

Draft Winooski Tactical Basin Plan Review

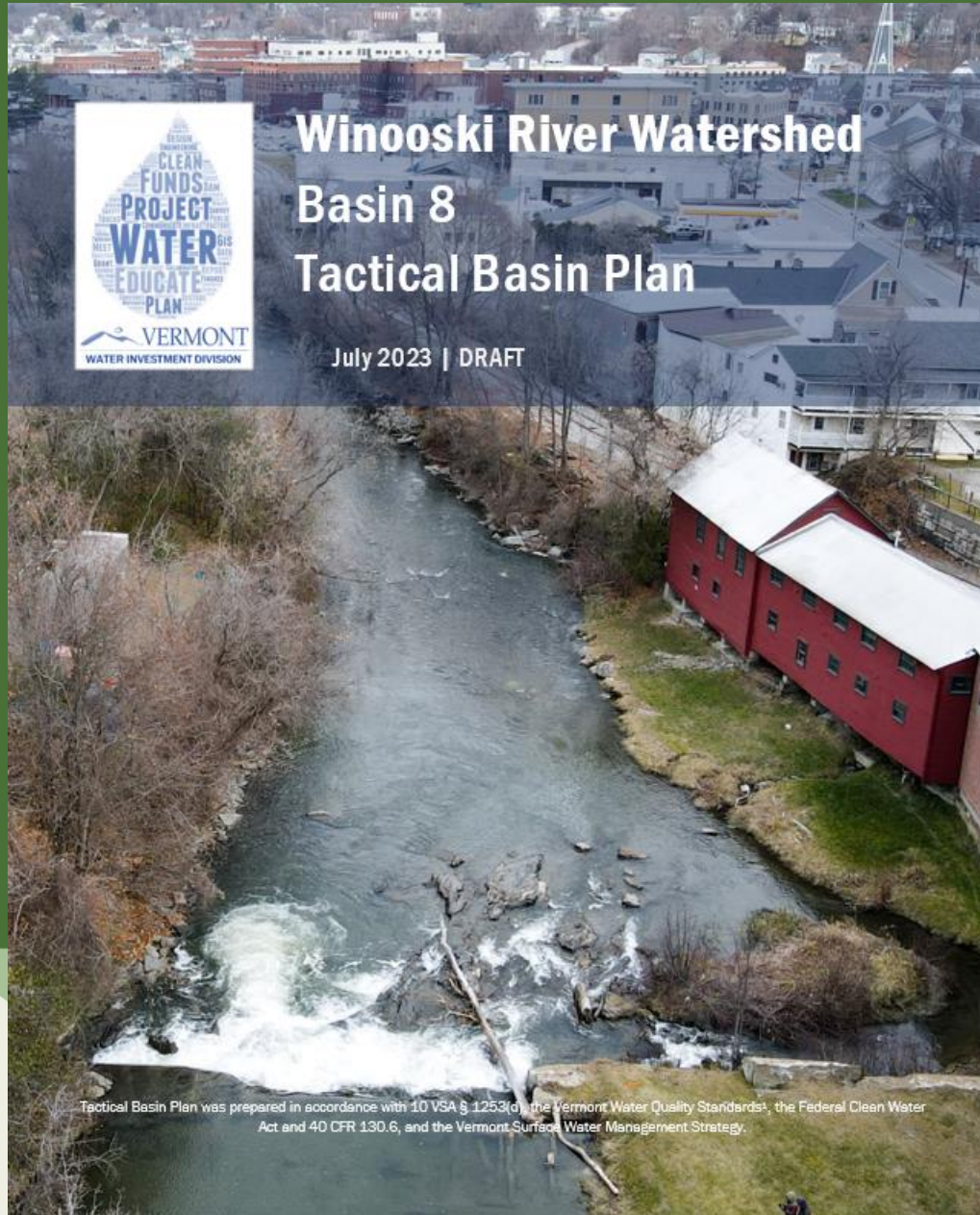


Chittenden County RPC
Clean Water Advisory Committee
August 1, 2023

Outline

- TBP overview
- Review request
- Winooski basin conditions highlights
- Strategy highlights

Executive Summary and Draft Tables



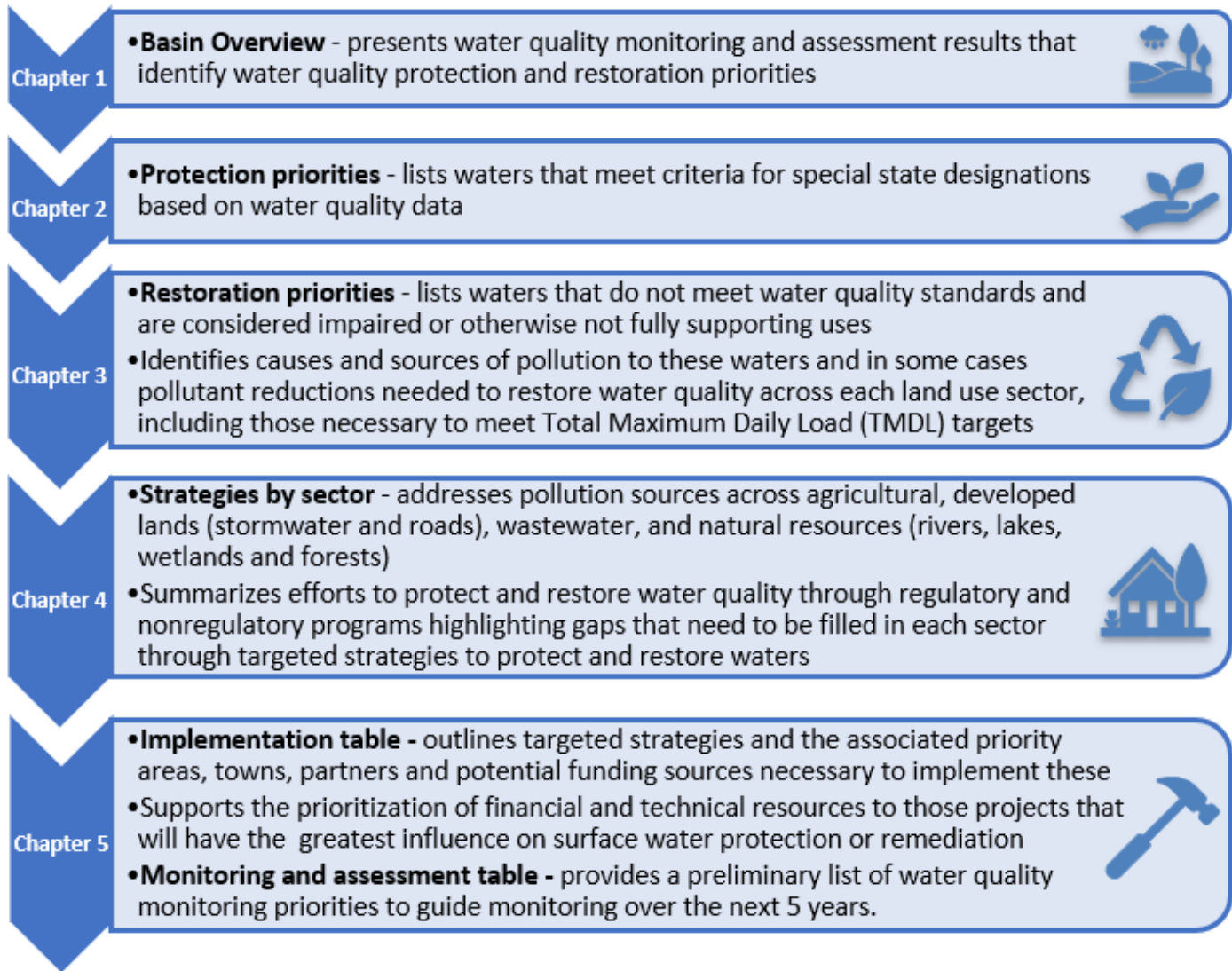
TBP Overview

2023 Winooski Tactical Basin Planning Timeline



TBP Overview

- Updates on basin conditions
- Describes latest clean water programs/opportunities
- Describes progress on Lake Champlain TMDL
- Identifies priority actions by sector



Clean Water Projects Explorer

Clean Water Project Explorer <<

Project Status

Potential Projects

Projects In Progress

Completed Projects

Keyword

Sector

Step

Type

Agency

County ☐ Include Multi County Projects

Town

Basin ☐ Include Multi Basin Projects

WPD ID

Search

Clear

Search Results *(Click for Listing)*

Projects found: 672
Projects with map points found: 351 v

Review Requests – email keith.fritschie@vermont.gov

1. Review implementation table: do you think your town is erroneously included/excluded from any particular strategy?

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
	Target outreach and increased funding to HUC 12 watersheds	Muddy Brook, Winooski	Shelburne,	AAFM, LCCD,	NRCS, AAFM,

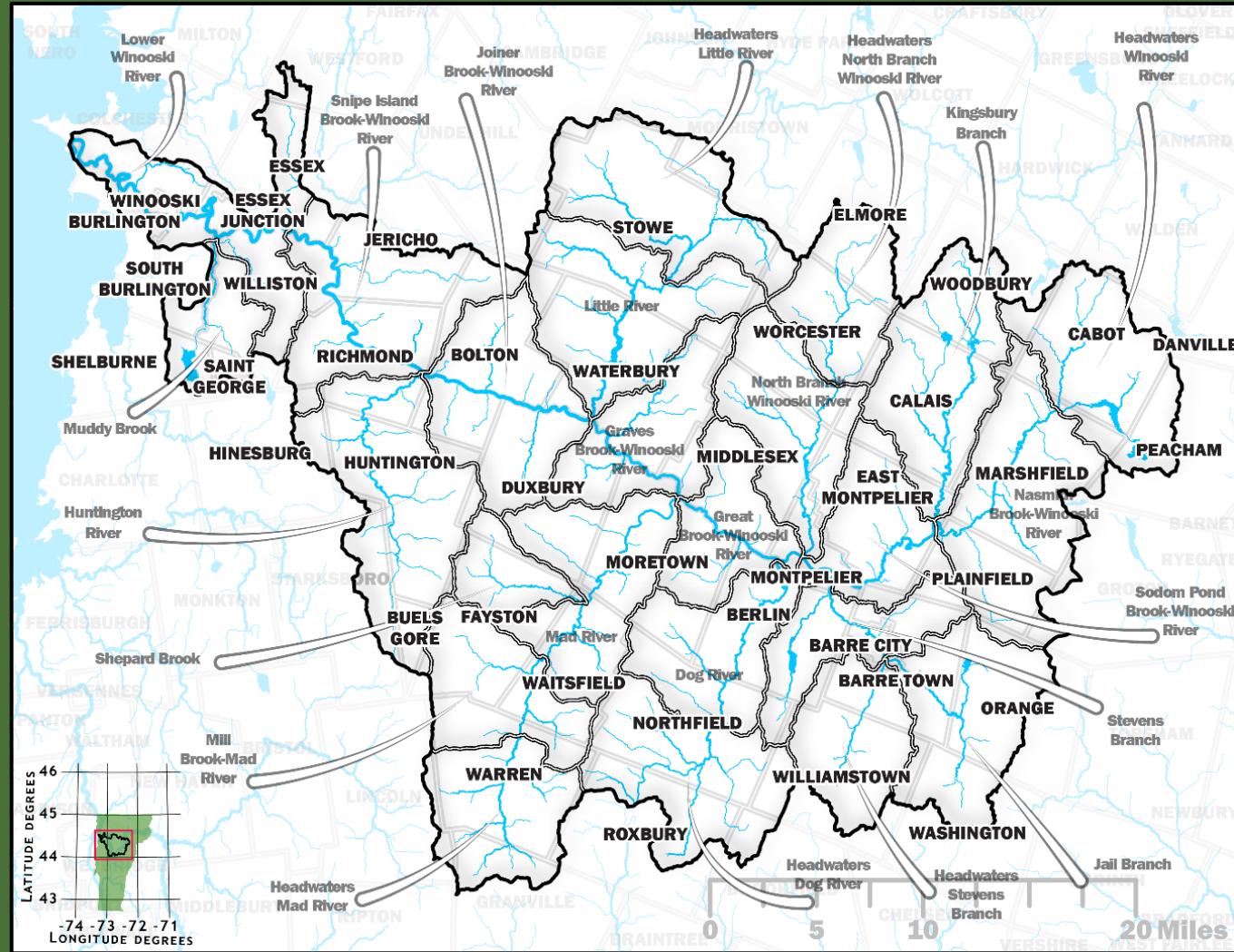
Review Requests – email keith.fritschie@vermont.gov

2. Review municipal protection table: do any fields for your town seem incorrect, and would other information be useful to you in this table in future iterations?

	National Flood Insurance Program	Road and Bridge Standards	Local Emergency Management Plan	Local Hazard Mitigation Plan	River Corridor Protection ¹	ERAF Rate	E911 Structures in Special Flood Hazard Area (SFHA)	SFHA Structures Insured	Critical or Public Structures in SFHA	Percent of All Town Structures in SFHA	Steep Slope Protection	Water Resource Setbacks In by-laws, ordinances, town plan, or zoning?		
	Enrolled?	Adopted?	Completed?	Adopted?	None, CRS, By-Law, or Interim	Percent	Count	Percent	Count	Percent	In by-laws, ordinances, town plan, or zoning?	Rivers	Wetlands	Lakes
Barre City	Yes	No	Yes	No	None	7.5%	342	23%	8	11%		No	No	No
Barre Town	Yes	Yes	Yes	No	None	7.5%	7	29%	1	<1%		Yes	Yes	Yes
Berlin	Yes	Yes	Yes	Yes	CRS	17.5%	161	19%	3	12%		Yes	Yes	Yes
Bolton	Yes	Yes	Yes	Yes	Interim	17.5%	36	22%	1	7%	Yes	Yes	Yes	Yes
<u>Buels Gore</u>	No	Yes	No	Yes	None	7.5%	0	-	0	0%	Yes	Yes	Yes	Yes
Burlington	Yes	Yes	Yes	Yes	None	12.5%	42	17%	0	<1%	Yes	Yes	Yes	Yes
Cabot	Yes	Yes	Yes	No	Interim	7.5%	30	10%	1	4%		No	No	Yes
Calais	Yes	Yes	Yes	Yes	None	12.5%	39	3%	0	4%		Yes	Yes	Yes
Colchester	Yes	Yes	Yes	No	CRS	7.5%	81	19%	0	1%	Yes	Yes	Yes	Yes
Duxbury	Yes	Yes	No	Yes	None	7.5%	37	8%	0	5%		No	No	No

Basin Overview

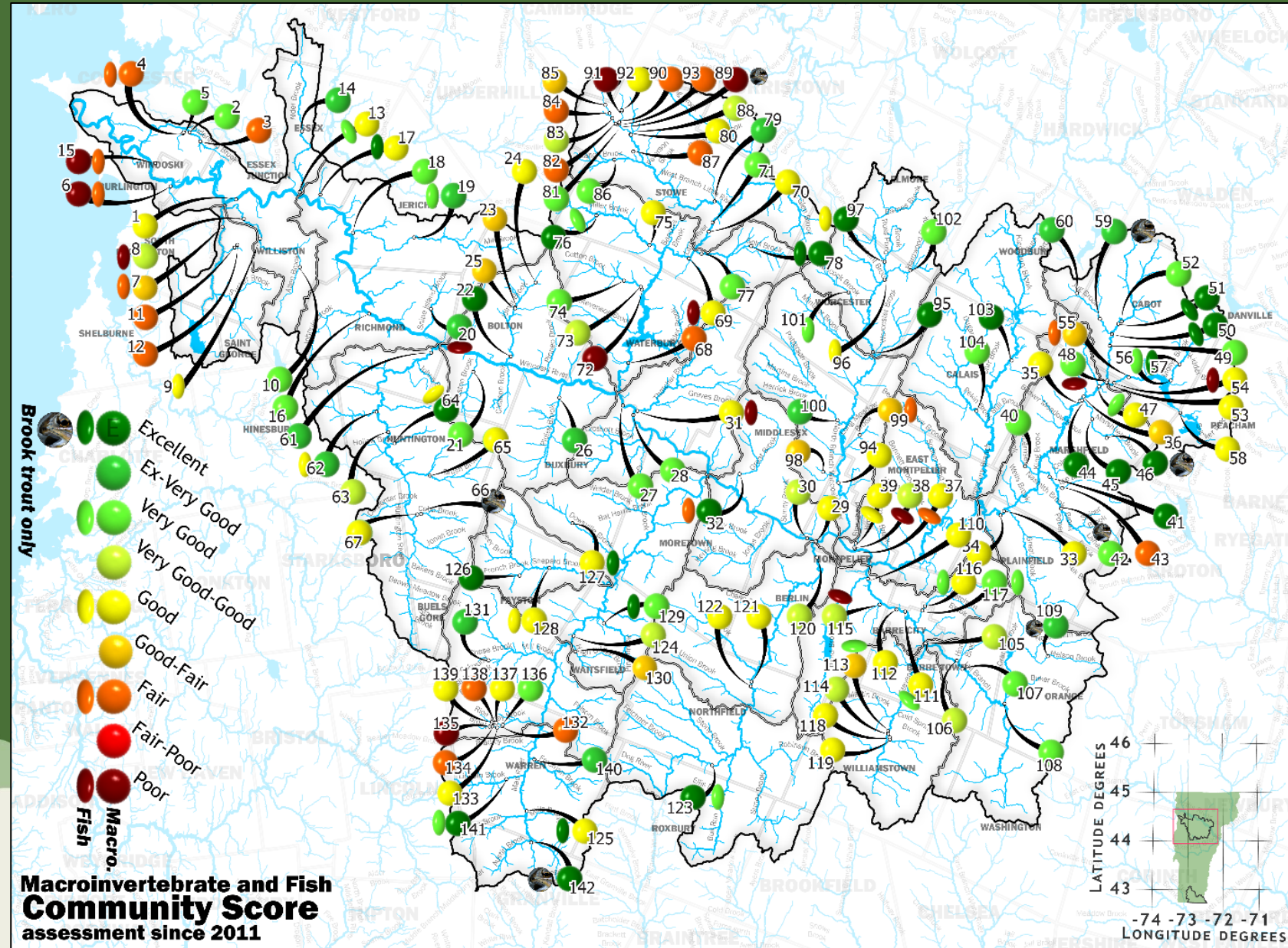
- Second largest VT basin
- 50 towns
- >1300 stream miles
- 73% forest, 9% ag, 3% developed
- 52 clean water strategies
- 65 monitoring priorities



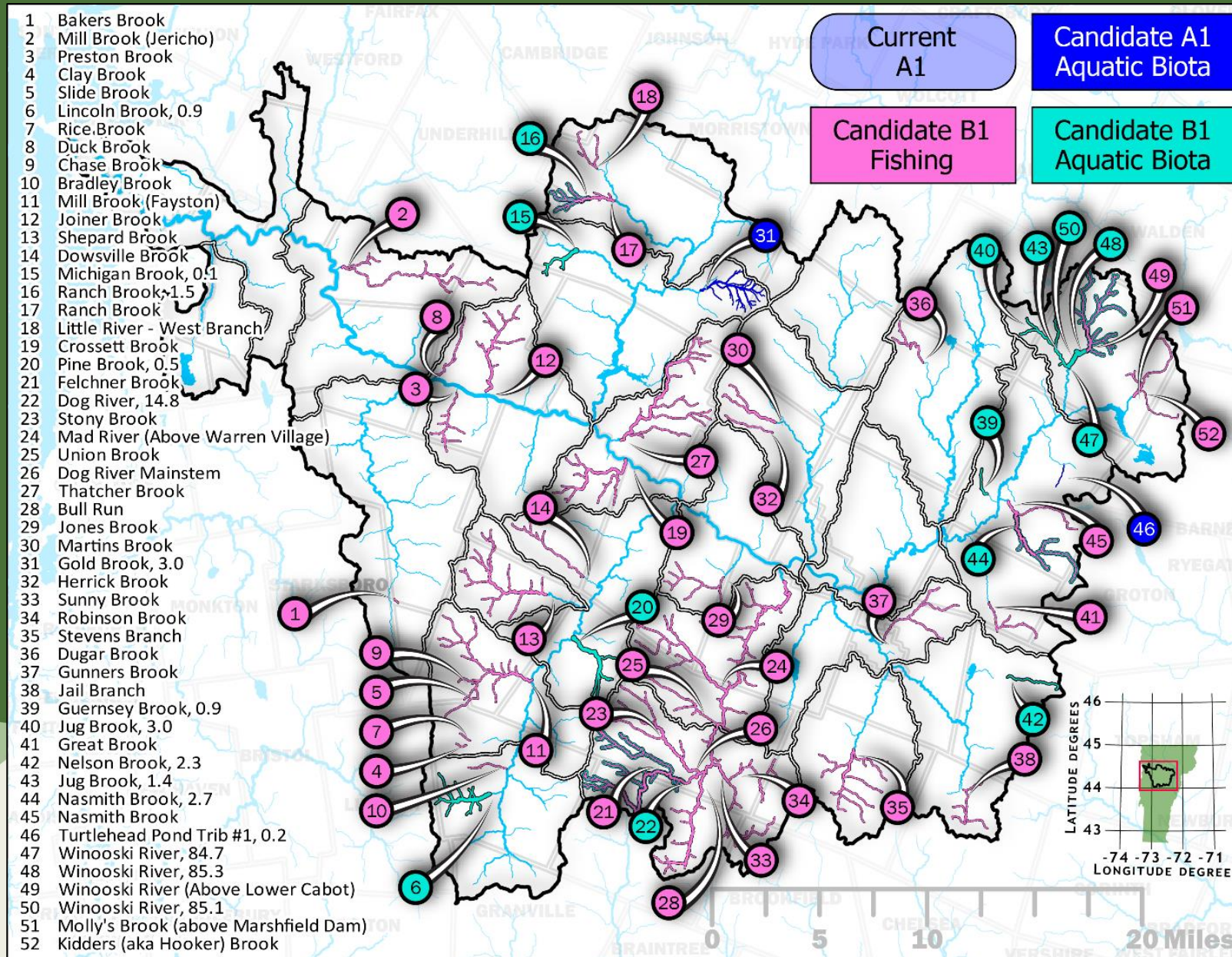
How is the Water Quality? - biomonitoring results

Other assessment include:

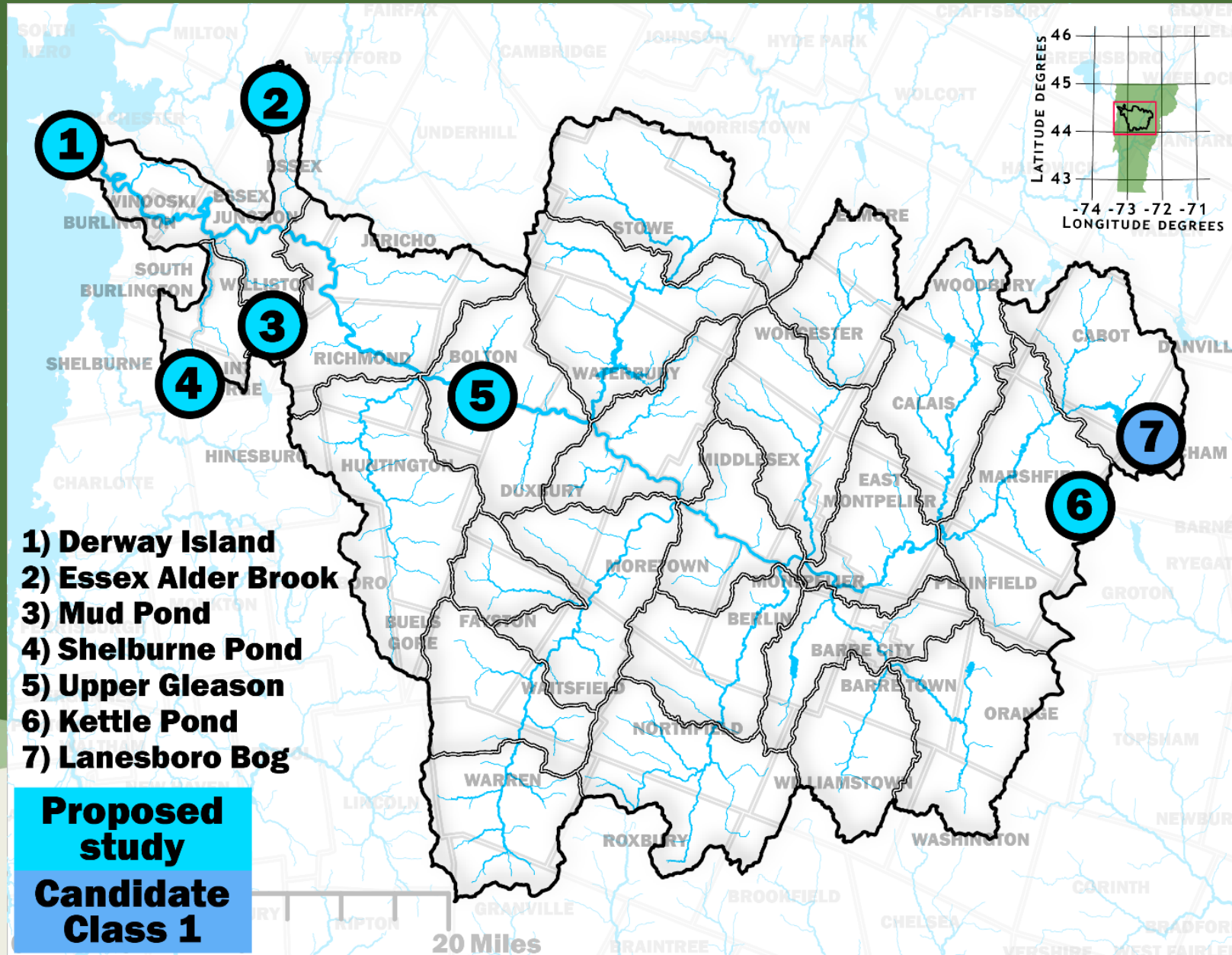
- Fisheries assessments
- Lake scorecards
- Wetland rapid assessments
- Stream geomorphic assessment
- Nutrient modeling/monitoring
- Chloride
- PFAS



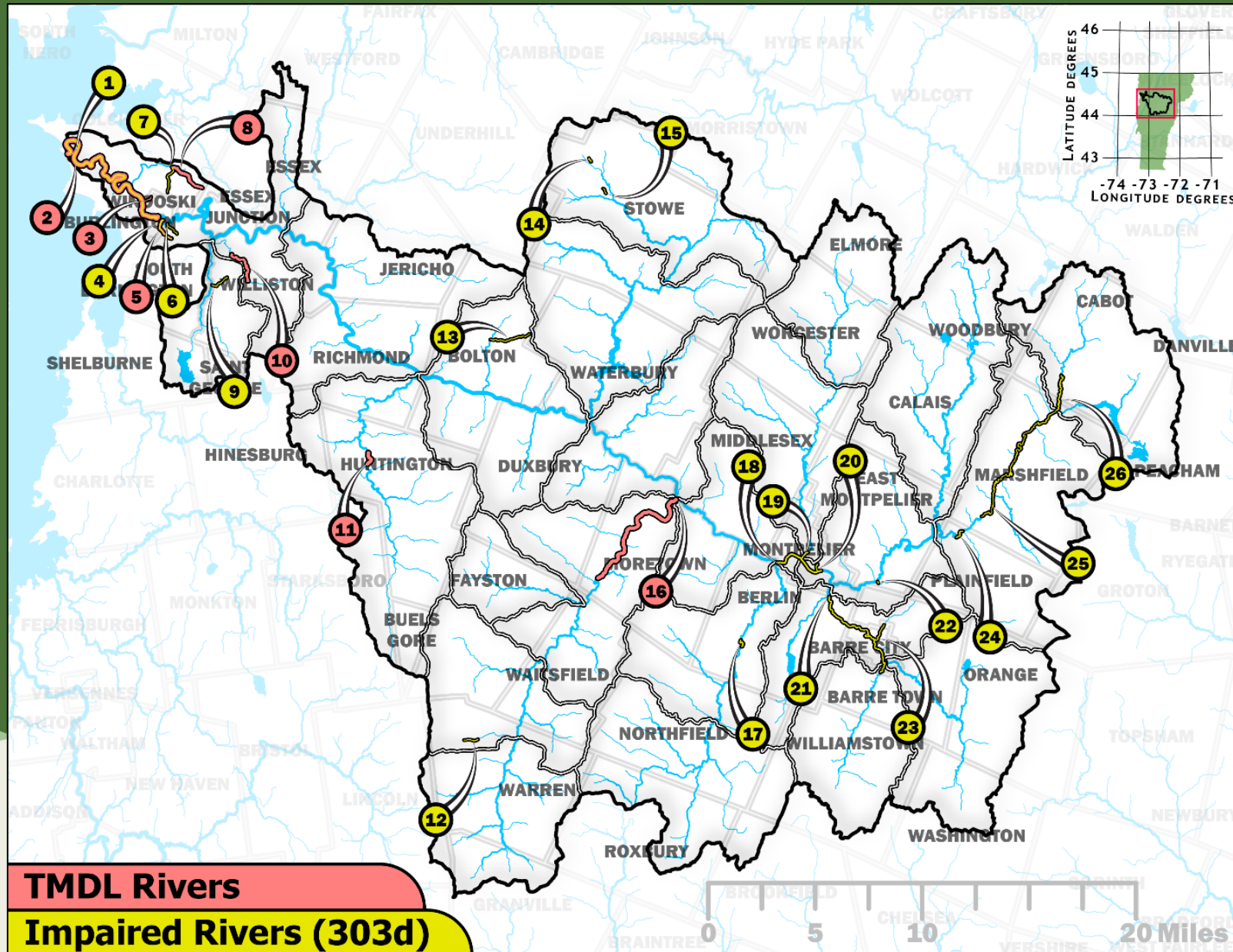
Protection priorities: reclassification candidates



Possible wetland reclassification candidates

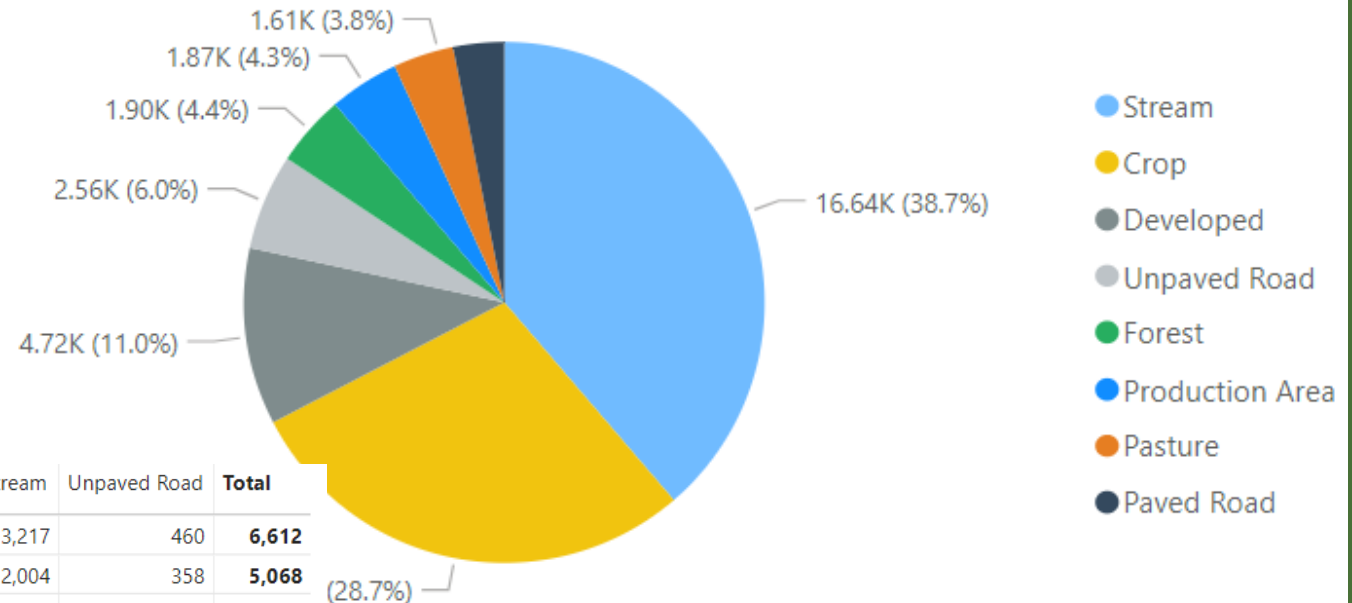


Restoration priorities: impaired waters



Lake Champlain Phosphorus TMDL

Watershed TP Reduction (kg/yr)



BasinPlan	Crop	Developed	Forest	Pasture	Paved Road	Production Area	Stream	Unpaved Road	Total
Dog River	349	647	1,477	119	289	54	3,217	460	6,612
Graves Brook-Winooski River	311	853	1,047	169	302	25	2,004	358	5,068
Great Brook-Winooski River	239	621	1,032	44	295	43	1,985	530	4,790
Headwaters Dog River	564	1,058	2,589	122	361	63	874	1,016	6,648
Headwaters Little River	2,308	1,105	1,421	138	310	57	1,801	439	7,578
Headwaters Mad River	381	565	2,835	77	196	45	1,085	360	5,544
Headwaters North Branch Winooski River	70	150	1,542	10	135	10	1,592	130	3,638
Headwaters Stevens Branch	1,751	1,229	424	298	267	155	1,533	500	6,157
Headwaters Winooski River	2,012	875	1,705	193	184	192	2,103	496	7,760
Huntington River	1,570	554	2,566	228	149	129	3,096	759	9,052
Jail Branch	1,254	1,247	1,681	203	275	137	1,461	680	6,938
Total	26,275	23,345	38,084	3,441	6,725	2,332	57,572	12,663	170,436

Online, interactive data report:

[Estimated TMDL TP Loading and Reduction](#)

Sector Overview

Assessment data, sector plans (e.g., LWAPs, SWMPs, RCPs), partner/landowner interest/capacity, and funding opportunities shape priority strategies



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

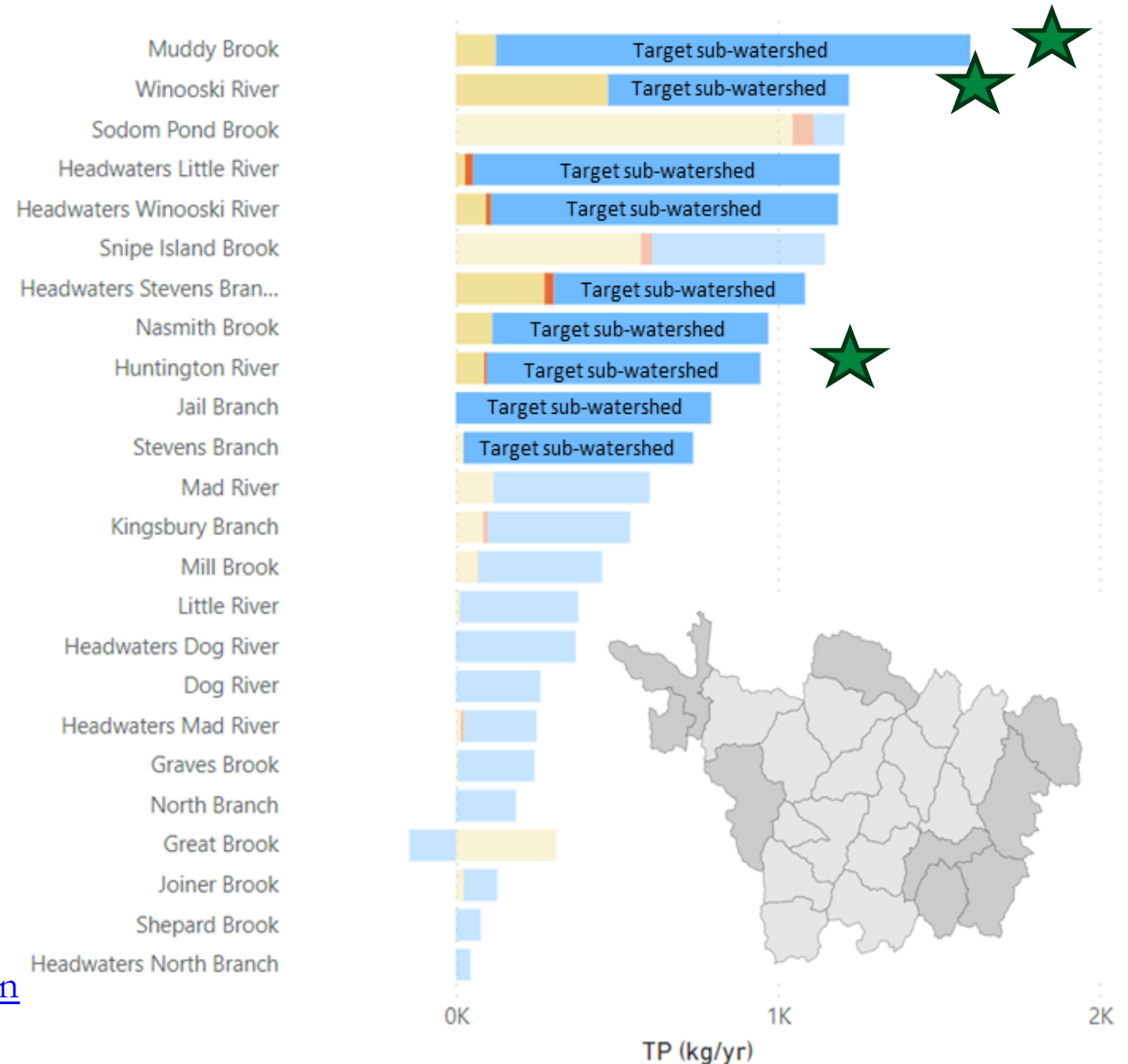
- Restoration of "natural infrastructure" functions that prevent and abate pollution. Natural infrastructure includes: floodplains, river channels, lakeshores, wetlands, and forest lands.

Agriculture

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

SFY 2022 TMDL Reductions by HUC12

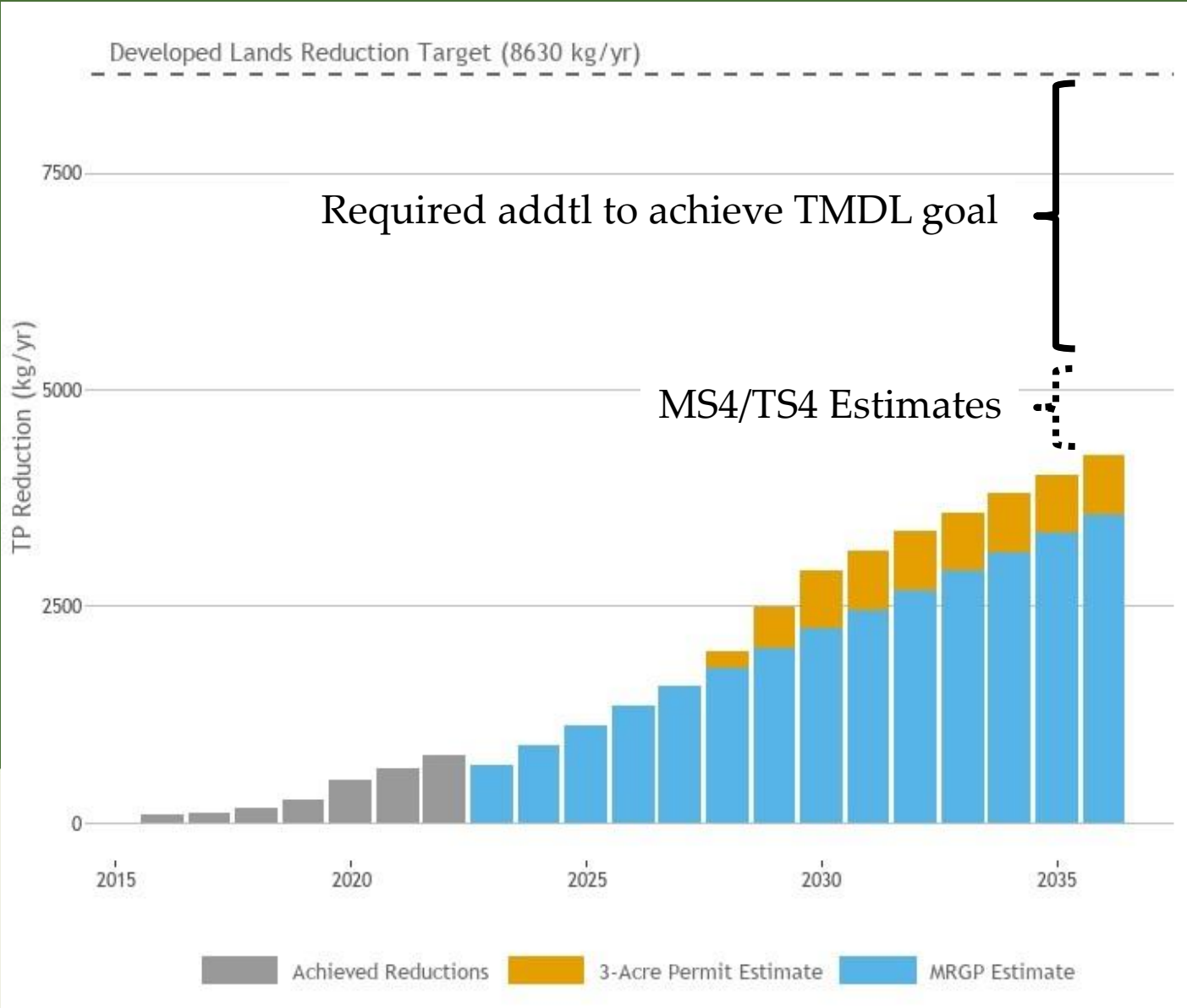
● Crops and Pasture ● Production Area ● Remaining Goal



Agriculture – Example Strategies

- 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



Developed Lands – Example Strategies

- 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

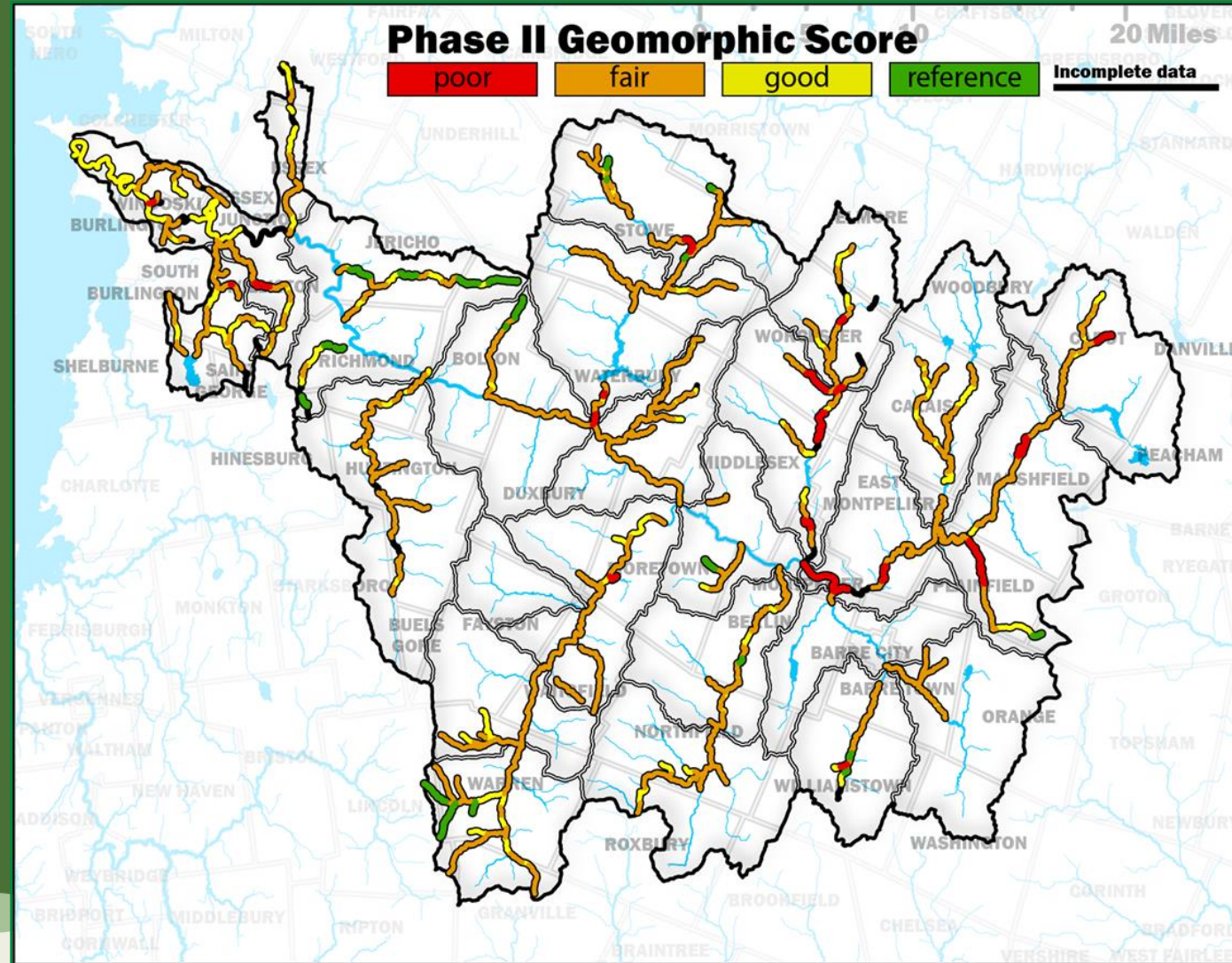
Facility (Permit ID)	Permit Expiration	Permitted Flow (MGD)	Current Percent of Flow*	TMDL Allocated Wasteload (MT P/yr)**	Treatment Type	Receiving Water
Barre 3-1272	9/30/2025	4.000	53%	1.105	Extended aeration	Steven's Branch
Burlington – North 3-1245	9/30/2009	2.000	40%	0.552	Activated sludge	Winooski River
Burlington – Riverside 3-1247	9/30/2009	1.200	42%	0.331	Activated sludge	Winooski River
Cabot 3-1440	9/30/2025	0.050	35%	0.041	Activated sludge	Winooski River
Essex Junction 3-1254	6/30/2026	3.300	59%	0.911	Activated sludge	Winooski River
Global Foundries 3-1295	3/31/2026	8.000	39%	2.210	Sequencing batch reactor, industrial treatment	Winooski River
Marshfield 3-1195	12/31/2025	0.045	33%	0.311	Aerated lagoon	Winooski River
Montpelier 3-1207	9/30/2022	3.970	42%	1.097	Activated sludge	Winooski River
Northfield 3-1158	9/30/2025	1.000	45%	0.276	Sequencing batch reactor	Dog River
Plainfield 3-0381	9/30/2025	0.125	40%	0.138	Sequencing batch reactor	Winooski River
Richmond 3-1173	12/31/2025	0.222	39%	0.061	Extended aeration	Winooski River
So. Burlington – APPW 3-1278	6/30/2026	3.300	53%	0.911	Activated sludge	Winooski River
Stowe 3-1232	9/30/2025	1.000	34%	0.276	Sequential batch reactor	Little River
Waterbury 3-1160	12/31/2025	0.510	65%	0.141	Aerated lagoon	Winooski River
Williamstown 3-1176	12/31/2022	0.150	61%	0.166	Aerated lagoon	Steven's Branch
Winooski 3-1248	6/30/2026	1.400	47%	0.387	Activated sludge	Winooski River

Wastewater– Example Strategies

- 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.

Natural Resources Restoration

- Including rivers, forests, wetlands, and lakes
- LC TMDL expects large P reductions from streams, and for required forest P reductions to be met by Acceptable Management Practices



Rivers – Example Strategies

- 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.

Wetlands/Ponds/Forests – Example Strategies

- Support local efforts to reclassify B(1) candidate streams.
- 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.
- Evaluate opportunities to incorporate adjacent wetlands into the footprints of existing and new river corridor easements.
- 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.

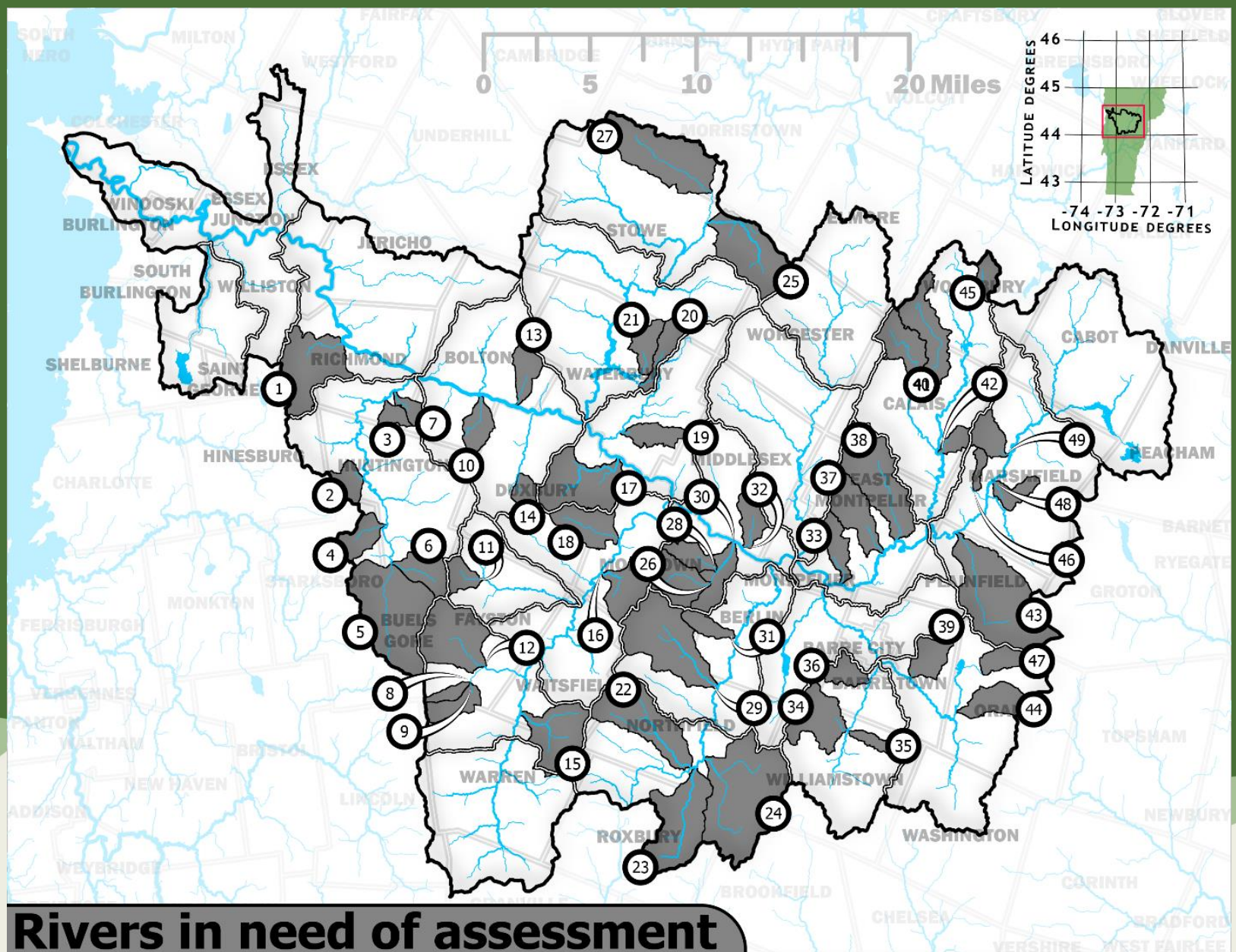
Questions?



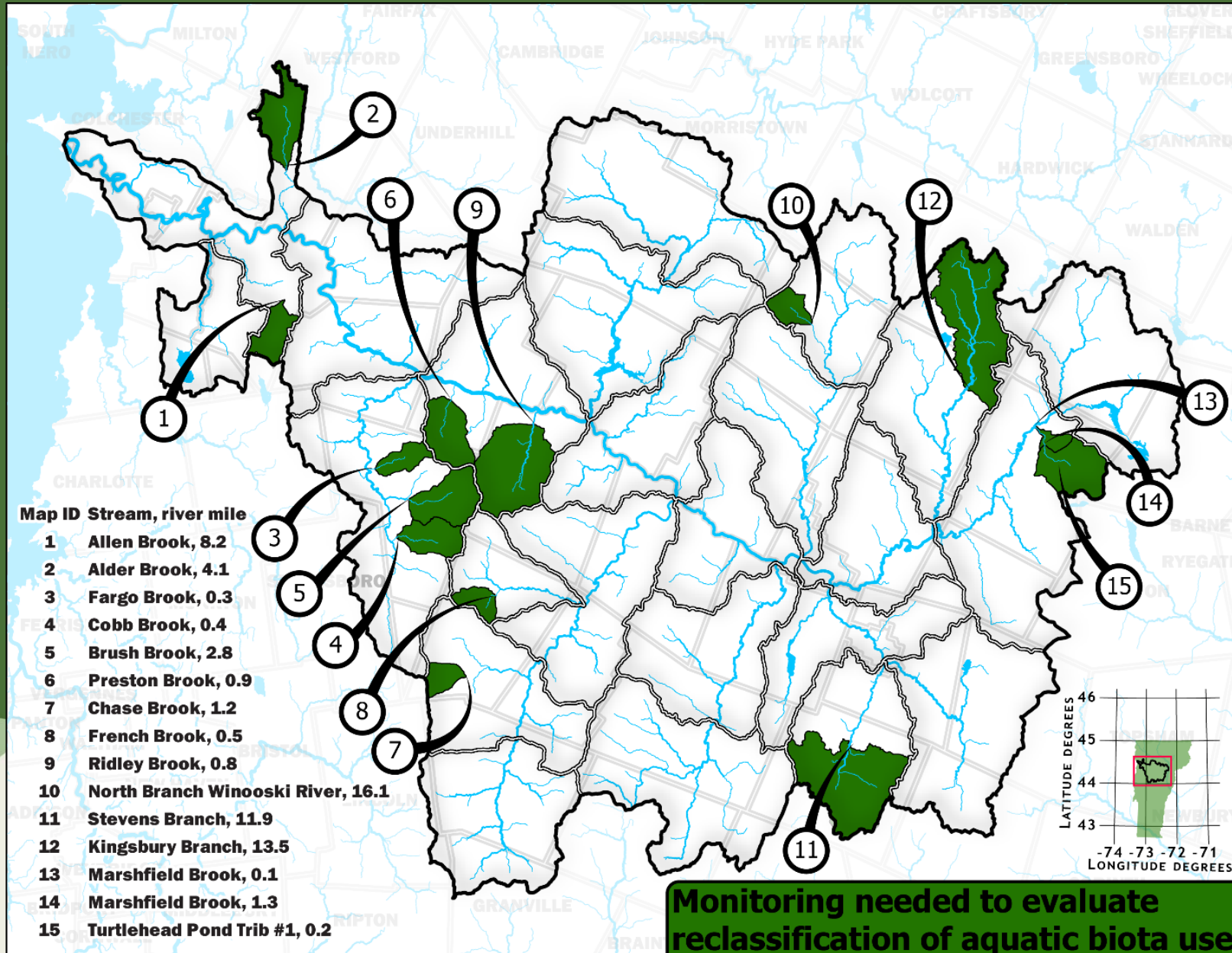
Request reminder: review implementation and municipal protection tables

keith.fritschie@vermont.gov

Possible Monitoring Needs



Possible Monitoring Needs



Possible Monitoring Needs

