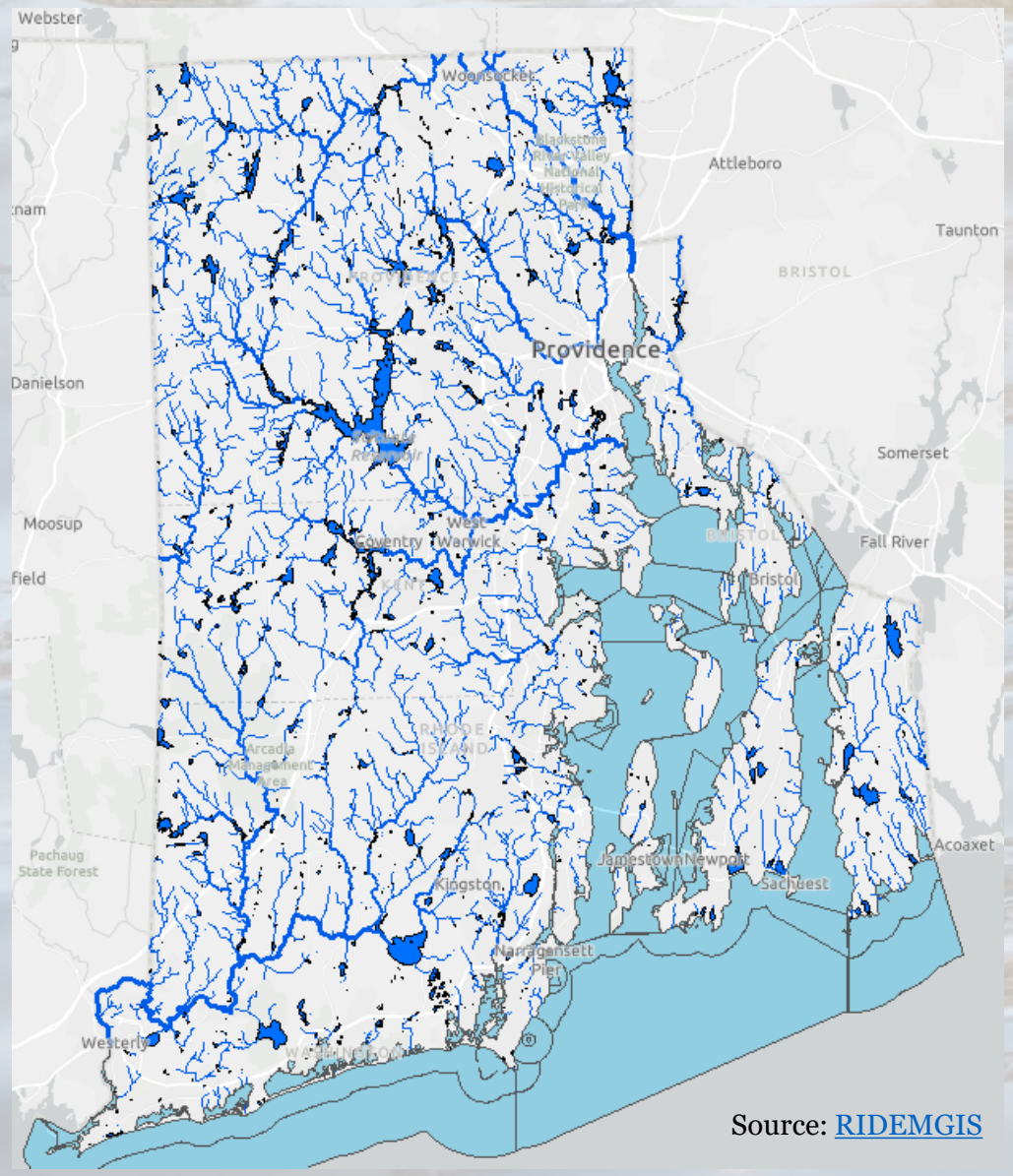
Source: Wiki

Geology and Types of Wells in RI



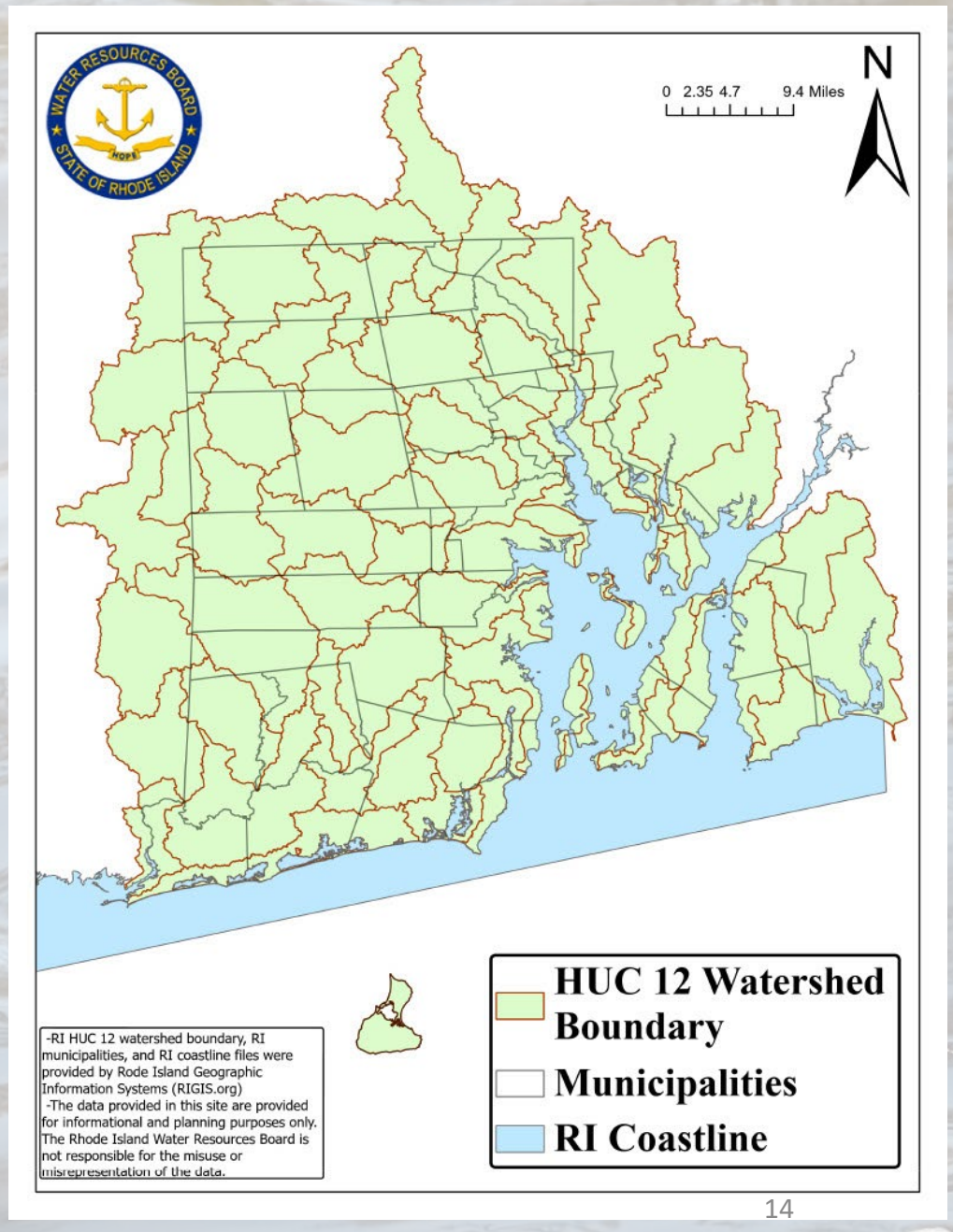
Source: Wiki

RI Water Resources: Surface Water



Source: RIDEMGIS

Water doesn't understand borders: state or municipal

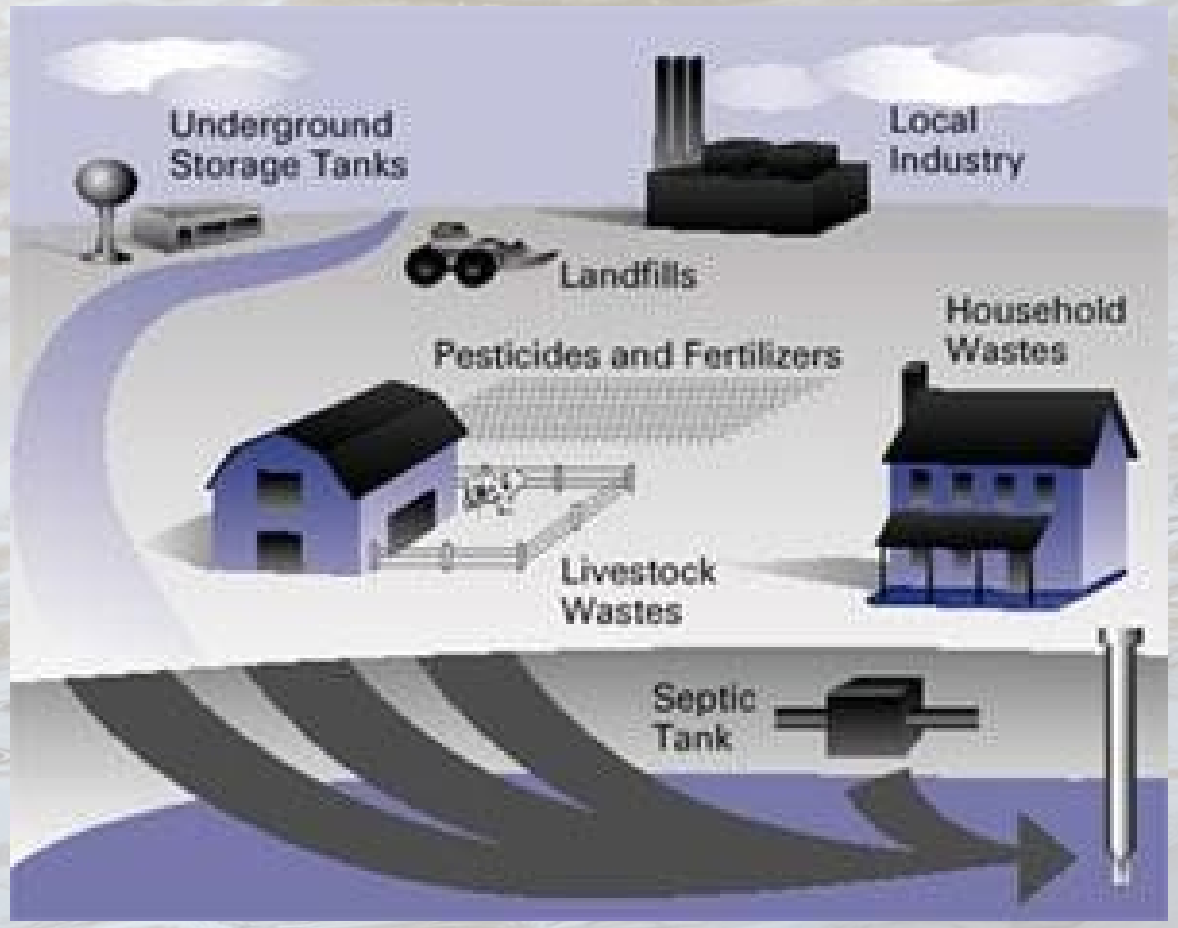


Water Quality

- Pollution finds its way into water resources.
  - Water treatment is more expensive than protection.

- Main concerns
  - Bacteria
  - Excess nutrients
  - Legacy pollution
  - PFAS and Emerging Contaminants

Water issues, and their solutions, are complex.



Source: USEPA

Waterborne diseases can be spread via a well which is contaminated with fecal pathogens from septic effluent –shallow wells are especially susceptible.

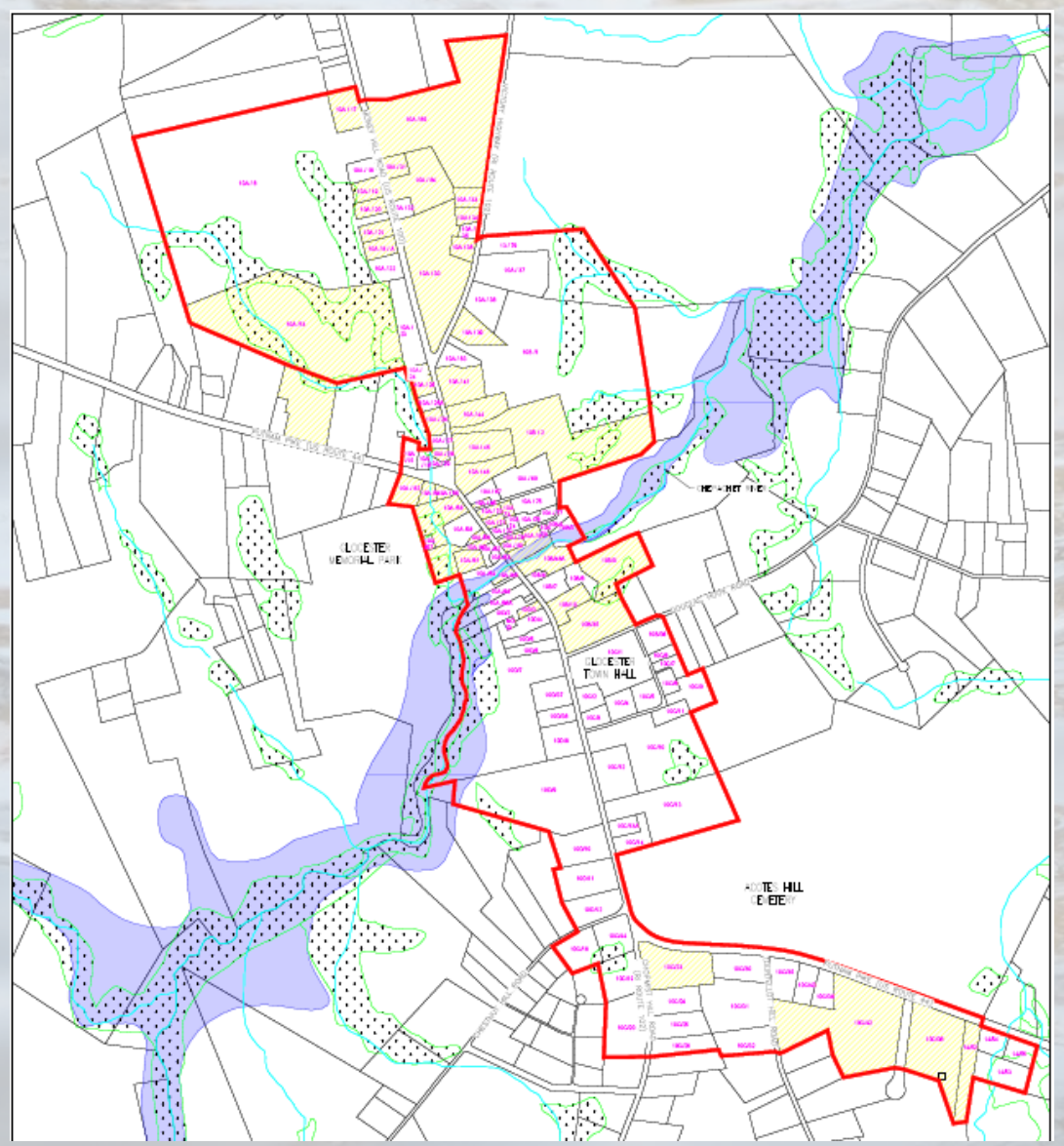
RI Water Challenges and Opportunities

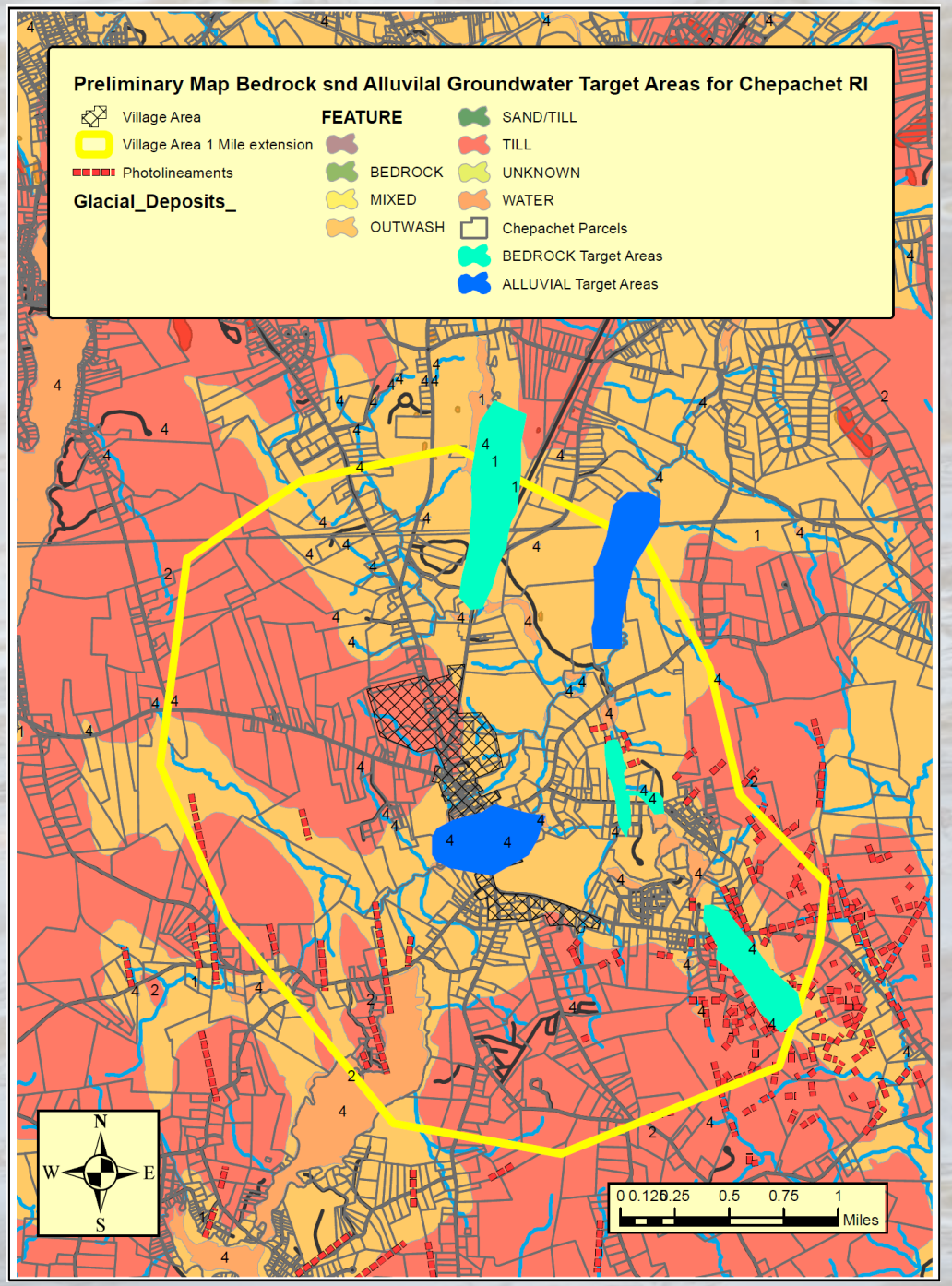
- Availability of Sufficient, High Quality Water Supply is the Primary Requirement for any Development
- Water Resource Planning has Historically Been “Local” though Regional Approaches are Needed
- Water Supply in Many Rural Towns is Highly Fragmented

Water Supply in Many Rural Towns is Highly Fragmented

- Small Lot Size – do not meet protective criteria for public wells;
- Limited Capacity – principally bedrock wells with limited yield;
- Contaminant Threats – historic industrialization, drainage, OWTS, etc.;
- Minimal Infrastructure – transmission, storage, fire protection;
- Limited Access to Higher Yield Aquifers;
- Treatment Needs – iron, manganese, PFAS, Nitrate-N, etc.;
- Availability of Experienced Operators & Maintenance Staff;
- Capital, Operating & Maintenance Cost;
- Note: Every Small Rural Community is Unique.

Town of Glocester
Municipal Water Feasibility Study





For Discussion

- Across the state there are substantial water resources and potentially developable resources.
- Available supplies are not necessarily where they are needed.
- Water needs to be considered early in the process, it's not a given.
- Water issues, and their solutions, are complex.
- Regional problems are difficult to address.
- Developing and maintaining a water supply is expensive.
- Developing new supplies impacts other supplies and resources.
- Emerging contaminants and regulations require new technologies and present other challenges.
- This is an initial conversation…there's so much more.

For Further Information

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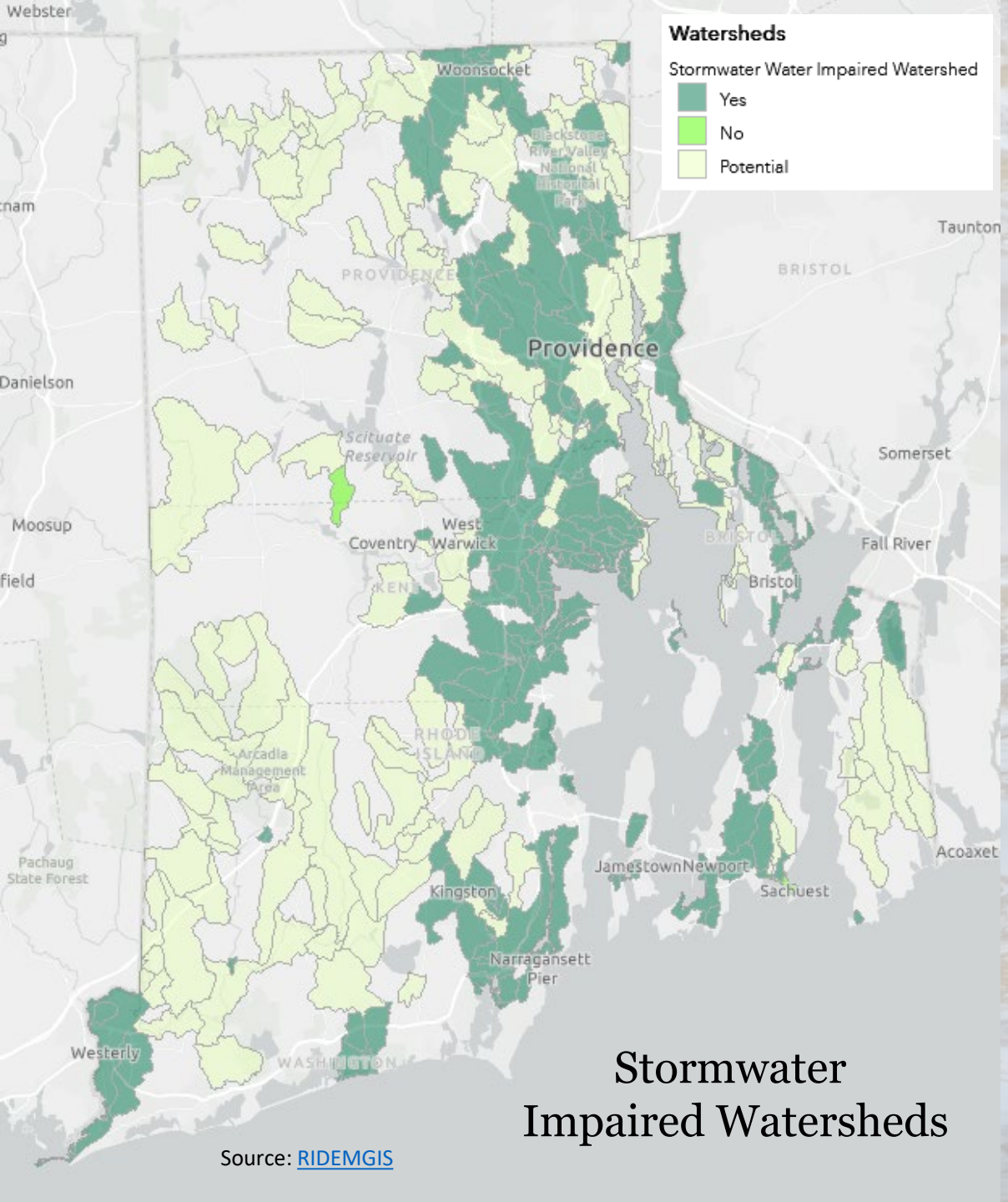
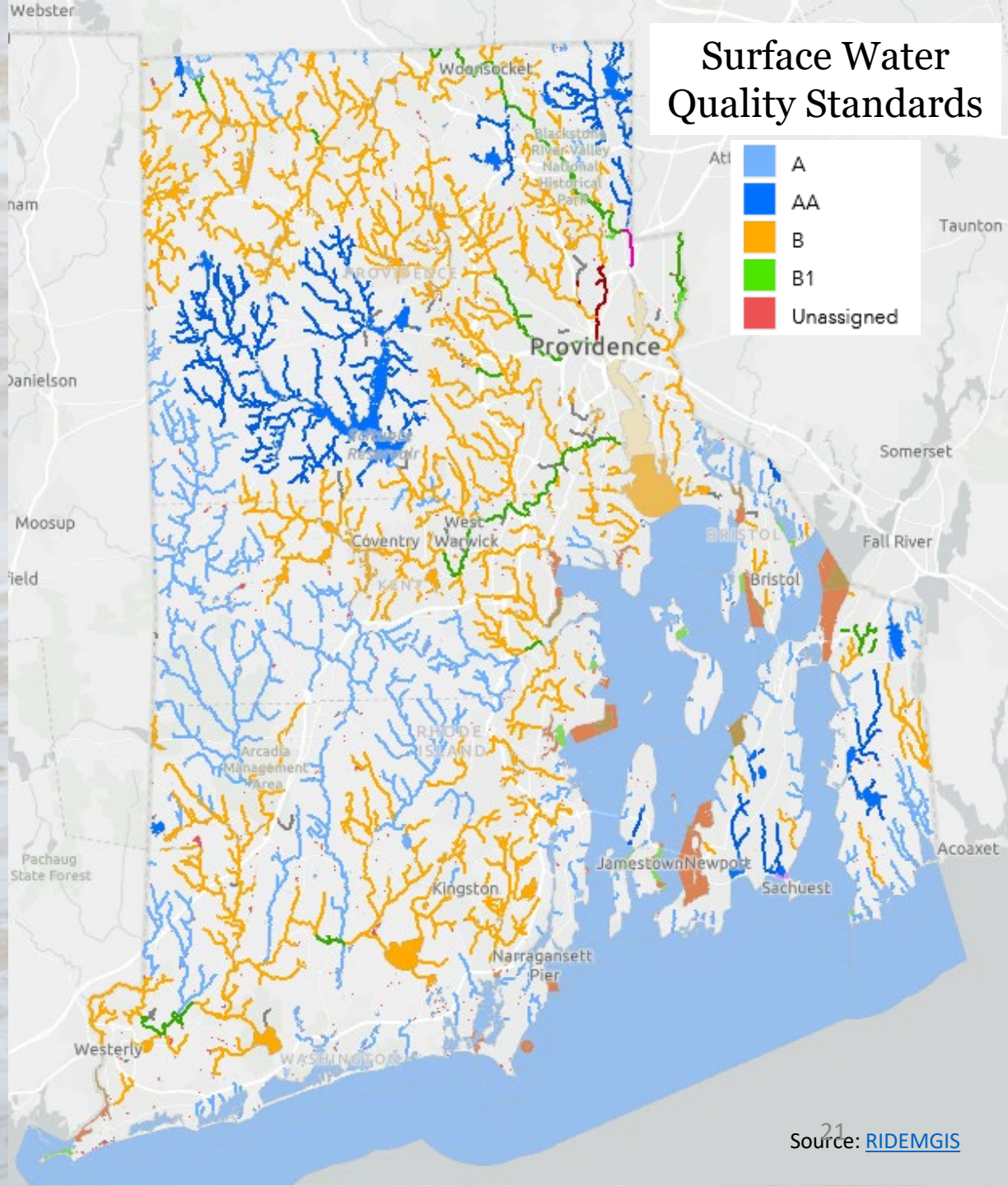
http://www.wrb.ri.gov



Stormwater Impaired Watersheds

Source: RIDEMGIS



Source: RIDEMGIS