



## **MINUTES**

**January 16, 2020**

**Loose Cannon Café – Bennington, VT**

Present: Jock Irons (Woodford), Walt Klinger (Pownal), Dana Rozycki (North Bennington), Suzanne dePeyster (Sandgate), Sheila Kearns (Sandgate), Chris Damon (North Bennington), James Salerno (Economic Development), Megan Herrington (Public Health), John LaVecchia (Dorset), Nancy Faesy (Dorset), John LaVecchia, Jr. (Rupert), Charlie Rockwell (Rupert), Chris Williams (Shaftsbury), Marie Caduto (VT ANR), Barry Mayer (Trout Unlimited, Batten Kill Watershed Alliance)

BCRC Staff: Jim Sullivan, Jim Henderson, Bill Colvin

After a light meal and informal conversation among commissioners, the meeting was called to order at 6:00 PM.

I. Approval of Minutes of November 21, 2019 Meeting

Motion (dePeyster): Approve the Minutes as presented. Second by Irons. Passed unanimously.

II. Deerfield River Tactical Basin Plan – Presentation by Marie Caduto, VT ANR Watershed Coordinator

Caduto presented an overview of the Deerfield River Tactical Basin Plan (presentation attached). The plan covers a description of the basin, strategies and priorities, and surface water concerns. A portion of the watershed lies in the Bennington County region (Sunderland, Glastenbury, Woodford, in particular).

The watershed is heavily forested – very little development in the Bennington Region, but considerable development in Windham County, from ski areas to village centers and

agricultural land. Much land in the Bennington Region is in the Green Mountain National Forest, with strong land conservation measures in place.

Caduto emphasized the importance of retaining forest land to protect water quality. Noted the significance of privately conserved land, including land in the Current Use Program.

Described importance of macroinvertebrate assessments to evaluate the water quality and habitat conditions of the rivers. Reviewed water quality assessments of lakes, ponds, and wetlands in the watershed, noting some gaps in the data. Described fisheries and places where brook (native), rainbow, and brown trout are found, and factors limiting trout production.

Identified impaired waters – noted requirements for addressing the causes in the basin plan. Issues affecting quality include acidification, temperatures, invasive species, flow interruptions, and various pollutants. Remediation plans described, including agricultural practices and control at point sources. Projects include road drainage improvements (not so many roads in our region). Also includes a section on climate change adaptation.

Last section of the basin plan includes implementation strategies and actions.

Public comments on the plan can be submitted to Marie.

III. Working Communities Challenge - Bill Colvin, BCRC Economic Development Director

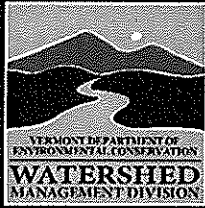
Colvin provided an overview of the Working Communities Challenge (handout attached). The program is intended to provide resources to strengthen rural towns, regions, and small cities through collaborative efforts to build strong economies and healthy communities. BCRC partnering with several area organizations to pursue a planning grant.

Elements of Bennington project include support for the Lightning Jar co-working center, Bennington Area Makers (BAM) – a creative maker space in downtown Bennington facilitating a variety of “STEAM” related initiatives (James Salerno provided some details on specific projects and activities at BAM), and Startup 802 – an entrepreneurial training and support program.

Decisions on the planning grant are expected by the end of January. Subsequent effort will involve development of an implementation program and grant application. Significant funding over three-year period to support the locally identified projects.

Noted importance of reaching out to and supporting lower income residents; hoping to develop specific outreach methods during the planning phase.

IV. Meeting adjourned at 7:15 PM.



# Deerfield River & Lower Connecticut River Tactical Basin Plan



Green River, Guilford

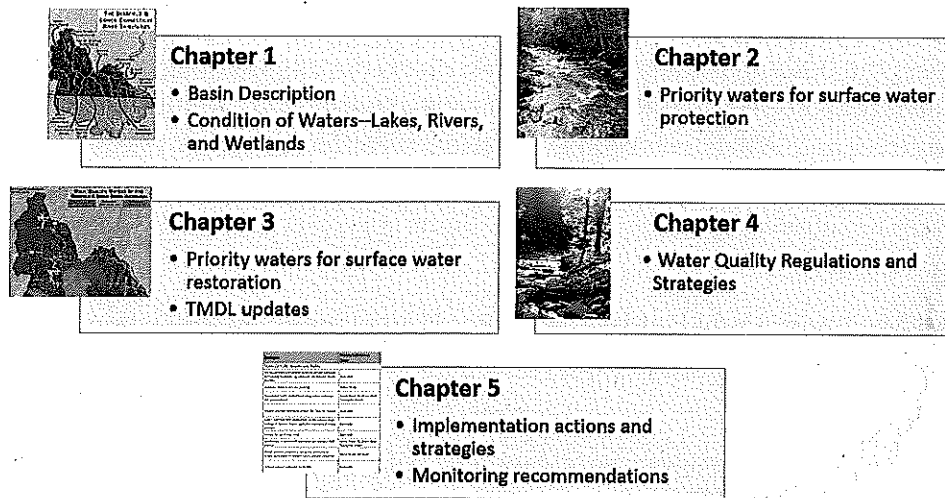
November 2019 | Public Draft



## Executive Summary

The Deerfield Tactical Basin Plan (TBP) provides an assessment of watershed condition and identifies current and future strategies to protect high quality waters and restore impaired water resources based on the approaches set forward in the Vermont Surface Water Management Strategy (VSWMS).

The five chapters in this plan provide a framework for understanding Basin 12, including its unique characteristics and water quality issues, and where and how to carry out priority actions to protect, maintain, enhance, and restore water quality in the Basin.



The Deerfield River descends from the towns of Glastenbury and Stratton in the southern Green Mountains of Vermont. It flows through south central Vermont and crosses the Vermont-Massachusetts border before it joins the Connecticut River. The Deerfield River in Vermont has four branches: North, South, East and West. Two more of the Deerfield's main tributaries, the East Branch of the North River and the Green River, originate in Vermont and enter the Deerfield River in Massachusetts. The Deerfield River system drains 14 towns and 318 square miles in Vermont and 347 square miles in Massachusetts.

Included in Basin 12 is a short reach of the Connecticut River mainstem, from the mouth of the West River in Brattleboro south to the Massachusetts border as well as Whetstone, Broad and Newton Brooks and the Fall River draining directly into the Connecticut River.

The Deerfield is the second most forested, the least developed, and the least cultivated basin in the State of Vermont. Forested land covers 82% of the Basin. Approximately 60% of the land in the Basin is under some form of protection due to inclusion in the Green Mountain National Forest, Great River Hydro ownership, private conservation or Use Value Appraisal (Current Use).

Extensive opportunities exist in the Basin for protection and reclassification where water quality and habitat conditions show that aquatic biota and fisheries are in exceptional condition and

meet the criteria of Class A(1) or B(1). Seven waters are being recommended for A(1) for Aquatic Biota and three for B(1). Vermont Department of Fish and Wildlife (VDFW), Fisheries Division is recommending 13 waters for B(1). Outstanding Resource Water designation is being proposed for four lakes and two gorges. Three wetlands are being put forward for further study to determine if they meet Class 1 wetland criteria.

While river and stream conditions for aquatic life, aesthetics, swimming and boating in the Basin exceed state-wide averages, many lakes and ponds are either unassessed or impacted by acid and mercury entering with precipitation. Increasingly, cyanobacteria blooms are impacting swimmability of waters in the state. The current status of cyanobacteria in Basin 12 is not known and would benefit from further assessment.

Stressors do impact the Basin in numerous areas. Ski resort development degrades water quality in the North Branch Deerfield River. High levels of bacteria are found in the North Branch Deerfield River and Whetstone Brook. Extensive areas have been physically altered by straightening, channel relocation and riverbed manipulation. Additionally, natural flows and water temperatures are altered by six hydroelectric dams and reservoirs and water withdrawals for snowmaking.

Six separate Total Maximum Daily Loads (TMDLs) or Water Quality Remediation Plans (WQRPs) are in place addressing five pollutants: acidity, bacteria, mercury, nitrogen and stormwater.

Only 4.6 percent of the Basin is in agricultural land use with Newton Brook in Vernon being the only agriculturally impaired water. Stormwater runoff and road runoff bring sediment and nutrients into waterways throughout the Basin.

Actions to implement projects that address these impacts and those to protect water resources are documented in the on-line [Watershed Projects Database](#). Overarching strategies and actions are listed in Table 17.

## What is a Tactical Basin Plan

Tactical basin planning is carried out for the Agency of Natural Resources (VANR) by the Watershed Management Division's Monitoring and Assessment, Program (MAP) in coordination with watershed partners. Tactical basin plans are developed in accordance with the [Vermont Surface Water Management Strategy \(VSWMS\)](#) and the [Vermont Water Quality Standards \(VWQS\)](#) to protect, maintain, enhance, and restore the biological, chemical, and physical integrity of Vermont's water resources. The basin-specific water quality goals, objectives, strategies, and actions described in the TBP's aim to protect public health and safety and ensure public use and enjoyment of Vermont waters.

The TBP process allows for the issuance of plans for Vermont's fifteen basins every five years, as required by statute 10 V.S.A. § 1253. The plans incorporate the U.S. Environmental Protection Agency's (EPA) 9-element framework for watershed plans (Environmental Protection Agency, 2008) and meet obligations of the Vermont Clean Water Act. Updating a basin plan includes: 1. monitoring water quality and summarizing existing information, 2. assessing and analyzing water quality data, 3. identifying strategies and projects to protect and restore waters, 4. seeking public comment and finalizing the plan, and 5. ongoing plan implementation and tracking throughout the planning cycle.

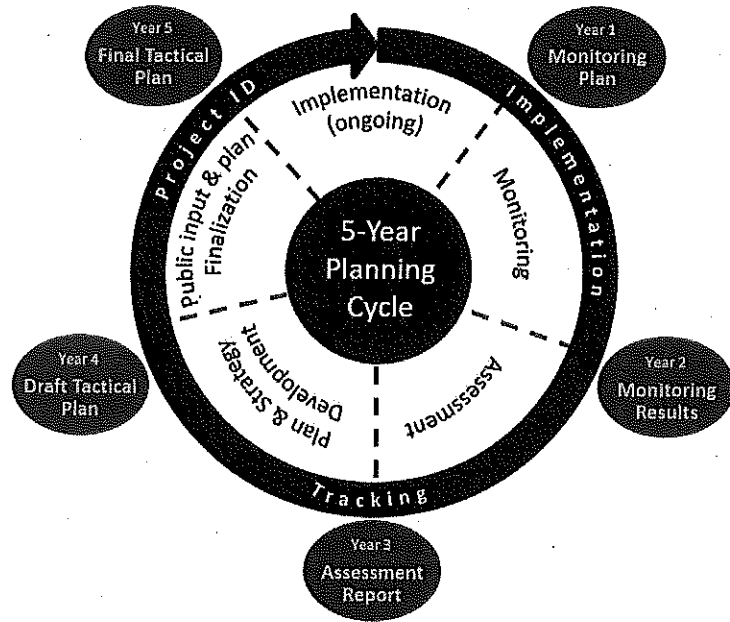


Figure 2. Steps in the Tactical Basin Planning Process

Tactical basin plans can be considered a strategic guidebook for protecting and restoring Vermont's surface waters for VANR and watershed partners. Plans identify causes and sources of pollution and opportunities for protecting waters through outstanding resource water designation and reclassification. Plans also identify pollutant reductions needed to restore water quality, including those necessary to meet Total Maximum Daily Load targets. Plan implementation tables list strategies to foster education and outreach, and targeted restoration actions that are eligible for federal and state funding. The plan's strategies, described in Chapter 5's strategy table, target overarching objectives that are tracked via the online [Watershed Projects Database \(WPD\)](#) which lists individual projects that will meet these objectives. The WPD is continuously updated to capture project information from

- the TBP process,
- on the ground assessments and
- emerging projects due to natural and/or anthropogenic events.

The [2014 Basin 12 Water Quality Management Plan](#) identified sixty-two action items of which half have been implemented or are in progress by VANR and its watershed partners. A report card of this progress can be viewed in Appendix A. The 2019 tactical plan builds upon those original plan recommendations by promoting specific, geographically explicit actions in areas of the basin that have been identified for intervention, using environmental modeling and on-the-ground monitoring and assessment data. This updated tactical basin plan will serve for the next five-years to address water quality concerns across land use sectors and improve aquatic habitat.

## A. The Vermont Clean Water Act

The Vermont Clean Water Act, Act 64, addresses water quality throughout Vermont by addressing the sectors that have potential to cause pollution. These sectors are agriculture, developed lands, wastewater, roads and natural resources processes. Agricultural non-point source water quality programs and the application of the Required Agricultural Practices (RAPs) on small, medium, and large farms is managed by the Agency of Agriculture, Food and Markets (VAAFAM). Stormwater discharges from new and existing development, industrial and municipal stormwater discharges, and runoff from state and municipal roads are managed through the Vermont Departments of Environmental Conservation (VDEC) and Agency of Transportation (AOT). While the Vermont Department of Forests, Parks and Recreation (VDFPR) and VDEC, in tandem, address water quality runoff from forest silvicultural activities.

Act 64 also establishes the requirement that all water quality improvement actions undertaken by the State be integrated by means of TBPs, and establishes partnerships with regional planning commissions, conservation districts, and other organizations to support this work. TBPs encourage communities to take protective measures that will restore, maintain and enhance water quality in all areas, but do not preclude development that is consistent with municipal bylaws, regional and municipal plans, and with applicable state and federal regulations.

## B. Vermont Water Quality Standards

The Vermont Water Quality Standards (VWQS) establish the minimum or maximum limits for certain water quality parameters at specific locations for the purpose of managing waters to support their designated uses. Designated uses include aquatic biota and habitat; swimming & contact recreation; boating; fishing; public water supply and crop irrigation. In Vermont, Water Quality Standards include both Water Classification Orders and the Regulations Governing Water Classification and Control of Quality.

## C. Assessment Methodology

The Agency of Natural Resources' Watershed Management Division (WSMD) in VDEC assesses the health of a waterbody using biological, chemical and physical criteria. Most of this data can be accessed through the Vermont Integrated Watershed Information System, online data portal.

VDEC uses monitoring and assessment data<sup>1</sup> to assess individual surface waters in relation to VWQS as outlined in the 2016 DEC Assessment and Listing Methodology. The four categories used to assess Vermont's surface water are **full support**, **stressed**, **altered** and **impaired**. Waters that currently support designated and existing uses and meet water quality standards are placed into the full support or stressed categories. Waters that do not meet VWQS are placed in the altered or impaired categories.

---

<sup>1</sup> Appendix A of the Vermont DEC Water Quality Monitoring Strategy 2011-2020



## Condition of Rivers

The majority of the Basin's waters are in good to excellent condition with regards to aquatic biota (Figure 6). The majority of the region is forested with dispersed areas of small village development. However, extensive development around two major ski areas on the North Branch Deerfield and urban development in Brattleboro increases stormwater runoff and chloride concentrations in these areas.

Flow alteration is the most prevalent stressor<sup>2</sup> in the streams and rivers of the Basin in part due to the 54 known dams impacting flows, sediment transport and aquatic organism passage. Leading pollutants include acid and mercury deposition, *E. coli* bacteria, excess nutrients and temperature modifications - both hot and cold. In many Basin tributaries fish communities are impacted by low acidity and low productivity of headwater streams.

## Condition of Lakes and Ponds

There are 17 lakes and ponds in the Deerfield Basin that are 20 acres or greater, which total approximately 4,000 acres. Many of these lakes and ponds fully support the requirements of the VWQS, a number are impacted by acidification, and several exhibit high levels of mercury in fish. Both acid and mercury result from atmospheric deposition from sources outside of Vermont and are exacerbated by local geological conditions and water level manipulation.

## Condition of Wetlands

Wetlands are identified on the [Vermont Wetlands Inventory Map](#). Few wetlands in Basin 12 or the state have been assessed for quality. Of those that have been assessed through the Vermont Rapid Assessment Methodology (VRAM) those in Basin 12 have ranked along the upper end of the scale, indicating higher quality and little disturbance. Important wetlands in the Basin include the Vernon Black Gum Swamps, the floating bog in Lake Sadawga and Atherton Meadows wetland in Vermont's Atherton Meadows Wildlife Management Area. All three of these are recommended for assessment for consideration as Class 1. Lily Pond in Vernon host a very high frequency of Rare, Threatened and Endangered (RTE) species and unusual species composition due to its southerly location in state. Lily Pond is a high priority for protection.

---

<sup>2</sup> See VSWMS for pollutant definitions. [http://www.anr.state.vt.us/dec/waterq/wqd\\_mgtplan/swms\\_appB.htm](http://www.anr.state.vt.us/dec/waterq/wqd_mgtplan/swms_appB.htm).

## Condition of Fisheries

The Deerfield watershed and southern tributaries to the Connecticut River provide habitat for a variety of warm and cold-water fish species. The waterbodies in the Deerfield watershed include large reservoirs for hydropower generation, lakes and ponds which provide warmwater fisheries, small headwater streams providing cold-water habitat for trout, and large tributary streams. This diversity of habitat types promotes a range of fishing opportunities throughout the Basin.

Small headwater streams that provide habitat for native Brook Trout are found throughout the Basin. Streams with relatively high abundance include Bond Brook, Broad Brook, Cold Brook, Deerfield mainstem (i.e. Harriman bypass), Haystack Brook, Lamb Brook, Oak Brook, Central Park Brook, and West Branch Deerfield. Large tributary streams include the North Branch Deerfield, East Branch Deerfield, Mainstem Deerfield, Whetstone Brook, Broad Brook and the Green River.

Trout production appears to be limited throughout the region due to natural causes such as water chemistry, stream temperatures, and in certain areas may be further impacted by flow alterations and post-Irene alterations within the system. Tributary streams provide greater trout abundances, and stocking supplements catchable sized trout to support a moderate recreational fishery. Efforts to improve aquatic passage, protect riparian corridors, re-evaluate the flow regime during the FERC relicensing process, and restoring Post-Irene reaches are management tools that could be applied to the Deerfield watershed, and tributaries of the Connecticut River.

## Priority Surface Waters for Protection

All surface waters in Vermont are managed to support designated uses valued by the public at a level of Class B(2) or better. These uses include swimming, boating, fishing, aquatic biota, aquatic habitat, aesthetics, drinking water source and irrigation. Several waters in the Basin are identified as being high quality, and these, as well as other unique waterbodies, are candidates for establishing alternate management objectives or augmented protections.

# PROTECTION PRIORITIES IN THE DEERFIELD & DIRECT CONNECTICUT RIVER TRIBUTARIES

## Potential Outstanding Resource Waters

1	Grout Pond
14	Howe Pond
18	Halifax Gorge
13	Broad Brk Falls & Gorge
23	Lily Pond

## Potential B1 Aquatic Biota

7	Haystack Brook
8	Lamb Brook
10	W. Branch Deerfield Trib 7
19	Fall River

## Potential A1 Aquatic Biota

17	Green River
25	S. Branch Deerfield
26	E. Branch North R.

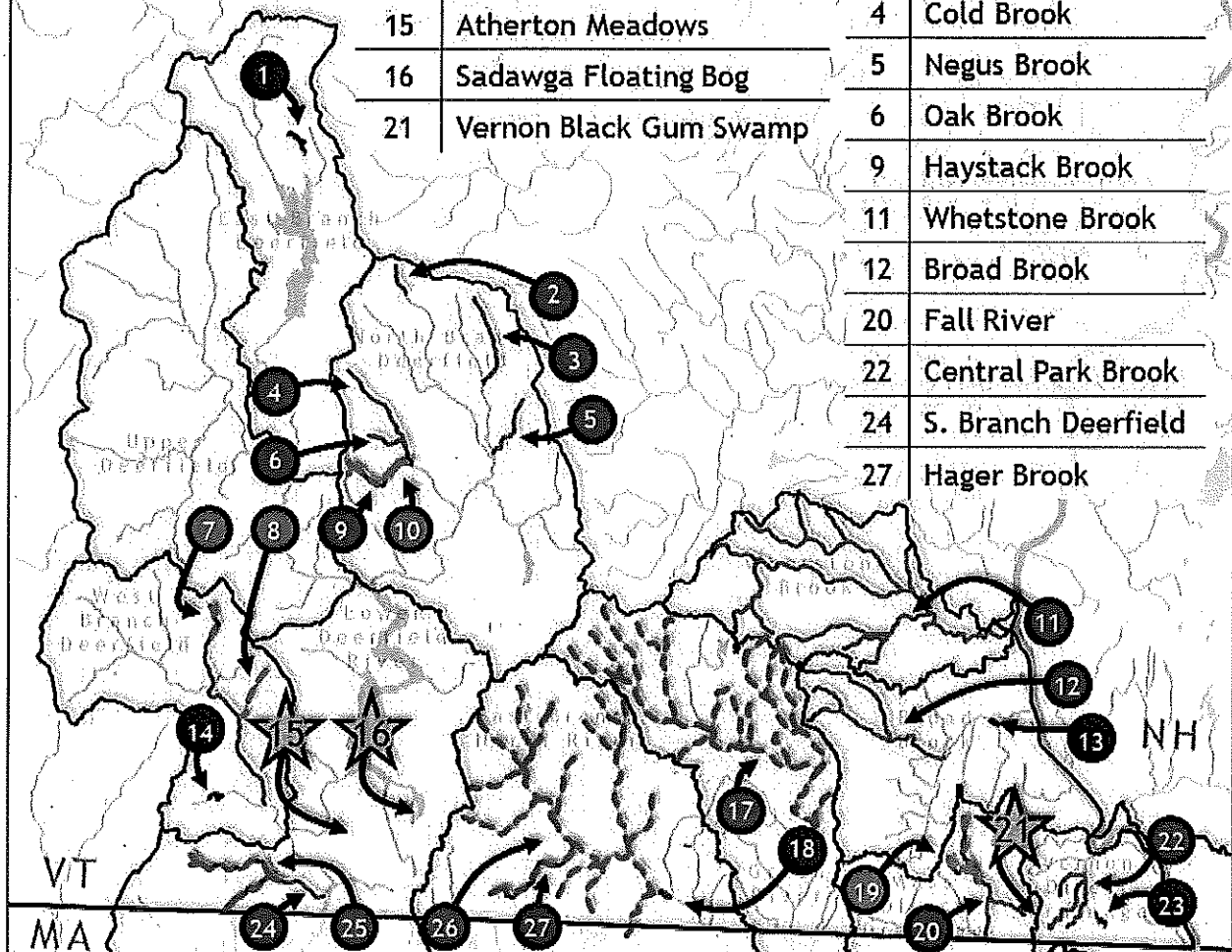
## Potential B1 Fishing

2	Blue Brook
3	Cheney Brook
4	Cold Brook
5	Negus Brook
6	Oak Brook
9	Haystack Brook
11	Whetstone Brook
12	Broad Brook
20	Fall River
22	Central Park Brook
24	S. Branch Deerfield
27	Hager Brook

## Potential Class 1 Wetlands

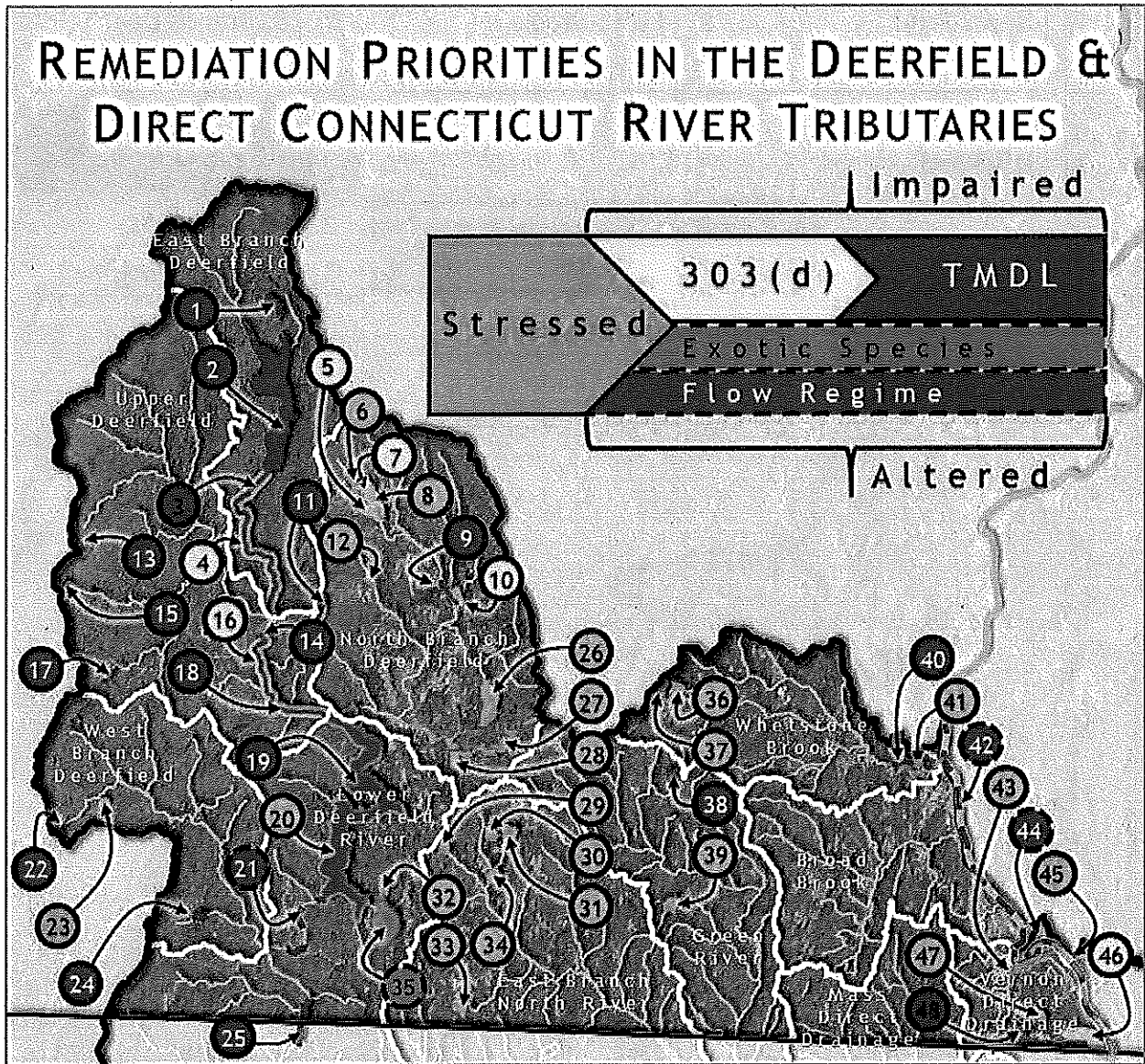


15	Atherton Meadows
16	Sadawga Floating Bog
21	Vernon Black Gum Swamp



## Priority Areas for Surface Water Restoration

The Vermont Surface Water Management Strategy (VSWMS) lays out the goals and objectives of VDEC's Watershed Management Division for addressing pollutants and stressors that can negatively affect the designated uses of Vermont surface waters. When waters do not fully support desired uses they are listed as **stressed**, **altered** or **impaired**.



The goals of the Tactical Basin Plan include addressing the stressors or pollutants degrading the listed waters through geographically specific actions listed in the implementation table in Chapter 5 and the Watershed Projects Database. The types of actions prescribed are based on the stressor specific practices outlined in the Vermont Surface Water Management Strategy.

## Stressed

Map ID	Name	Pollutant/Problem	List
6	BASELODGE TRIBUTARY, FROM MOUTH UP 0.2 MILES	PHYSICAL ALTERATION, SEDIMENTATION	Stressed
8	NORTH BRANCH DEERFIELD RIVER, SNOW LAKE TO TANNERY BROOK RD	PHYSICAL ALTERATIONS, TEMP	Stressed
12	OAK BROOK, MOUTH TO HEADWATERS	ACID DEPOSITION	Stressed
20	HARRIMAN RESERVOIR (WHITHAM)	ACID DEPOSITION	Stressed
23	MUD POND (WOODFORD)	ACID DEPOSITION	Stressed
25	SOUTH BRANCH DEERFIELD RIVER, UP FROM SHERMAN RES	ACID DEPOSITION DEPOSITION	Stressed
26	LAKE RAPONDA	ACID DEPOSITION	Stressed
27	BEAVER BROOK	PHYSICAL ALTERATION, SEDIMENT	Stressed
28	SPRUCE POND (WILKIN)	ACID DEPOSITION	Stressed
29	RYDER POND	ACID DEPOSITION	Stressed
30	LAUREL POND	ACID DEPOSITION	Stressed
31	GATES POND	ACID DEPOSITION	Stressed
32	CLARA POND	ACID DEPOSITION	Stressed
33	SHIPPEE POND	ACID DEPOSITION	Stressed
34	JACKSONVILLE	ACID DEPOSITION	Stressed
36	MARLBORO-431;	ACID DEPOSITION	Stressed
37	HIDDEN POND	ACID DEPOSITION	Stressed
39	DEER PARK POND	ACID DEPOSITION	Stressed
41	WHETSTONE BROOK, BEND NW OF LIVING MEM PARK DOWN	SEDIMENTS, FLOW	Stressed
43	CENTRAL PARK BROOK	ACID DEPOSITION	Stressed
45	CT RIVER, BELOW VERNON DAM	TRITIUM	Stressed
47	VERNON HATCHERY;	ACID DEPOSITION	Stressed

## 303(d)

Map ID	Name	Pollutant/Problem	List
4	EAST BRANCH DEERFIELD RIVER, BELOW SOMERSET DAM, 5.2 MILES	ACID DEPOSITION	303(d)
5	IRON STREAM, TRIB TO JACKS BROOK (0.3 MILE)	IRON	303(d)
7	NO. BRANCH DEERFIELD RIVER, TANNERY BRK RD TO 0.2 MI ABOVE SNOW LAKE	STORMWATER, TEMPERATURE	303(d)
10	ELLIS BROOK, MOUTH TO RM 0.5	NUTRIENTS	303(d)
15	UPPER DEERFIELD RIVER, BELOW SEARSBURG DAM, 3.6 MILES	ACID DEPOSITION	303(d)
46	NEWTON BROOK, MOUTH TO RM 2.0	SEDIMENT, NUTRIENTS	303(d)

## TMDL

Map ID	Name	Pollutant/Problem	List
1	GROUT POND (Stratton)	MERCURY, ACID DEPOSITION	TMDL
2	SOMERSET RESERVOIR (Somerset)	ACID DEPOSITION, MERCURY	TMDL
3	EAST BRANCH DEERFIELD RIVER, BELOW SOMERSET DAM	MERCURY	TMDL
9	NO. BRANCH, DEERFIELD RIVER, VICINITY OF WEST DOVER	E. COLI	TMDL
11	HAYSTACK POND (Wilmington)	ACID DEPOSITION	TMDL
13	LOST POND (Glastenbury)	ACID DEPOSITION	TMDL
14	SEARSBURG RESERVOIR (Searsburg)	MERCURY	TMDL
15	LITTLE POND (Woodford)	ACID DEPOSITION	TMDL
17	ADAMS RESERVOIR (Woodford)	ACID DEPOSITION	TMDL
18	UPPER DEERFIELD RIVER, BELOW SEARSBURG DAM	MERCURY	TMDL
19	HARRIMAN RESERVOIR (Whitingham)	MERCURY	TMDL
22	STAMFORD POND (Stamford)	ACID DEPOSITION	TMDL
24	HOWE POND (Readsboro)	ACID DEPOSITION	TMDL
26	SHERMAN RESERVOIR (Whitingham)	MERCURY	TMDL
38	SOUTH POND (Marlboro)	ACID DEPOSITION	TMDL
40	WHETSTONE BROOK - BRATTLEBORO	E. COLI	TMDL
48	LILY POND (Vernon)	ACID DEPOSITION	TMDL

## Exotic Species

## Flow Regime

Map ID	Name	Pollutant/Problem	List
35	SADAWGA POND	LOCALLY ABUNDANT EWM GROWTH.	Exotics
21	LOWER DEERFIELD RIVER BELOW HARRIMAN RESERVOIR (3.5 MILES)	HYPOLIMNETIC WATER RELEASE	FLOW
42	CT RIVER, ABOVE VERNON DAM	WATER LEVEL FLUCTUATION AT DAM	FLOW
44	CT RIVER, BELOW VERNON DAM (5.5 MILES)	FLUCTUATING FLOWS BY HYDROPOWER FLOW	FLOW
21	LOWER DEERFIELD RIVER BELOW HARRIMAN RESERVOIR (3.5 MILES)	HYPOLIMNETIC WATER RELEASE	FLOW

## Strategies to Address Pollution by Land Use Sector

Tactical basin plans address water quality by land use sector as summarized in the following sections. These sectors are consistent with the VDEC CWIP [Clean Water Investment Report](#). A source sector is a land use activity that can contribute pollutants to the environment. Sectors effecting water quality addressed in this plan are:



AGRICULTURE

### *Agriculture*

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



DEVELOPED LANDS

### *Developed Lands--Stormwater*

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



ROADS

### *Developed Lands--Roads*

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



WASTEWATER

### *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.



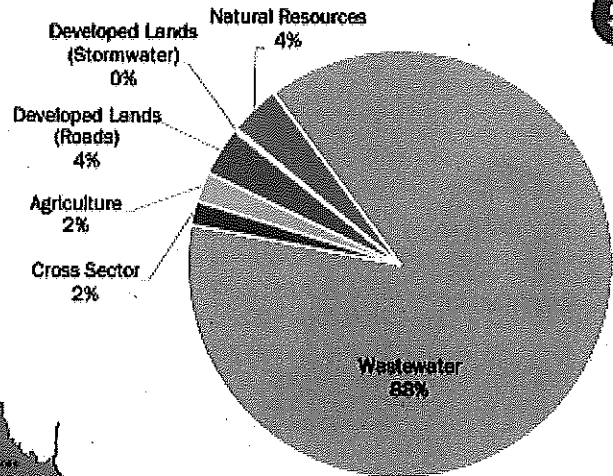
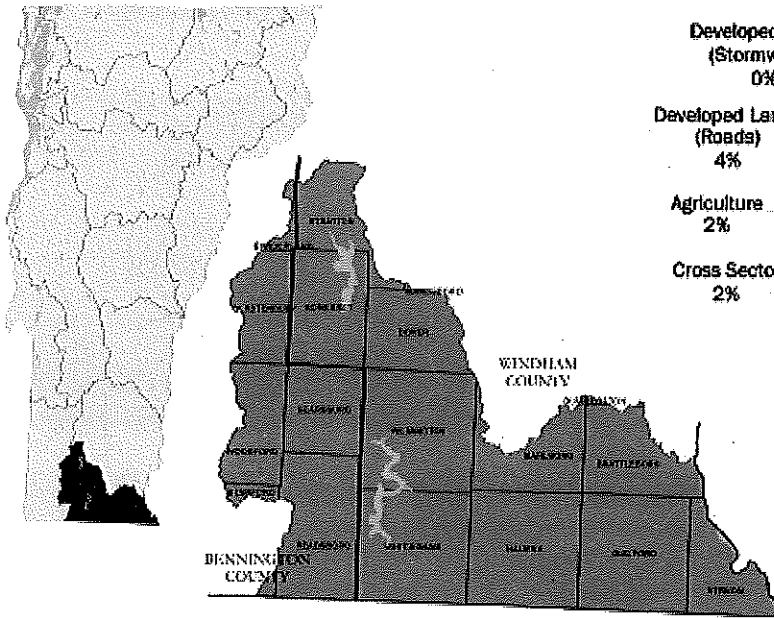
NATURAL RESOURCES

### *Natural Resource Restoration*

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

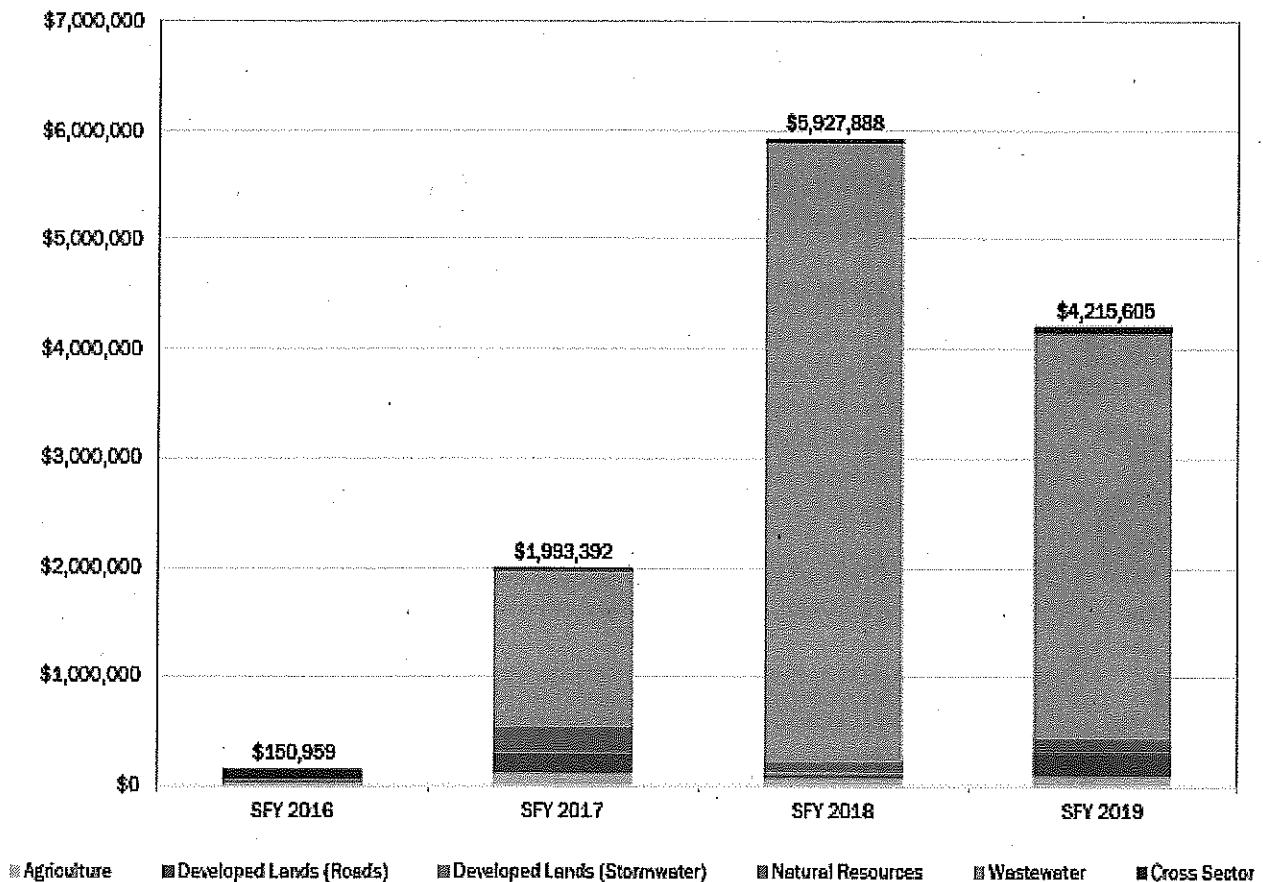
The plan's strategies, described in Chapter 5's strategy table, target overarching objectives that are tracked via the online [Watershed Projects Database \(WPD\)](#) which lists individual projects that will meet these objectives. State Clean Water Funding is also tracked by sector and reported annually in the Vermont Clean Water Initiative Annual Investment Report. And each basin is individually tracked for investment and progress achieved.

# Deerfield River Watershed Investments



Dollars awarded by State of Vermont agencies to clean water projects in the Deerfield River watershed, SFY 2016-2019, by sector  
**Total: \$12,287,843**

Dollars awarded by State of Vermont agencies to clean water projects in the Deerfield River watershed, by sector and State Fiscal Year.



# Deerfield River Watershed Results

Results of clean water projects funded by State of Vermont agencies completed, SFY 2016-2019, by sector, in the Deerfield River watershed. Note: Does not include results of projects funded, but not yet completed.



## AGRICULTURE

AGRICULTURE PROJECT OUTPUTS	2016	2017	2018	2019	TOTAL
Acres of agricultural land treated by conservation practices	-	-	-	-	-
Acres of agricultural land treated by forest and grass buffers	-	-	-	-	-
Acres of pasture with livestock excluded from surface waters	-	-	-	-	-
Number of barnyard and production area practices installed	-	-	-	-	-
Acres of water quality protections within newly conserved agricultural lands	-	-	-	-	-
Estimated acres of agricultural land treated through equipment	-	-	46	-	46

### AGRICULTURE POLLUTANT REDUCTION

Pollutant reductions can currently only be estimated for phosphorus in the Lake Champlain and Lake Memphremagog basins



## NATURAL RESOURCES

NATURAL RESOURCES PROJECT OUTPUTS	2016	2017	2018	2019	TOTAL
Acres of forested riparian buffer restored	2	0.5	-	0.8	3
Acres of riparian corridor conserved and restored through easements	-	-	-	-	-
Acres of floodplain restored	-	-	-	-	-
Acres of lakeshore restored	-	-	5	0.4	5
Stream miles reconnected for stream equilibrium/fish passage	-	-	-	-	-
Acres of wetland conserved and restored through easements	-	-	-	-	-
Acres of forestland conserved with water quality protections	-	-	-	-	-
Miles of forest road drainage and erosion control improvements	-	-	-	-	-
Number of stream crossings improved	-	-	-	-	-
Square feet of eroding gully remediated	-	-	-	-	-

### NATURAL RESOURCES POLLUTANT REDUCTION

Pollutant reductions can currently only be estimated for phosphorus in the Lake Champlain and Lake Memphremagog basins



## DEVELOPED LANDS

DEVELOPED LANDS AND ROADS PROJECT OUTPUTS	2016	2017	2018	2019	TOTAL
Acres of existing impervious surface treated by stormwater practices	-	-	-	-	-
Miles of municipal road drainage and erosion control improvements	-	335	13,819	7,711	21,865
Number of municipal road drainage and stream culverts replaced	-	2	-	3	5
Cubic yards of Class IV road gully erosion remediated	-	-	-	-	-
Cubic yards of catch basin outlet erosion remediated	-	-	-	-	-
Acres stabilized through use of hydroseeder/mulcher equipment per year	-	-	-	-	-

### DEVELOPED LANDS AND ROADS POLLUTANT REDUCTION

Pollutant reductions can currently only be estimated for phosphorus in the Lake Champlain and Lake Memphremagog basins



## ROADS



## WASTEWATER

WASTEWATER PROJECT OUTPUTS	2016	2017	2018	2019	TOTAL
Number of combined sewer overflow abatements completed	-	-	-	-	-
Number of sewer extensions completed	-	-	-	-	-
Number of wastewater collection systems refurbished	-	-	-	-	-
Number of wastewater treatment facility refurbished	-	-	-	1	1
Number of wastewater treatment facility upgrades completed	-	-	-	-	-



## Chapter 5 Plan Implementation

### Summary of Implementation Actions

Strategies	Priority Areas	Town	Partners	Funding
<b>AGRICULTURAL LANDS</b>				
Increase outreach and technical assistance through workshops and trainings for farmers, ag contractors and technical service providers on the new RAPs, improving soil health, implementing conservation field practices	Newton Brook	Vernon	UVM Ext., NRCDs, AAFM, NRCS	
Implement livestock exclusion practices	North Branch Deerfield, Newton Brook, Whetstone Brook, Connecticut River	Wilmington, Vernon, Brattleboro	NRCDs, AAFM, NRCS	
Increase farm buffer establishment along surface waterways and upland wetlands			UVM Ext., NRCDs, AAFM, NRCS	
Support small farm NIMP development and implementation through courses and trainings for farmers, manure applicators and technical service providers			VDEC, NRCDs, AAFM, NRCS	
Establish long-term funding for agricultural buffer projects			UVM Ext., NRCDs, AAFM, NRCS	
Increase the use of cover crops			UVM Ext., NRCDs, AAFM, NRCS	
Develop and host educational workshops directed to horse, beef, and small animal operations			UVM Ext., NRCDs, AAFM, NRCS	
Identify areas where water quality will most benefit from farm inspections and assistance	North Branch Deerfield, Newton Brook, Whetstone Brook		NRCDs, AAFM, NRCS	
Increase regional equity of State and Federal agricultural funding distribution			AAFM, NRCS	
Acquire RCE on lands located on alluvial fans			VLT, VRC, UVLT	

Strategies	Priority Areas	Town	Partners	Funding
<b>DEVELOPED LANDS / STORMWATER</b>				
Conduct stormwater master planning to identify and prioritize actions	North Branch Deerfield, Cold Brook, Whetstone Brook	Brattleboro, Dover, Mount Snow, Hermitage	RPCs, NRCDS, municipalities, ski resorts	
Implement priority project identified in these plans		Brattleboro, Dover, Mount Snow, Hermitage	North Branch Deerfield ski resorts	
Identify and mitigate sources of bacteria causing impairment	North Branch Deerfield, Whetstone Brook	Dover, Wilmington, Brattleboro	VDEC, municipalities	
Address stormwater runoff entering Kettle Pond	Whetstone Brook	Brattleboro	WCNRC, municipality	
Address stormwater runoff entering Whetstone Brook	Whetstone Brook	Brattleboro	WCNRC, municipality	
Address stormwater runoff discharges from ski area development impairing water quality	North Branch Deerfield, Cold Brook	Dover, Wilmington	Municipalities, ski resorts	
Implement required actions to mitigate impairments addressed in the Mt Snow WQRPs	North Branch Deerfield, Baselodge tributary	Mt Snow Resort	Mt Snow Resort	
Conduct outreach to landowners scheduled to fall under the 3-acre stormwater rule			RPCs, NRCDS, VDEC	
<b>DEVELOPED LANDS / ROADS</b>				
Assist municipalities to control runoff from gravel and paved roads: implement road assessment protocol to assist with prioritization; provide technical and financial resources to assist with implementation; implement Municipal Roads General Permit (MRGP)			RPCs, NRCDS, municipalities	BR, GIA
Complete REIs in remaining towns		Dover, Guilford, Marlboro, Whitingham Woodford	RPCs, municipalities	BR
Assist towns with support and training on data collection methods and uploading data into MRGP database			RPCs, VDEC	
Increase municipal participation in BR & GIA funding: assist in project prioritization and project proposal development			RPCs, NRCDS, municipalities, VDEC	
Implement projects to address Class 4 road & legal trail erosion			NRCDS, municipalities	Work Crew Block Grant
Conduct outreach on BMPs for private roads and driveways			RPCs, NRCDS	
Replace geomorphologically incompatible culverts and bridges			VTrans, municipalities	Structures
<b>WASTEWATER</b>				
Reduce the nitrogen load from municipal wastewater discharges to address the US-TMDL			Municipalities	CWSRF
Conduct wastewater planning and feasibility studies for small communities without municipal systems			VDEC	CWSRF

Strategies	Priority Areas	Town	Partners	Funding
<b>NATURAL RESOURCE RESTORATION: Rivers, Lakes, Wetlands &amp; Forests</b>				
<b>RIVERS: Work toward stream equilibrium and flood resilience</b>				
Increase the number of river and floodplain restoration projects to re-establish connections to floodplains	reaches with High to Extreme Sensitivity ratings		NRCDS, RPCS	
Increase River Corridor Easements which incorporate channel management, riparian buffer provisions and flood resiliency	Green River, East Branch North River		VRC, VLT, TNC	
Increase buffer plantings	Newton Brook, Whetstone Brook		NRCDS, watershed assoc's	
Remove dams, esp. High Hazard dams			CRC, RPCs, dam owners	
Protect floodplains and river corridors from conversion & development			VRC, VLT, TNC	
Increase buffer plantings			NRCDS, watershed assoc's	
Restore floodplain of Birge Street parcel	Whetstone Brook	Brattleboro	NRCDS, watershed assoc's	
<b>SHORELANDS: protect and restore</b>				
Promote & Implement the Lake Wise Program to encourage lake-friendly shoreline property maintenance	All Lakes & ponds		lakeshore owners, lake assoc's	
Establish Lay Lake Monitoring on appropriate lakes and ponds	Sadawga, Grout, Howe, Lily		lakeshore owners, lake assoc's	
Work to control riparian and aquatic invasive plants	All Lakes & ponds		lakeshore owners, lake assoc's	
Work to protect Lily Pond			lakeshore owners, VANR, municipality	
<b>WETLANDS: protect and restore</b>				
Restore degraded wetlands for habitat and water quality improvement		Vernon	AAFM, VDEC, NRCDS, watershed assoc's	
Assess areas of prior converted wetland and hydric soils for restoration			AAFM, VDEC, NRCDS, watershed assoc's	
Implement wetland restoration as sites and opportunities are identified			AAFM, VDEC, NRCDS, watershed assoc's	
Assess wetlands for potential reclassification	see Table 6	Towns experiencing strong development pressure	VDEC - Wetlands	
Map unmapped wetlands		Wilmington, Dover and Vernon	VDEC - Wetlands, RPCs	

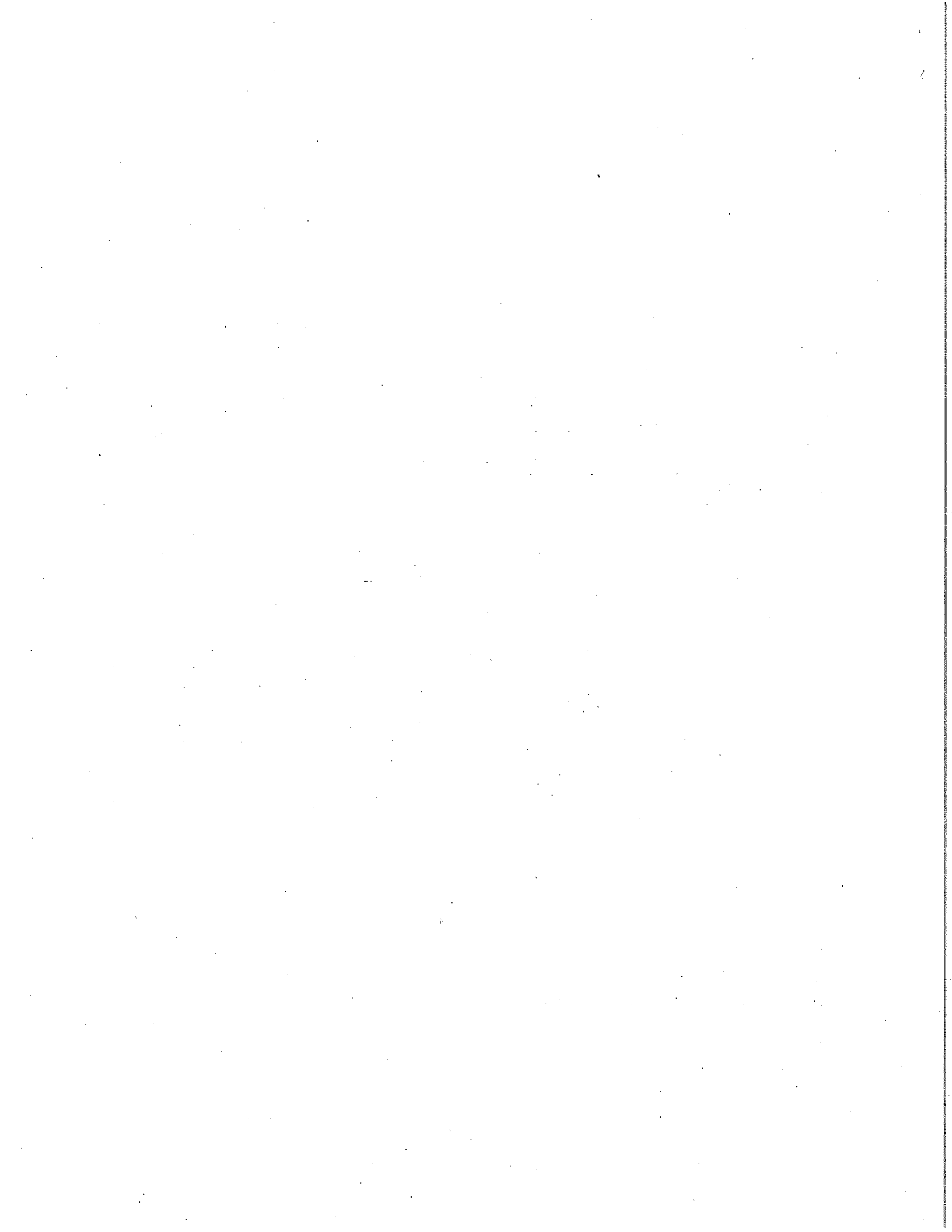
Strategies	Priority Areas	Town	Partners	Funding
FISHERY: protect and restore				
Implement strategic wood addition projects on:			TU, VDFW, USFS	
• East Branch of the Deerfield below Somerset Dam				
• Deerfield mainstem above Rake Branch				
• Rake Branch				
• Deer Cabin, Deer Lick, Blind and Glastonbury				
• Heather Brook and within Vose Brook				
Repair and maintain fish ladder at Green River Crib Dam			Community org	
<b>FOREST MANAGEMENT: abate soil erosion</b>				
Protect headwater streams and sensitive upland surface waters			DFPR, USFS, VLT	
Conduct outreach on AMPs and forest BMPs			DFPR, NRCDS	
Better manage forest road runoff through adherence to AMPs and site restoration			DFPR, landowners	
Continue and expand the Portable Skidder Bridge Program			NRCDS	
<b>CLIMATE CHANGE ADAPTATION: mitigate potential impacts of climate change on species survival</b>				
Support efforts, such as state, federal, regional and international Climate Change Action Plans to reduce greenhouse gas emissions in the Northeast and climate change risks to SGCN	Connecticut River valley		ANR, RPCs, NRCDS, USFWS	
Conserve known habitat of SGCN through fee simple purchase, development rights or easements, management agreements, and education of private landowners and managers regarding appropriate management	Connecticut River valley		ANR, RPCs, NRCDS, USFWS	
Work to maintain connectivity with populations to the south in Massachusetts	Connecticut River valley		ANR, RPCs, NRCDS, USFWS	
<b>HAZARD MITIGATION &amp; FLOOD RESILIENCY</b>				
Increase outreach and training for municipalities on ERAF and river corridor protections			VDEC-Rivers, RPCs	WQ Planning
Increase funding for technical assistance and incentives for municipalities to enhance flood resiliency			VEM, VDEC-Rivers	
Remove sewer lines from hazardous locations including streambeds	Whetstone Brook	Brattleboro	Municipalities, VDEC - FED	CWSRF
Buy-out properties that are highly vulnerable to flooding from willing sellers	Green River, East Branch North River, Whetstone Brook		VEM, FEMA, RPCs	FEMA, HMP, PDHMP
Assess dams for structural integrity: prioritize High and Significant Hazard dams for removal or repair			VDEC - FED	FEMA, HMP, PDHMP
Create & implement Emergency Action Plans for all High and Significant Hazard dams			RPCs, VDEC - FED	
Implement infrastructure project at Jacksonville Municipal Center	East Branch North River	Jacksonville village	RPCs, VDEC, municipality	FEMA, HMP, PDHMP

Strategies	Priority Areas	Town	Partners	Funding
<b>FLOW ALTERATION: Restore natural flows</b>				
Work with dam operators to mitigate flow variations and work toward run-of-river management	Connecticut River, Deerfield River		Great River Hydro	
<b>SURFACE WATER PROTECTION: Restoration and Reclassification</b>				
Monitor and assess waters with no or outdated data	see Table 18		VDEC	
Work with partners to submit applications for reclassification	see Tables 3 & 4		RPCs, NRCDS, municipalities	
Evaluate waters for ORW designation	see Table 5		VDEC	
Evaluate waters for Class 1 Wetland designation	see Table 6		VDEC - Wetlands	

**Comments:**

Please submit comments in writing by January 20, 2020 to:

Marie Levesque Caduto, Watershed Coordinator  
 ANR / Dept. of Environmental Conservation  
 100 Mineral Street, Suite 303  
 Springfield, VT 05156-3168  
 Office: (802) 289-0633 / Cell: (802) 490-6142  
[Marie.Caduto@vermont.gov](mailto:Marie.Caduto@vermont.gov)



The background features a scenic view of a river with autumn foliage in the foreground and a large brick building in the background. Three white gear icons are positioned to the right of the text.

working  
communities  
challenge

# What is the Vermont Working Communities Challenge



A **partnership** between Vermont, Federal Reserve Bank of Boston, private sector, philanthropy & communities



A 3.5-year funding competition to **strengthen Vermont's rural towns, regions and small cities**



Goal is to support **ambitious collaborative efforts** that build **strong economies and healthy communities** with focus on residents who have lower-incomes





# What Changes Economic Futures For Small Places?

1

**Foundational  
Research**



Boston Fed + Kodrzycki and Muñoz 2009

Rosenfeld 2019 Lit Review

2

**Drivers of  
Resurgence**



- ❖ *Civic Leadership And Collaboration*
- ❖ *Sustained Focus On Economic Development Goals*

3

**What Emerged?**

**working**  **cities**  
challenge

**working**  **communities**  
challenge

# The Competition – What WCC Supports

- We fund **cross-sector leadership teams** with **ambitious shared goal(s)** to advance strong economies, healthy communities (think: 10 year horizon)
- Emphasis on **collective action** to **change systems** that unlock opportunity or hold a problem in place
- Focus on improving lives of people w/ **low- and moderate incomes**
- Phase I: Small **planning grants** (\$15K) for 5 month planning phase (6 planning grants will be awarded in VT)
- Phase II: Larger multi-year **implementation grants** (\$300K each) to support at least 3 collaborative efforts in VT; merit based - chosen by independent jury

# Examples: Past Working City Winners



## Lawrence

### 10 year result

Increase parent income by **15 percent** in the Lawrence Public School system **over a 10 year period;**

Partners: Lawrence CommunityWorks, Lawrence Public Schools, City of Lawrence, Lawrence Partnership, Greater Lawrence Family Health, Merrimack Valley Career Center, Northern Essex Community College & more



## Fitchburg

### 10 year result

Transform the **North of Main neighborhood** into a place where residents choose to live, work, and invest over the next 10 years.

Partners: Montachusett Opportunity Council, City of Fitchburg, Fitchburg State University, NuVue Communities, Enterprise Bank, Fitchburg Public Schools & more

# What Makes WCC Different

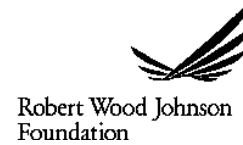
- Flexible to local priority, vision
- Multi-year, major funds focused on:
  - systems change
  - community engagement
- Funding *and support* for collaborative teams (not one organization)
- Competition spurs urgency, big ideas
- Data and learning orientation
- Partnership with other states, national intermediaries, & national philanthropy
- Vermont-led Steering Committee guides design & implementation + stability and rigor of Fed



# Leadership and Partners

## Statewide Steering Committee

Becca Balint	Vermont State Senate
Ben Doyle	USDA Rural Development
Beth Rusnock	National Life Group/National Life Group Foundation
Betsy Bishop	Vermont Chamber of Commerce
Ellen McCulloch-Lovell	EML Consulting
Emma Marvin	Butternut Mountain Farm
Hal Colston	Vermont State House of Representatives
Joan Straussman Brandon	Neighborworks America
Katrina Badger	Robert Wood Johnson Foundation
Rebecca Foster	Vermont Energy Investment Corporation
Lola Adedokun	Doris Duke Charitable Foundation
Molly Lambert	Lambert Consulting and Mediation
Nicole Grant	Avangrid/Avangrid Foundation
Sarah Waring	Vermont Community Foundation
Steve Patterson	Northeastern Vermont Development Association
Ted Brady	Vermont Agency of Commerce and Community Development
Tom Donahue	BROC Community Action
Gary Halloway + Tim Tierney	Vermont Agency of Commerce and Community Development



# Fed Role with Vermont



- Delivers management, staffing, and technical assistance
- Contributes in-kind costs to network meetings, Steering Committee, events
- Provides stability to initiative and rigor to process
- Does not select winners, maintains objectivity



# The Competition – Core Principles



Team of leaders from private, public, nonprofit and community work toward an **ambitious shared goal** in rural Vermont



Engagement of **community residents** in setting direction and decision-making



Economic inclusion, racial equity, and **diversity** across age, gender and sexual orientation as important part of shared goal



**System solutions**, not just programs, to achieve team's shared goal



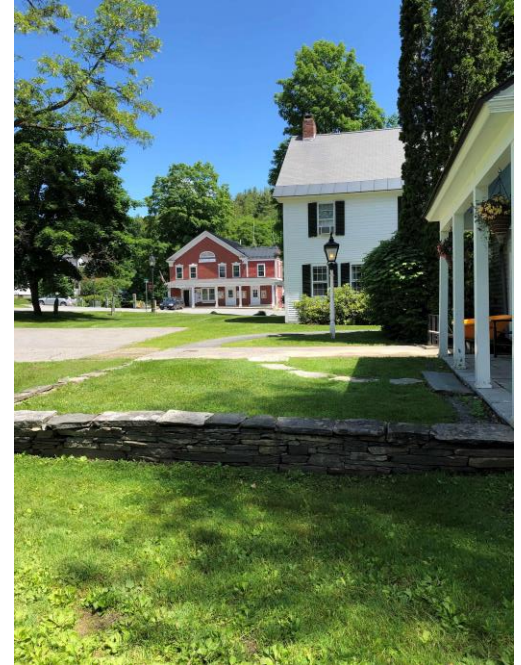
**Learning** and **adaptation** through research, data, and peer exchange



**Connections to ideas, people, and markets** within and across local economies and communities

# The Competition – Who is Eligible

- Cross-sector **leadership teams** that represent rural towns, regions and smaller cities.
- **Every town in Vermont** can be part of an application.
- Every team's application must include at least one **priority community**.
- Every application must represent a region, city, or group of towns that reaches at **least 6,000 people**.





# The Competition – Priority Communities

- (1) meet conditions of high economic need\*
- (2) provide a likely opportunity for greater systems change\* that benefit residents with lower incomes

Each of these priority communities has a total population above 6,000 and can submit an application independently or as part of multi-town or regional application

**Barre City**

**Bennington**

**Brattleboro**

**Middlebury**

**Rutland City**

**Springfield**

**St. Albans City**

**St. Johnsbury**

**Winooski**

Each of these priority communities has a total population below 6,000 and therefore must partner with other communities in their market/area/region to reach a total population of at least 6,000 people.

**Barton**

**Bradford**

**Castleton**

**Enosburgh**

**Fair Haven**

**Hinesburg**

**Johnson**

**Lyndon**

**Morristown**

**Newport City**

**Pittsford**

**Poultney**

**Putney**

**Randolph**

**Rockingham**

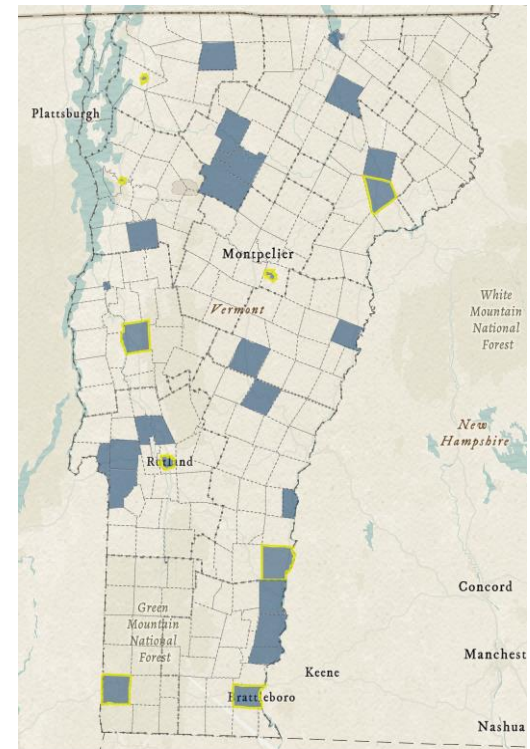
**Royalton**

**Stowe**

**Vergennes**

**Westminster**

**Windsor**



# What We Have Learned

- Requirement of one application per community region can be challenging, but can lead to new partnerships + spark creative ideas
- Successful teams had:
  - Positive, forward-thinking vision shared by cross-sector team, including input and involvement of residents
  - Long-term goals that were ambitious enough that no partner could achieve alone
  - A clear focus on low-income residents and communities of color
  - Entrepreneurial spirit and enthusiasm for learning
- Pay to hire 'dedicated staffing' key to guide the work - required!
- WCC is not meant to replace or compete with an existing collaborative effort in town, but rather to deepen and broaden this work (where it exists)

# What We Have Learned

- Focus on systems change (vs. running a program) can be challenging, but smaller communities have key advantages. (Systems Change: enduring changes to policies, procedures, resource flows, and decision-making)
- Try lots of different things, run pilots, learn about what works and doesn't. Strong teams can assess and change course. Working Communities welcomes flexibility.
- Having a partner on your team with experience and capacity to do sustained community engagement can be very helpful
- It is important that city teams carefully consider racial equity and diversity as part of a broader public participation strategy and overall effort – MORE than engagement:
  - how and who is involved in selecting and defining the community's challenge to address
  - how to inform, consult, involve, collaborate and empower residents and diverse constituencies in a sustained, meaningful way over time

# Application Process & Criteria

- Can build on existing initiatives or strengthen new ones
- Teams select their own vision and related 10-year goal (which can evolve and change during planning)
- Emphasis on 6 core principles
- Must include a priority community and benefit residents with low-incomes
- Two Phases
  - 1) Planning Phase: Grants for 6 community teams up to \$15K, 5 month planning period, includes 3 convenings to learn more about core principles
  - 2) 3-year Implementation Phase: Grants for 3 community teams up to \$300K with ongoing support, teams must win Planning Grant to apply for Implementation Grant

# Planning Phase Work Sessions

- 3 work sessions over 5 months to support teams develop competitive initiatives
- All session work will tie directly to Implementation Grant application requirements
- Allow time for teams to work independently at each session
- Support teams understand CORE PRINCIPLES of WCC + how to integrate into team initiatives
- Learning opportunities from content experts from VT (and beyond)



# Timeline

October 1-15, 2019

Regional Information Sessions

November 1, 2019

Letter of Interest Due

December 13, 2019

Planning Grant Application Due

January 31, 2019

Planning Grant Awards Announced

February – June 2020

Planning Phase

Week of Feb 24/Mar9

Meeting 1

Week of Apr 13

Meeting 2

Week of May 18

Meeting 3

June 15, 2020

Implementation Grant Application Due

August/September 2020

Implementation Grant Awards Announced

September 2020 - September 2023

Implementation Phase

# Planning for Success

Leaders are encouraged to review the Working Communities website

Key starter questions to consider as you begin:

1. What are key long term opportunities or needs for your community that this resource could help address?
2. How will you identify and involve other public, private and nonprofit partners in your community interested in applying?
3. Are there existing efforts already going on that you should engage?
4. What is your plan for ensuring ongoing resident engagement that reflects the diversity of your area? (See WCC Principle)
5. What goal makes the most sense for your community and its diverse residents (and what process will you use to determine it)?

# Start Up Advice from Past Winners

- “Get as many community partners as possible around the table early, even if it isn’t apparent how they will fit. That helps surface priorities faster.”
- “Identify a ‘lead’ for the initial phase who understands how to facilitate, not necessarily an org that might take the lead later. Good community facilitation is the most important skill in the beginning.”
- “Accept that partners may come and go, there may be no permanent partners only permanent issues. Let the issues bring your partners together – and those that want to make systemic change.”



Your Questions?

# More Information

Go to website

<https://www.bostonfed.org/workingcities/vermont/index.htm>

Stephen Michon

[stephen.michon@bos.frb.org](mailto:stephen.michon@bos.frb.org)

Thank  
You  
Partners!

