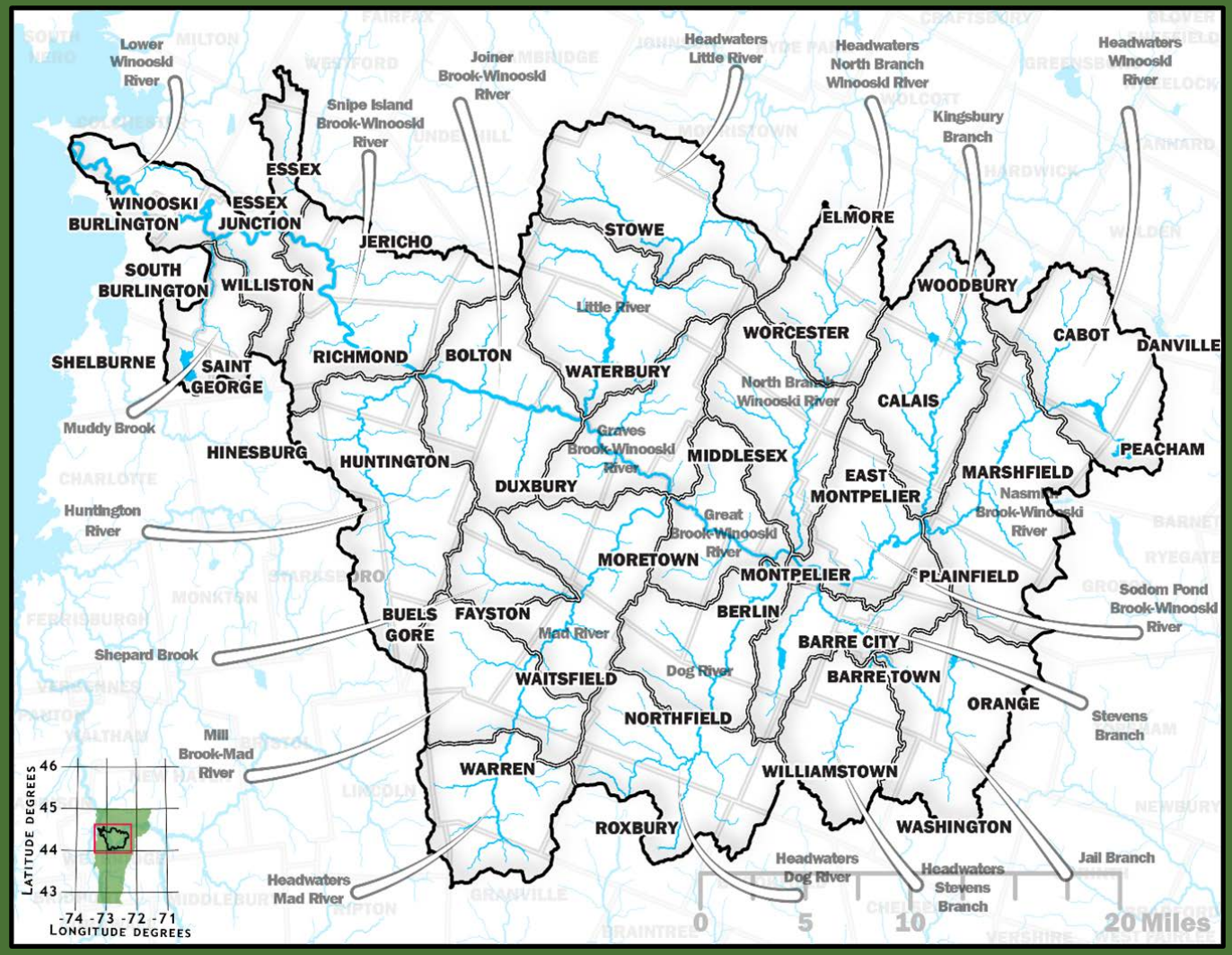
Draft Winooski Tactical Basin Plan Overview



Central Vermont RPC
Board Meeting and
Public Comment Opportunity
October 10, 2023

Keith Fritschie, Watershed Planner | keith.fritschie@vermont.gov
Water Investment Division | Vermont Department of Environmental Conservation

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Outline

- Basin Planning Process Overview
- Winooski Basin Conditions and Protection & Restoration Priorities
- Lake Champlain Phosphorus ‘Diet’ (TMDL)
- Sector-based Water Quality Strategy Highlights
- Opportunity for Questions and/or Public Comment

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15 Watersheds

5-Year Planning Cycle

Agriculture

- Conservation practices that reduce sources of pollution from farm production areas and farm fields.

Developed Lands--Stormwater

- Practices that reduce or treat polluted stormwater runoff from developed lands, such as parking lots, sidewalks, and rooftops.

Developed Lands--Roads

- Stormwater and roadside erosion control practices that prevent erosion and treat road-related sources of pollution.

Wastewater

- Improvements to municipal wastewater infrastructure that decrease pollution from municipal wastewater systems through treatment upgrades, combined sewer overflow (CSO) abatement, and refurbishment of aging infrastructure.

Natural Resource Restoration

- Restoration of "natural infrastructure" functions that prevent and abate pollution. Natural infrastructure includes: floodplains, river channels, lakeshores, wetlands, and forest lands.

5 General Sectors for Water Quality Planning

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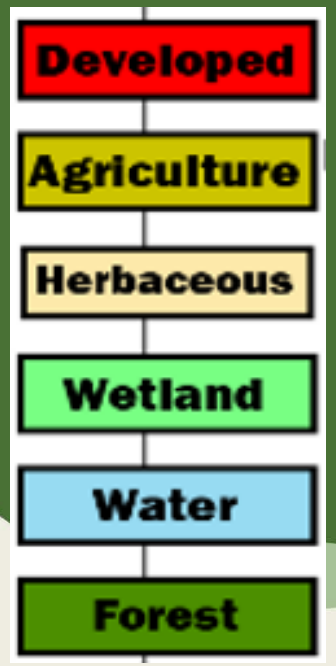
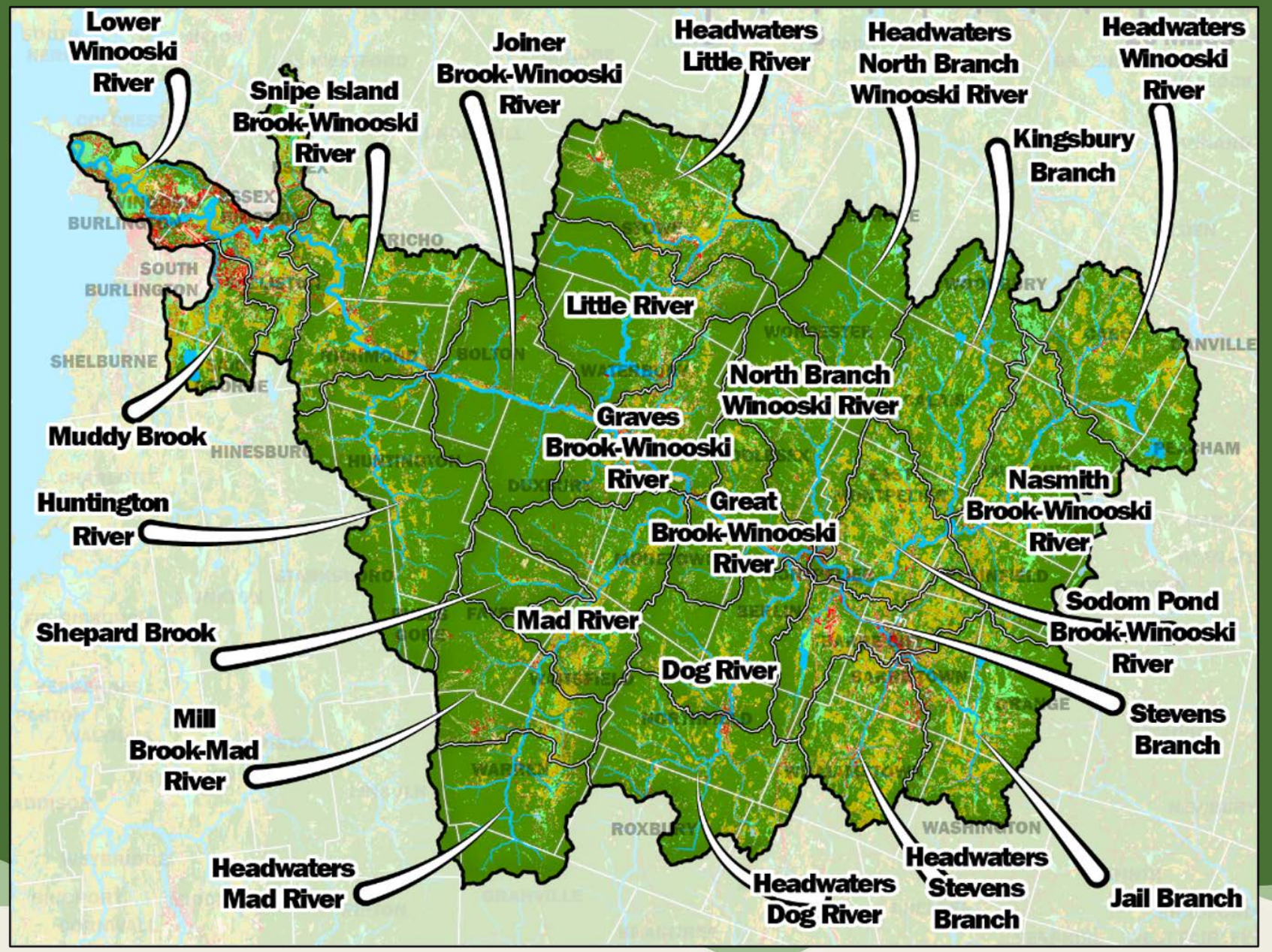
Basin Overview

- Largest VT watershed
- 50 towns
- >1300 stream miles





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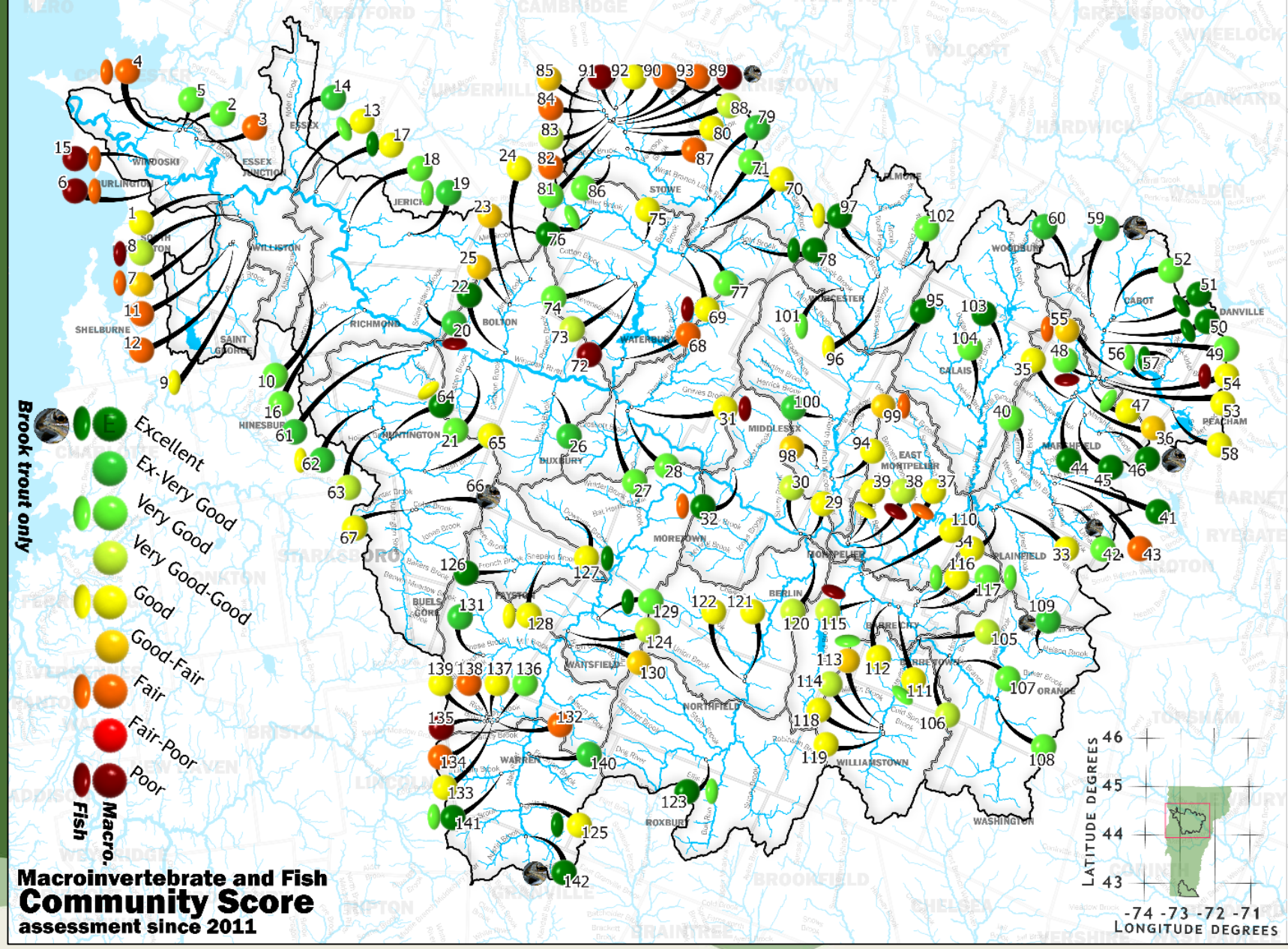
Water Quality Conditions

Other assessment include:

- Fisheries assessments
- Lake scorecards
- Wetland rapid assessments
- Stream geomorphic assessment
- Nutrient modeling/monitoring
- Chloride
- PFAS



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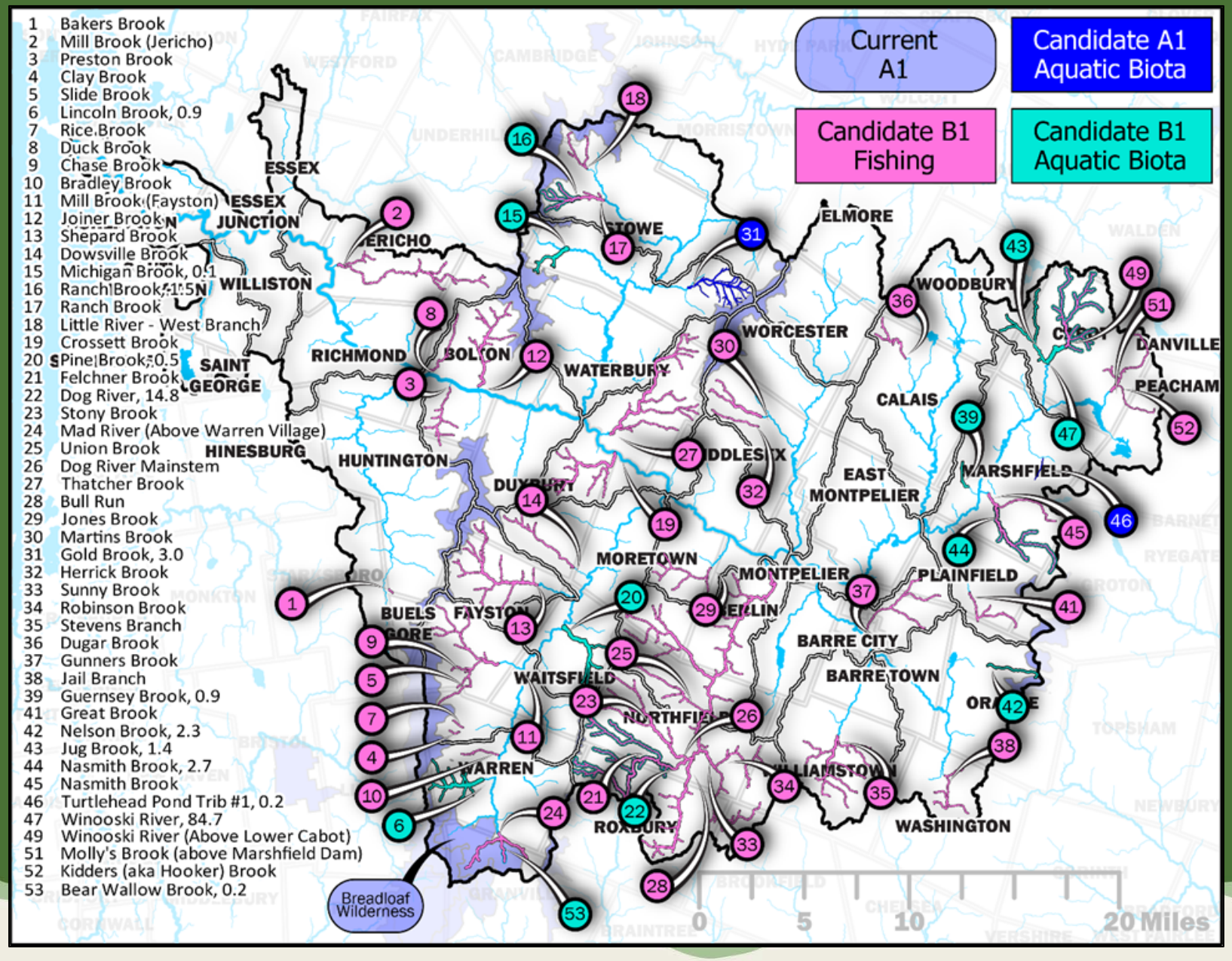
Protection priorities

- 53 streams
  - 15 for further study
- 1 pond (Peacham Pond)
  - 7 for further study
- 1 wetland (Lanesboro Bog)
  - 6 for further study
  - 2 already Class I



Reclassification process and petitions: Streams, Ponds, Wetlands

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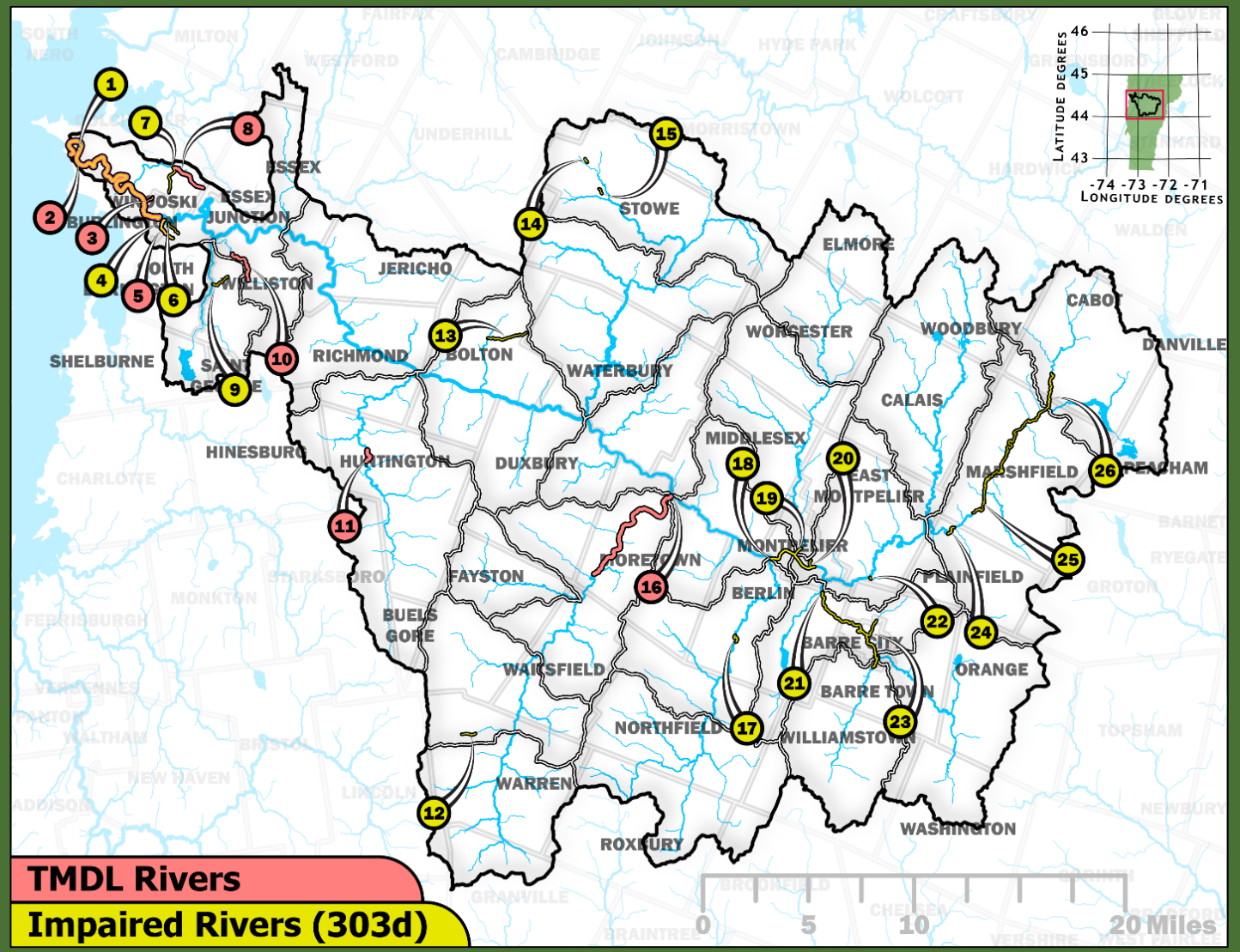
Restoration priorities

- 25 impaired river segments
  - 10 e. coli; 12 stormwater pollutants or road salt
  - 8 others flow-altered
  - 9 for further study

- 3 impaired ponds:
  - Shelburne (phosphorus)
  - Waterbury Reservoir (sediment)
  - Beaver Pond (acid)



[Vermont Assessment and Listing Webpage]

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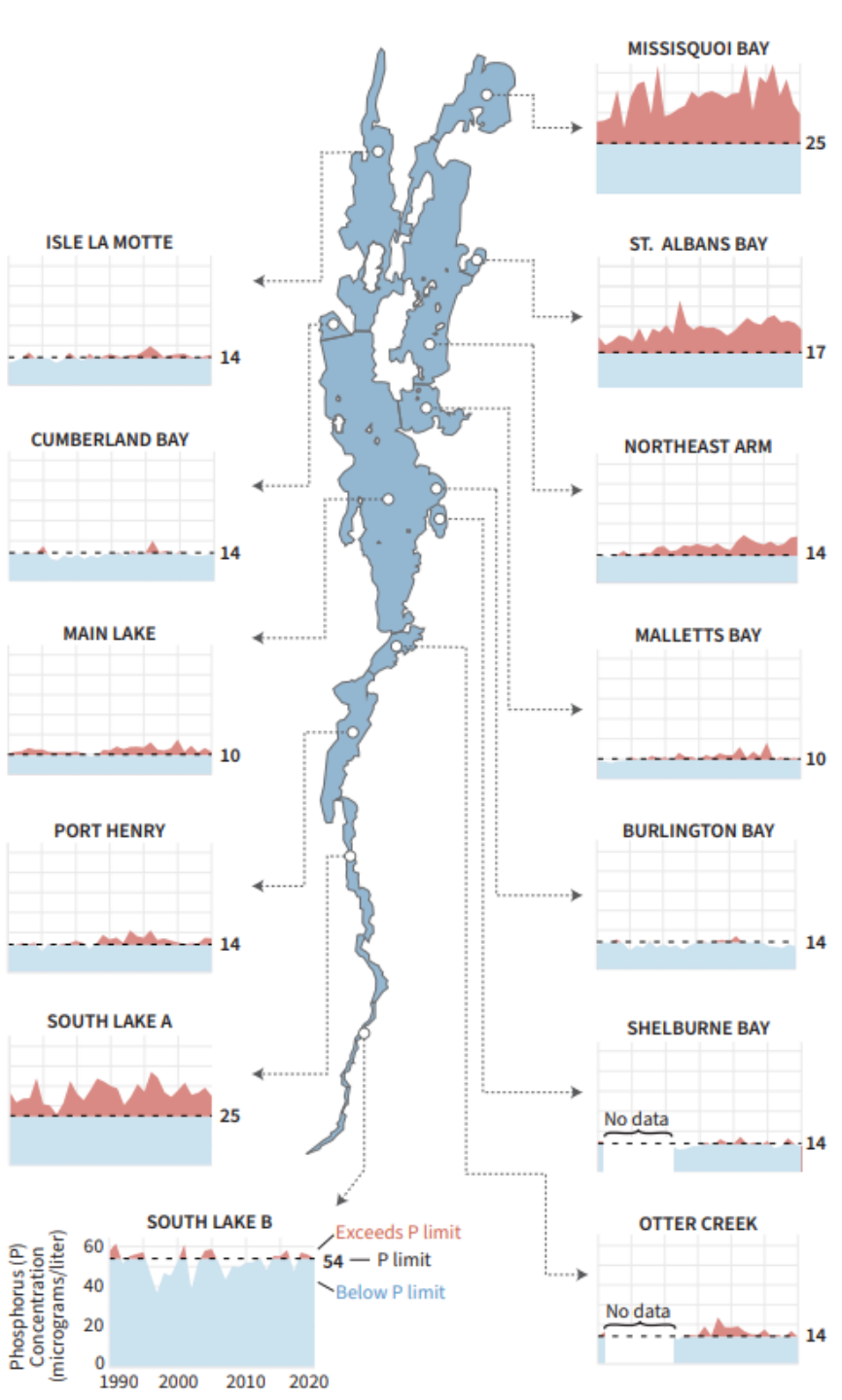
L. Champlain Phosphorus Impairment

- Phosphorus inputs from the watershed increase algae and cyanobacteria blooms in the lake

- 12 lake segments with different phosphorus criteria
  - In-stream and in-lake concentrations monitored through time, exceedances indicates in red

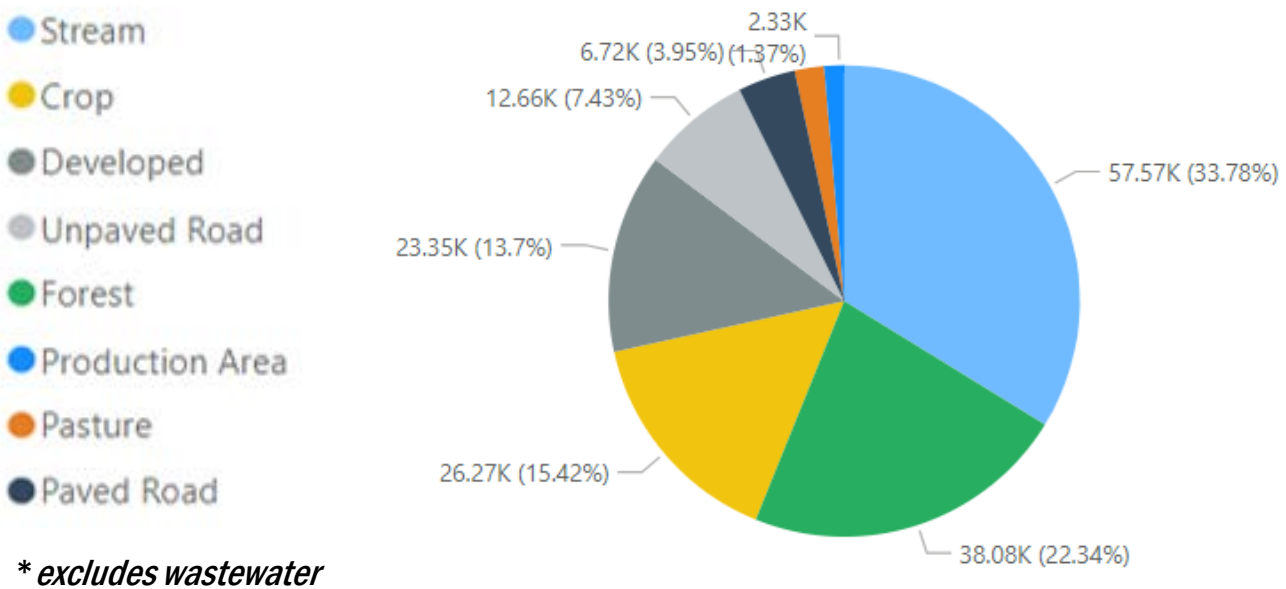

Glenn Russell

[2021 State of the Lake Report, Lake Champlain Basin Program]



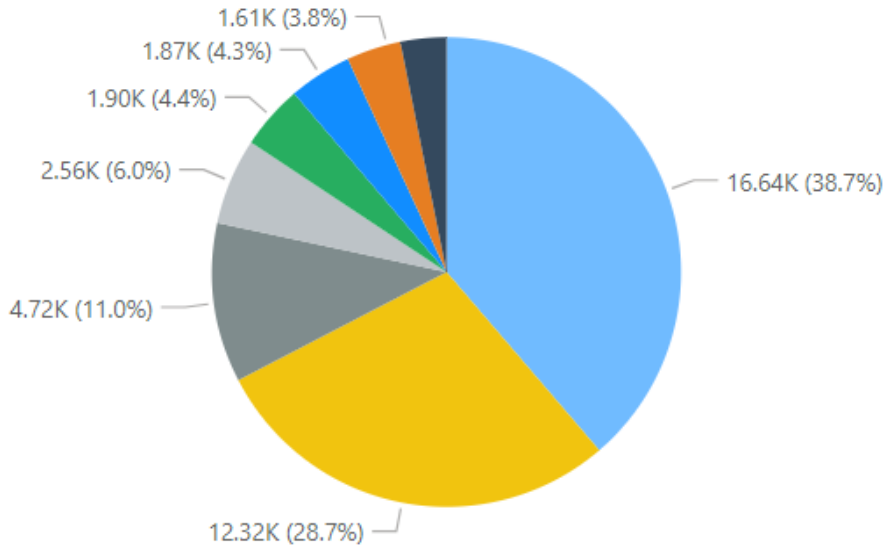
Lake Champlain Phosphorus 'Diet': 2016 Total Maximum Daily Load

2016 Winooski Load
(170.4k Kilograms Phosphorus/Year)



** excludes wastewater*

2036 Winooski Reduction Target
(43k Kilograms Phosphorus/Year)



Online, interactive data report:

[Estimated TMDL TP Loading and Reduction]

Lake-wide Progress Toward TMDL

- 18.9% of target achieved
- Expect accelerated reductions via:
  - Regulatory reductions kicking in
  - New Clean Water Service Provider Network for non-regulatory projects
  - New tools for prioritizing and tracking reductions from natural lands

[Vermont Clean Water Initiative 2022 Performance Report]

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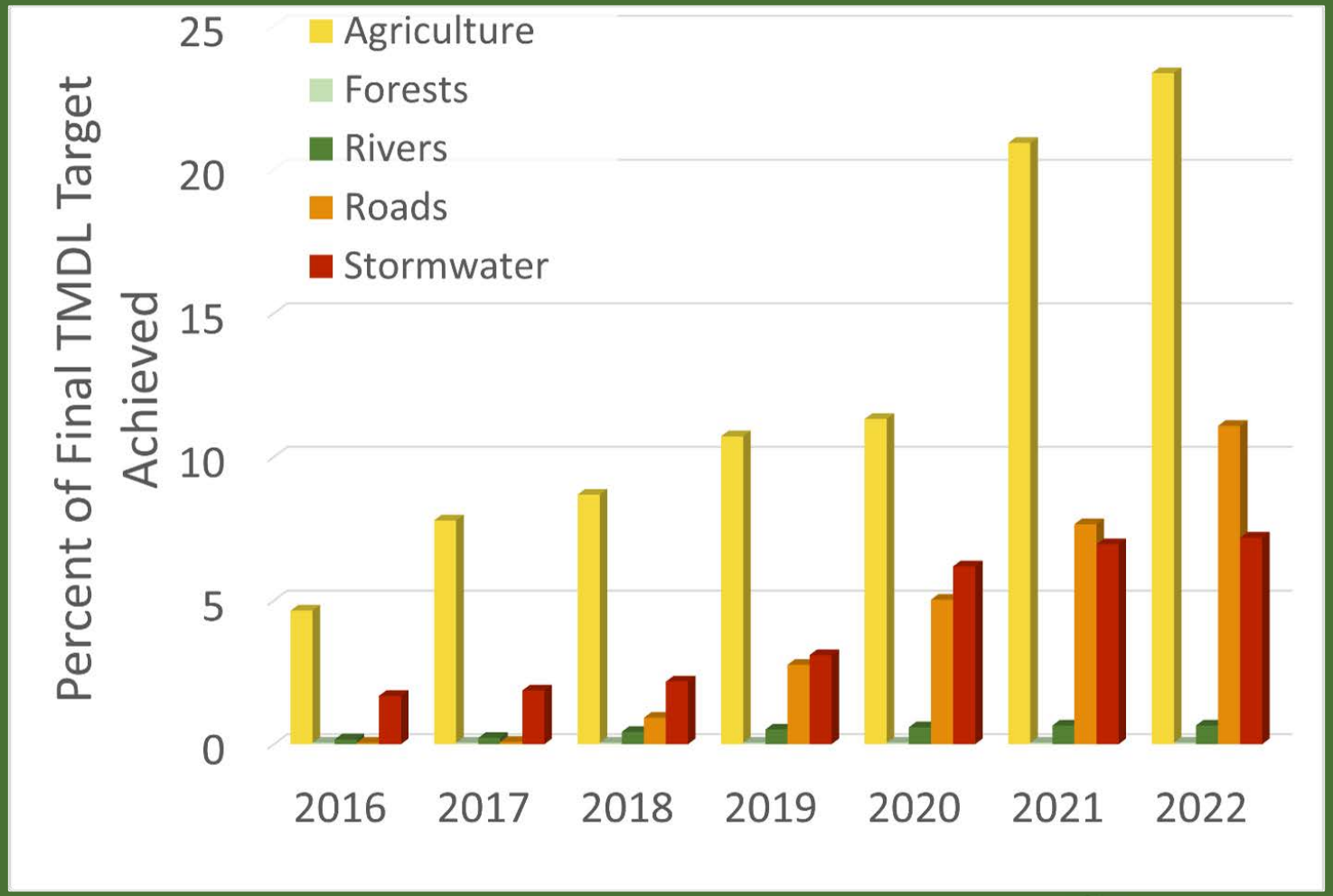
Winooski Progress Toward TMDL

- 11% of target achieved
  - Lowest in Lake Champlain basin
  - Relatively high developed lands and in-stream targets, lower ag targets

- Expected accelerated reductions via same lake-wide mechanisms



[Vermont Clean Water Initiative 2022 Performance Report]

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Public Survey and other Feedback

- 65 respondents from 16 towns
- PFAS: Increased TBP reporting on surface water, fish, and wastewater facility sampling results and future sampling plans
- Chloride: Increased TBP reporting on surface water sampling results
- Phosphorus, LC cyanobacterial blooms, fisheries and aquatic biodiversity loss, recreational access, riparian invasive species
- *July Flooding*

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Strategy Highlights

- 15+ TBP planning meetings
- 50 implementation strategies and 75 monitoring priorities
- Strategies guide Agency and partner funding/technical assistance for next 5 years
- 1074 potential projects mapped in the [Watershed Projects Database]

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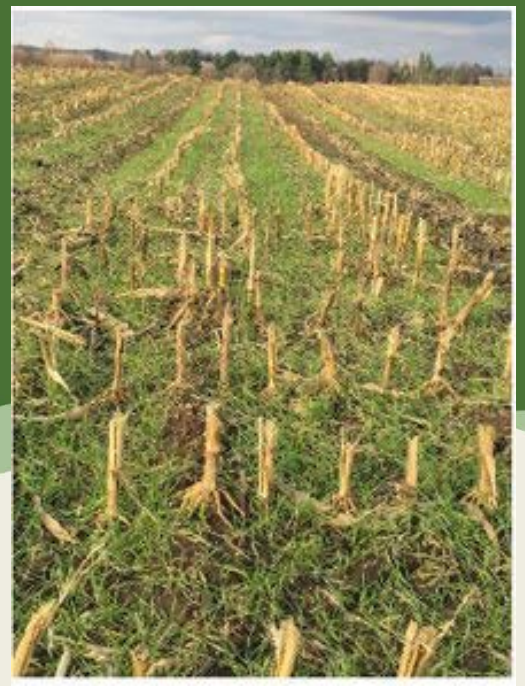
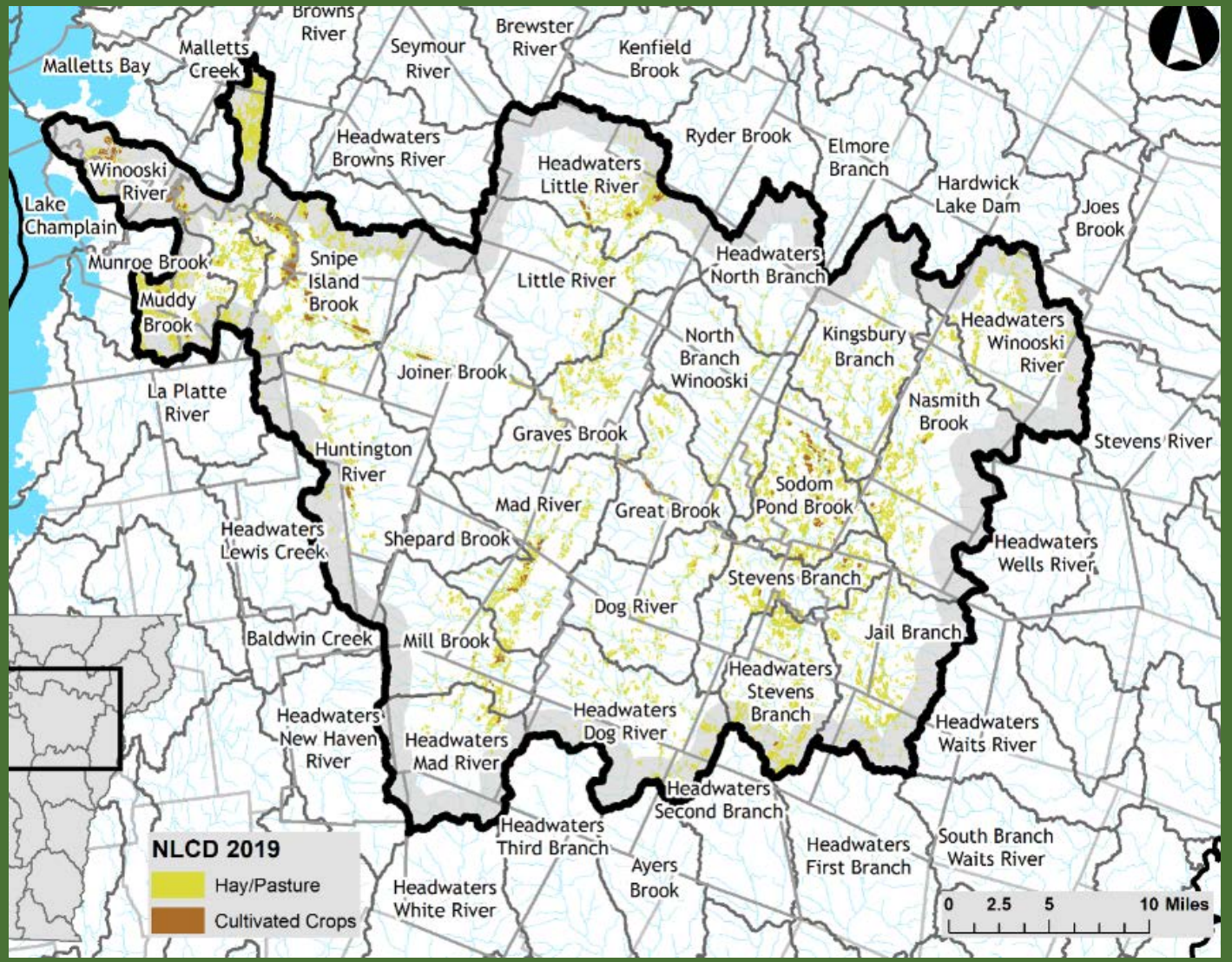
	Strategy	Priority Area or Watershed	Town(s)	Partner(s)	Funding
Strategies to address runoff from Agricultural Lands					
1	Support farmers in developing, updating, and implementing nutrient management plans.	Basin wide	All towns	AAFM, LCCD, NRCS, UVM Ext., WNRCD	NRCS, AAFM, RCPP, Pay for P
2	Maintain cover cropping and other annual practices by supporting farmers' consecutive adoption of practices through education and outreach, and/or enrollment in applicable conservation programs.	All sub-watersheds, especially Sodom Pond Brook, Snipe Island Brook, Winooski River, Great Brook, Huntington River, Mad River, Mill Brook – Mad River	East Montpelier, Richmond, Jericho, Essex, Colchester, Middlesex, Moretown, Huntington, Waitsfield, Warren, Fayston	AAFM, NRCS, UVM Ext., WNRCD	EQIP, CSP, AAFM, AGCWIP
3	Target outreach and increased funding to HUC 12 watersheds where field practice implementation has been lagging TMDL reduction targets to increase crop rotation, cover crop, no till practice, hayland BMP, and grazing management implementation.	Muddy Brook, Winooski River, Headwaters Little River, Headwaters Winooski River, Headwaters Stevens Branch, Nasmith Brook, Huntington River, Jail	Shelburne, South Burlington, Williston, Colchester, Stowe, Cabot,	AAFM, LCCD, NRCS, UVM Ext., WNRCD	NRCS, AAFM, RCPP, Pay for P, AGCWIP

Agriculture

- 9.5% of basin by land cover
- 18.8% of baseline phosphorus load
  - 36.8% of reduction target
- Highest phosphorus reductions by sector to date





Online, interactive data reports:
[Winooski Basin Agricultural Phosphorus Loading & Reduction](#) [Winooski Basin Agricultural Tracking & Target Setting](#)

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Agriculture – Example Strategies

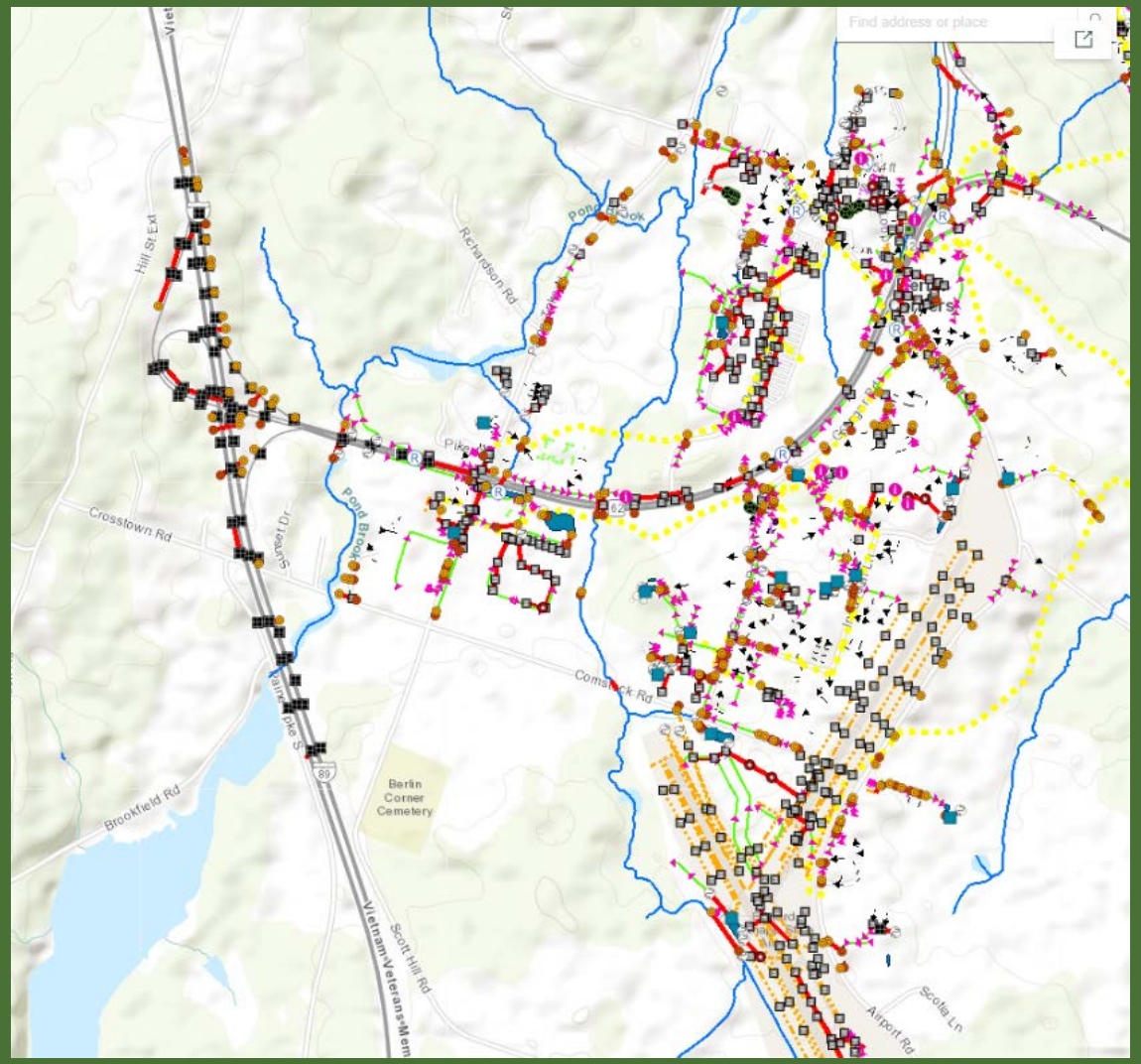
	Focus Areas	Example Strategies
Agriculture	Muddy Brook, Winooski River, Headwaters Little River, Headwaters Winooski River, Headwaters Stevens Branch, Nasmith Brook, Huntington River, Jail Branch, Stevens Branch, Sodom Pond Brook, Snipe Island Brook, Great Brook, Mad River	• Maintain cover cropping and other annual practices by supporting farmers' consecutive adoption of practices through education and outreach, and/or enrollment in applicable conservation programs. • Target outreach and increased funding where field practice implementation has been lagging TMDL reduction targets to increase crop rotation, cover crop, no till practice, hayland BMP, and grazing management implementation. • Develop a list of locally available equipment necessary for BMP implementation and assist farmers in accessing this equipment through local rental programs, cost-shares, or cooperative applications. • Support collaborative efforts among partners to enhance service to the agricultural community, such as a farm team model that streamlines technical service provider interactions with individual farms.

Developed Lands

- 2.7% of basin by land cover, with concentrations in the Stevens Branch, Muddy Brook, and Lower Winooski

- 25.1% of baseline phosphorus load
  - 20.1% of reduction target

- Contributes to ~50% of stream impairments



[Stormwater Mapping and Master Planning]

[MRGP Portal]

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Developed Lands – Example Strategies

	Focus Areas	Example Strategies
Developed Lands – Stormwater & Roads	**Stormwater:** Lower Winooski, Muddy Brook, middle Winooski near Montpelier, Stevens Branch, Jail Branch, and Barre City, Stowe, Northfield, Montpelier **Roads:** Barre Town, Calais, Plainfield, Moretown, Berlin, Cabot, Duxbury, and Middlesex	• Support the prioritization, design, and implementation of P-efficient stormwater projects from SWMPs, PCPs, or other stormwater-related planning documents • Promote and, where appropriate, coordinate existing campaigns to raise awareness of simple residential stormwater management solutions (e.g., Rethink Runoff, Storm Smart, Lawn to Lake). • Pilot GIS road segmentation and Road Erosion Inventory in prioritized private road networks (e.g., steep private road networks where road associations exist) as well as forest road networks. • Educate towns, businesses and contractors on winter maintenance strategies that reduce use of chlorides.

Wastewater

- 16 permitted wastewater treatment facilities in basin
- Permitted phosphorus load of WWTFs was collectively reduced by 15,400 kg/yr or 63.4% from baseline 2016 loads.
- Many small villages across VT have aging, inadequate on-site wastewater infrastructure
- Leaky septics may be an issue for a few waterbodies

On-site Wastewater Workshop community training

[VT Discharge Permits]
[ANR Village Wastewater Initiative]
[Wastewater Workshops]

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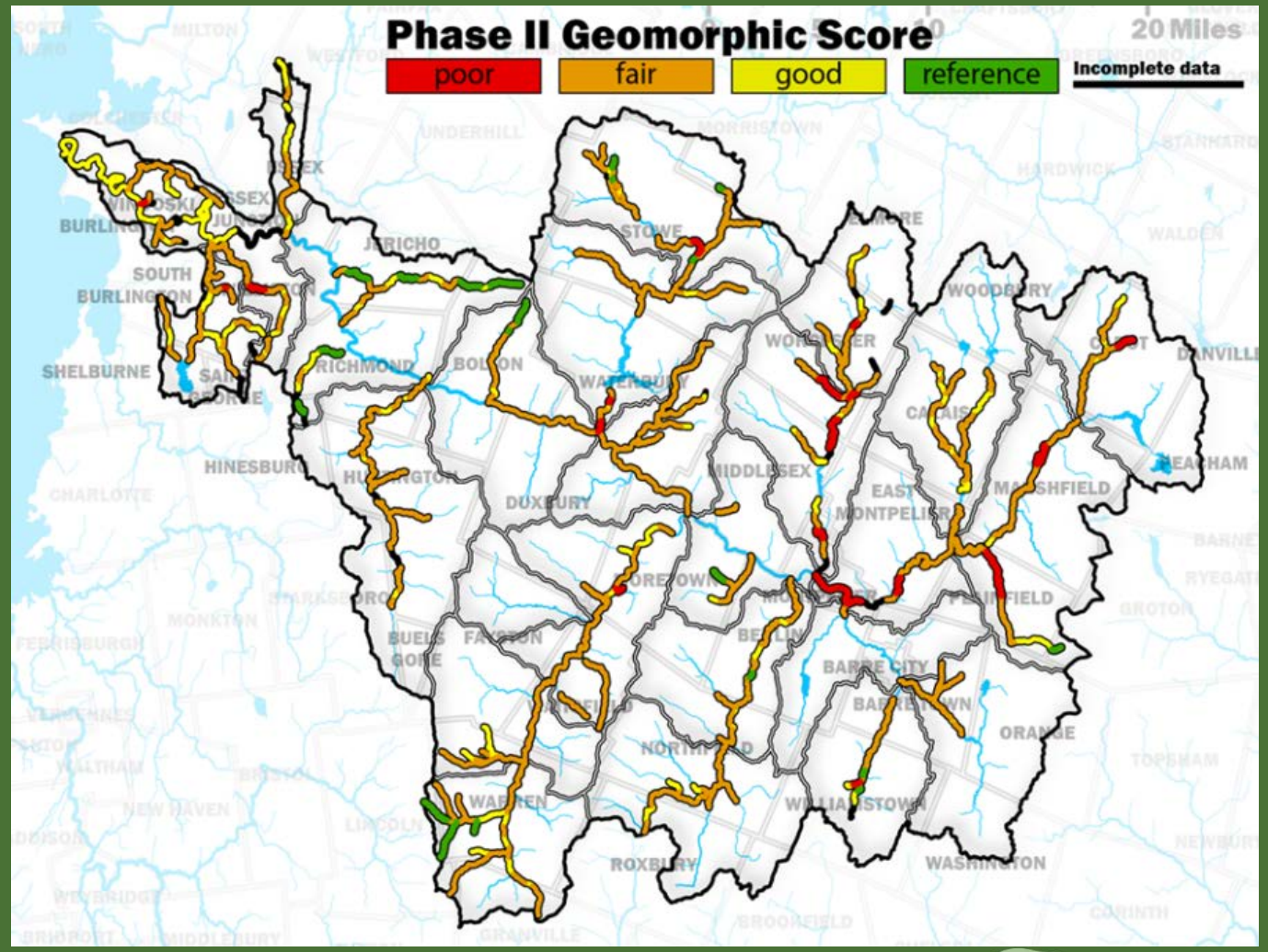
Wastewater– Example Strategies

	Focus Areas	Example Strategies
Wastewater	Barre City, Burlington, Cabot, Calais, Essex Junction, Huntington, Marshfield, Montpelier, Northfield, Middlesex, Moretown, Plainfield, Richmond, South Burlington, Stowe, Waitsfield, Warren, Waterbury, Williamstown, Winooski, Woodbury	• Support municipalities pursuing WWTF phosphorus optimization, expansion projects, and upgrades to meet TMDL allotments, phosphorus optimization and CSO requirements. • Assist communities in addressing inadequate individual on-site wastewater treatment through potential solutions like ANR Village Wastewater Solutions or innovative on-site systems. • Educate onsite septic owners about septic system maintenance and alternative systems through local outreach and education programs such as Wastewater Workshops.

Rivers

- Most major streams in fair to poor condition
- Lack of river equilibrium contributes most P in Winooski basin: 33.8% of baseline load
  - 38.7% of reduction target
- Poor in-stream, riparian, and floodplain conditions have additional impacts on flood resilience, aquatic habitat



[Stream Geomorphic Assessments/River Corridor Plans]

[Functioning Floodplains Initiative]

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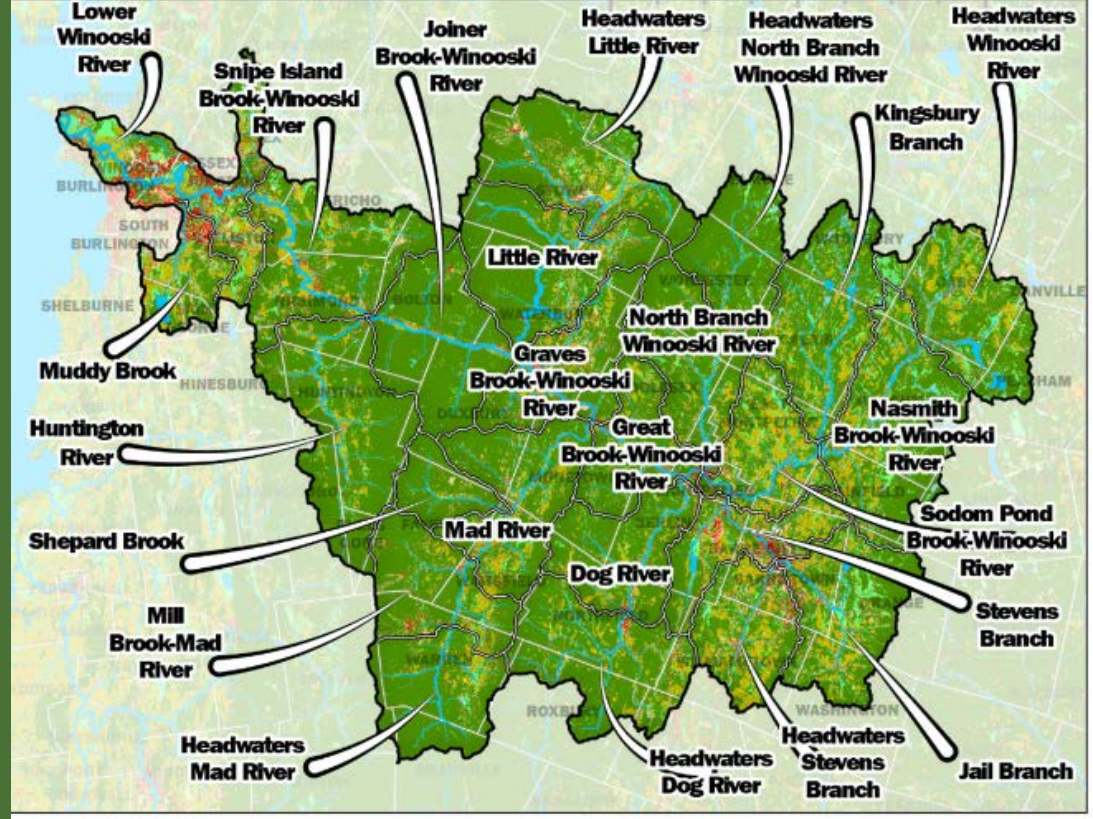
Rivers – Example Strategies

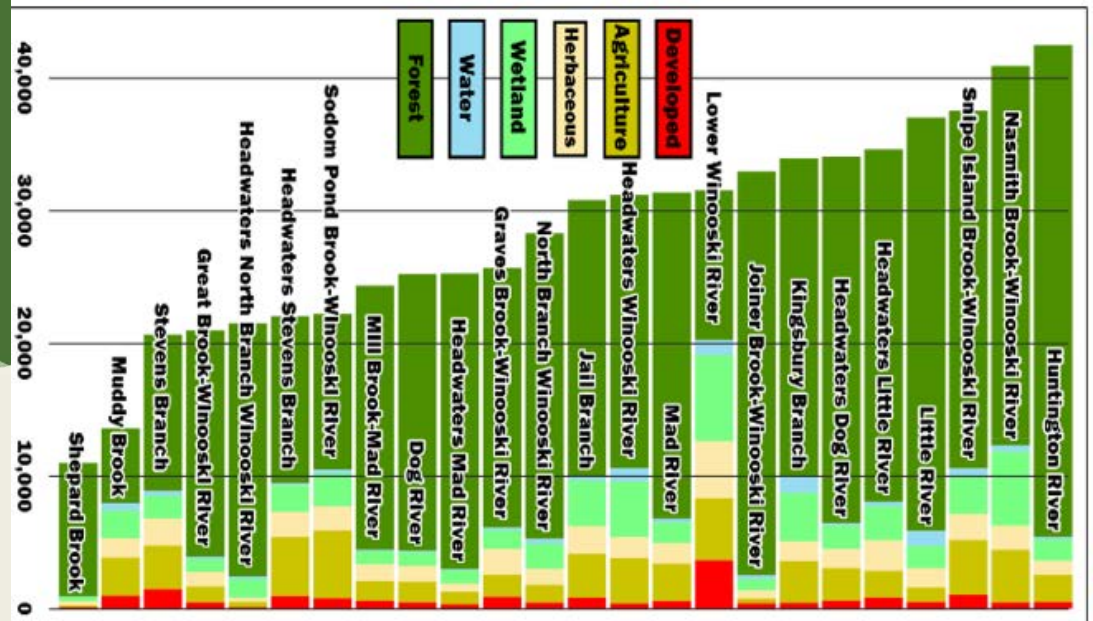
	Focus Areas	Example Strategies
Rivers	Basin-wide, including Winooski Headwaters, Dog River, Stevens and Jail Branches, Little River, Huntington River, Mad River	• Educate towns about and assist them in adopting new FEMA flood maps using model river corridor bylaw or similarly protective language. • Identify and implement effective low-tech process-based restoration projects, berm removal projects, and dam removal projects to restore fluvial processes, increase floodplain access, and promote flood resiliency. • Implement social marketing campaign that incentivizes riparian stewardship (i.e., Stream Wise) • Support recreational river access through the establishment and maintenance of stable access areas. • Support local efforts to reclassify B(1) candidate streams.

Forests

- Cover 73% of the basin
- 22.3% of baseline phosphorus load
  - 4.4% of reduction target (all from regulatory AMPs)
- AMPs do not cover past forest management jobs

[Acceptable Management Practices]





Forests – Example Strategies

	Focus Areas	Example Strategies
Forests	**State lands:** Mansfield State Forest, CC Putnam State Forest, Camels Hump State Park) **Town forests:** e.g., Northfield, Berlin, Montpelier, Barre City, Marshfield, and Worcester) Large private tracts within drinking water source protection areas	• Pilot the identification and prioritization of forest road segments and forest gullies with water quality impacts via the pending Forestland Erosion Assessment tool and forest REIs on state and town forests. • Coordinate outreach and training on properly implementing the forestry Acceptable Management Practices for practitioners, landowners, and technical service providers • Support the use of skidder bridges through rental and incentive programs. • Encourage land conservation and Use Value Appraisal enrollment where landowners are interested, especially in drinking water source protection areas.

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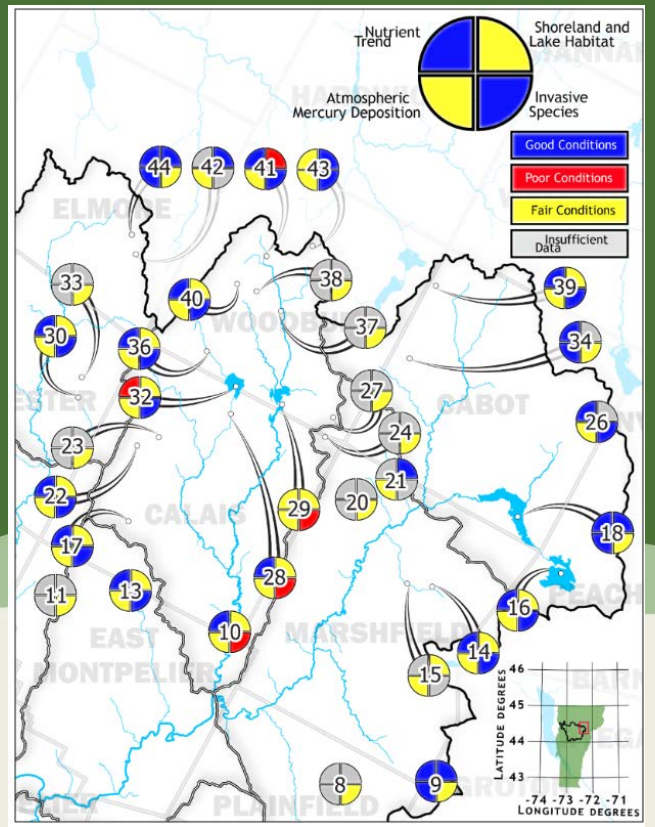
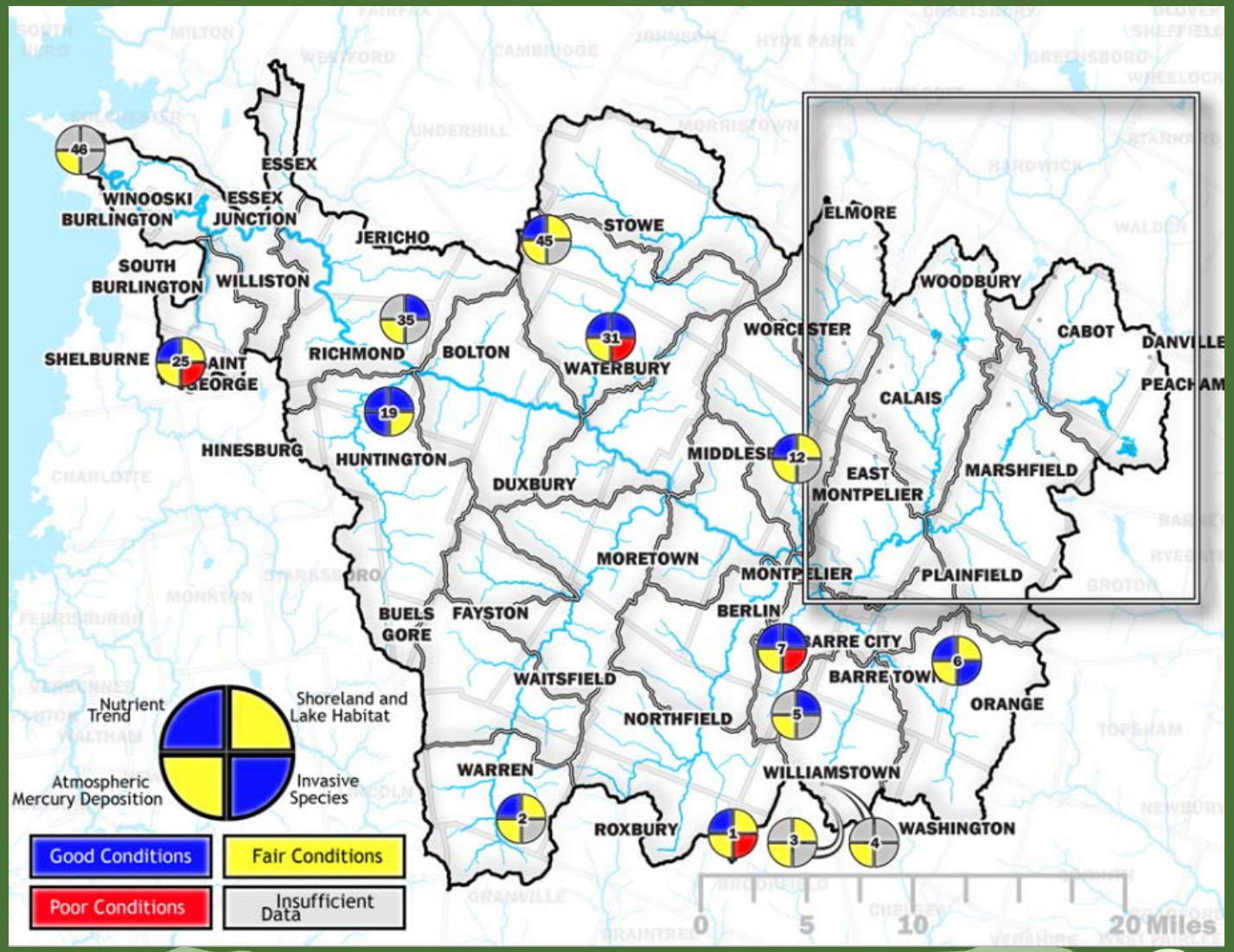
Ponds

- 2 ponds with increasing nutrient trends (Nelson Pond, Sabin Pond) and one with phosphorus impairment (Shelburne Pond)

- Several with highly developed shorelines





[Lake Scorecard]

[Lake Watershed Action Planning]

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Ponds – Example Strategies

	Focus Areas	Example Strategies
Lakes	Sabin Pond, Forest Lake (Nelson Pond), Shelburne Pond, Peacham Pond, Lake Mirror, Lake Greenwood, Curtis Pond	• Evaluate community support for and implement Lake Wise assessments and Lake Watershed Action Plans in populated lake communities with fair to poor shoreland or watershed conditions. • Develop, design, and implement priority projects identified through Lake Wise assessments, LWAPs, NGLAs, other assessment processes, or Lakes Program recommendations. • Support local efforts to reclassify candidate ponds.

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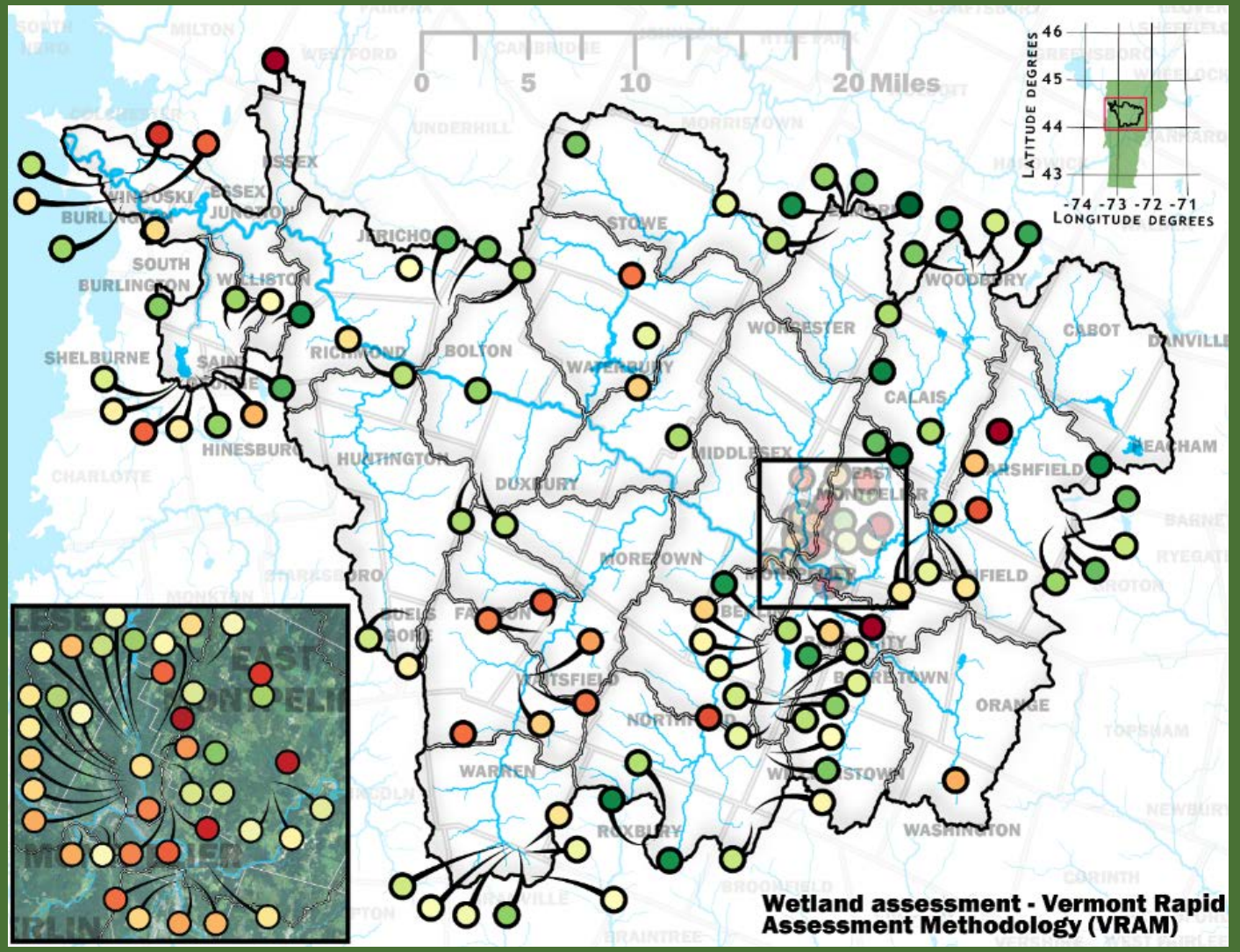
Wetlands

- Wetlands can serve critical storage and filtering roles, conferring flood resilience while reducing pollutant loads
- Many wetlands are unmapped and/or in degraded states
- Don’t currently have tools to estimate water quality benefits of wetland protection/restoration



[Vermont ANR - Wetlands Inventory Map]

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Wetlands – Example Strategies

	Focus Areas	Example Strategies
Wetlands	Potential Class I wetlands, VRAM-assessed wetlands, RCPP-identified wetland restoration priorities	• Support outreach to towns and the public – especially zoning administrators, prospective land purchasers, wastewater designers, and realtors – regarding updated wetlands mapping available in Fall 2023. • Develop a process for crediting the phosphorus reduction of wetland protection and restoration projects • Scope and develop small-scale (10 – 50-acre) wetland protection and restoration opportunities. • Support local efforts to reclassify candidate wetlands.

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Public Comment runs through November 10, 2023

- Draft plan and Story Map are available on the Winooski webpage:
  https://dec.vermont.gov/water-investment/watershed-planning/tactical-basin-planning/basin8
- Public comments can be sent via email to keith.fritschie@vermont.gov or mailed to:
  Keith Fritschie Basin 8 Comments, 1 National Life Drive, Montpelier, VT 05602
- Public comments will be addressed in a formal responsiveness summary published with the final plan due to be signed Dec ’23 or Jan ’24
- The plan will guide technical assistance in the basin for the next 5 years

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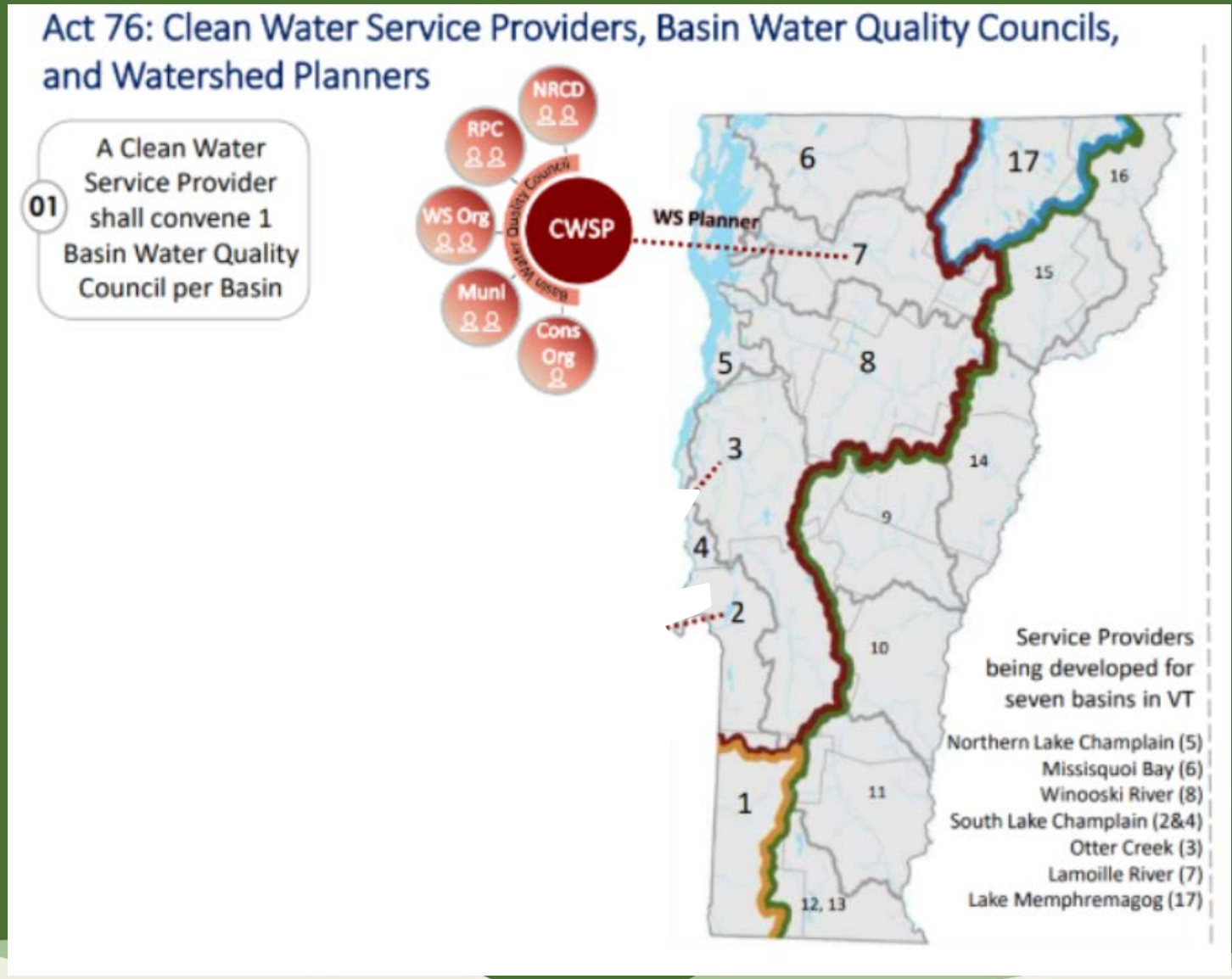
Act 76 Clean Water Service Provider Network

- CVRPC is the Winooski's CWSP
  - Basin Water Quality Council:
    - Vermont Rivers Conservancy
    - Lamoille and Winooski NRCDs
    - Friends of the Mad and Winooski Rivers
    - Chittenden County and Central Vermont Regional Planning Commissions
    - Municipal reps: Essex, Stowe, Northfield, Waitsfield

- Initial funding of ~$1 million/yr for non-regulatory P reduction projects
  - Initial P target: ~70kg/yr



[Winooski Basin Clean Water Service Provider - CVRPC]

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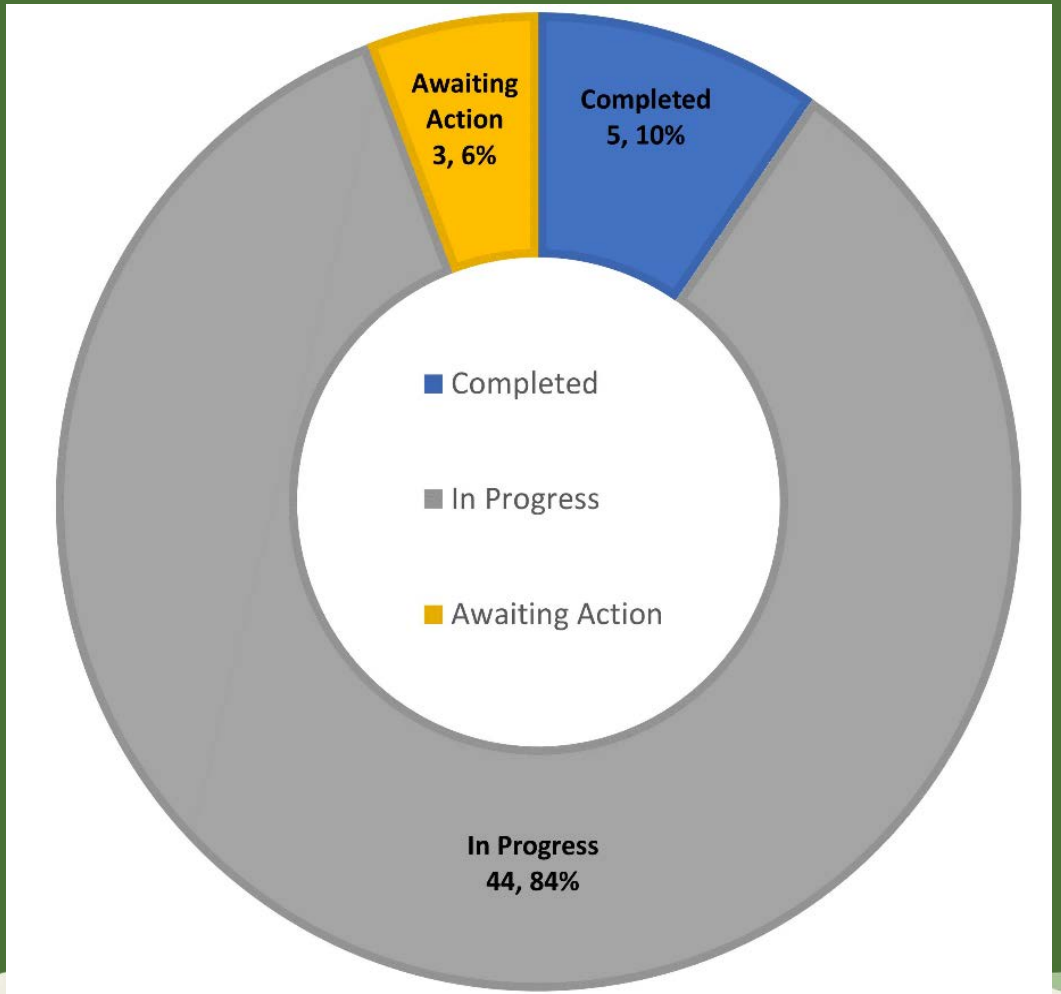
2018 Winooski Tactical Basin Plan Progress

- Full Report Card to be published in January 2024: https://dec.vermont.gov/water-investment/cwi/reports

- 17,000 acres of ag practices; 335 acres of impervious surface treated; 32 riparian acres planted; 82 acres of riparian corridors and 92 acres of wetlands protected; 26 miles of road improvements

- 11% of overall 2036 Phosphorus TMDL goal achieved



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