

Water and Municipal Asset Management



<http://cleanwater.vermont.gov/>

We're all in!

Vermont Clean Water Act 2015

- Agriculture
- Roads (Paved & unpaved, State & municipal)
- Developed Land
- Natural Resources (Forests & Streams)
- Municipal Wastewater Treatment Facilities
- Municipal Separate Storm and Sewer Systems (MS4) Permits

Transportation Sector Timeline of Deliverables

Fall 2015 &
Winter 2016

Outreach to municipalities and regional planning commissions will start

2016

Undertake stakeholder process to develop permit and standards

Winter 2016

Fall 2016 &
Winter 2017

Draft municipal roads general permit

2017

Issue TS4 permit for State Road System

December 31st 2016

Fall 2017 &
Winter 2018

Issue municipal roads general permit

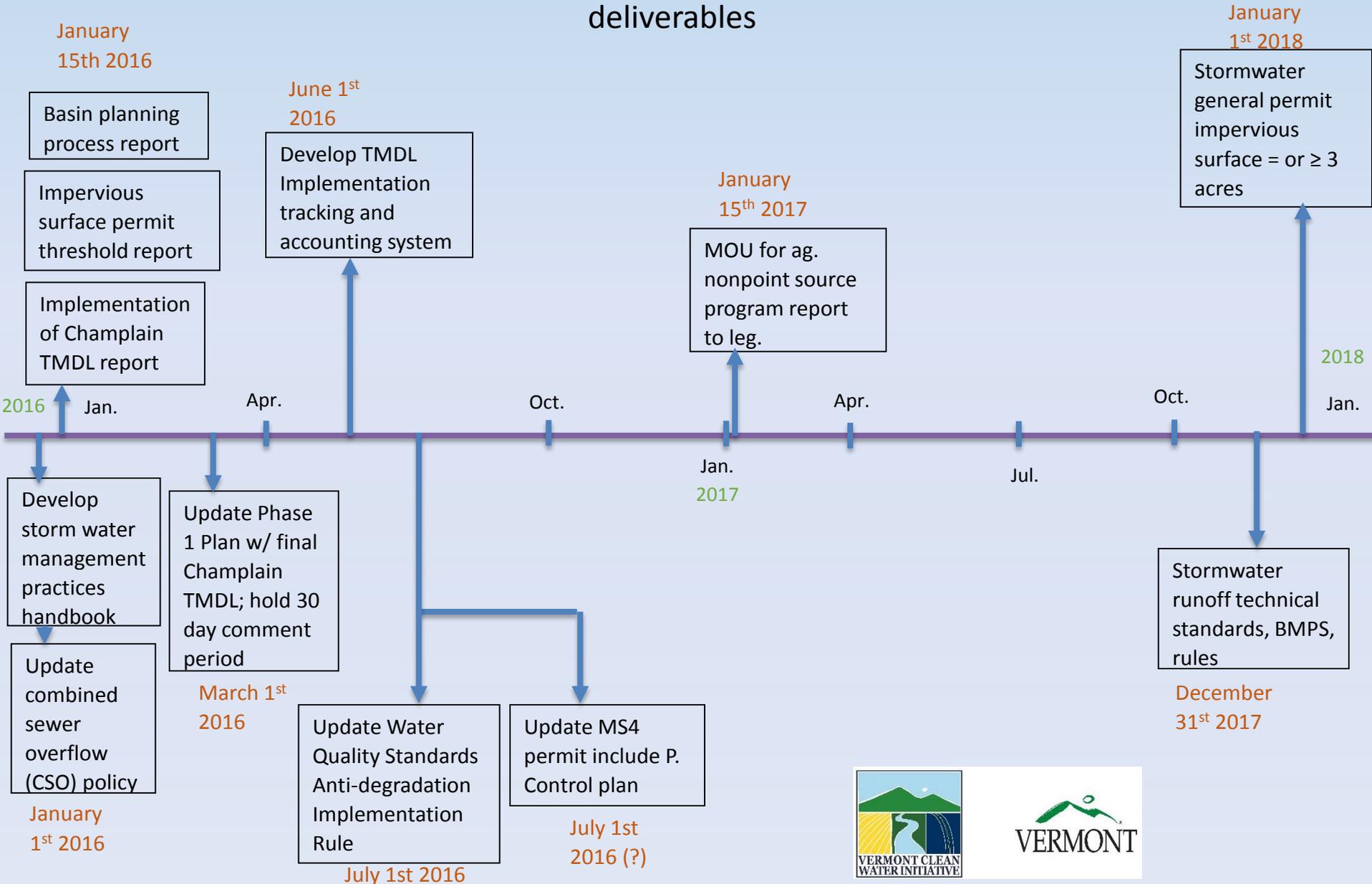
2018

2018-2021

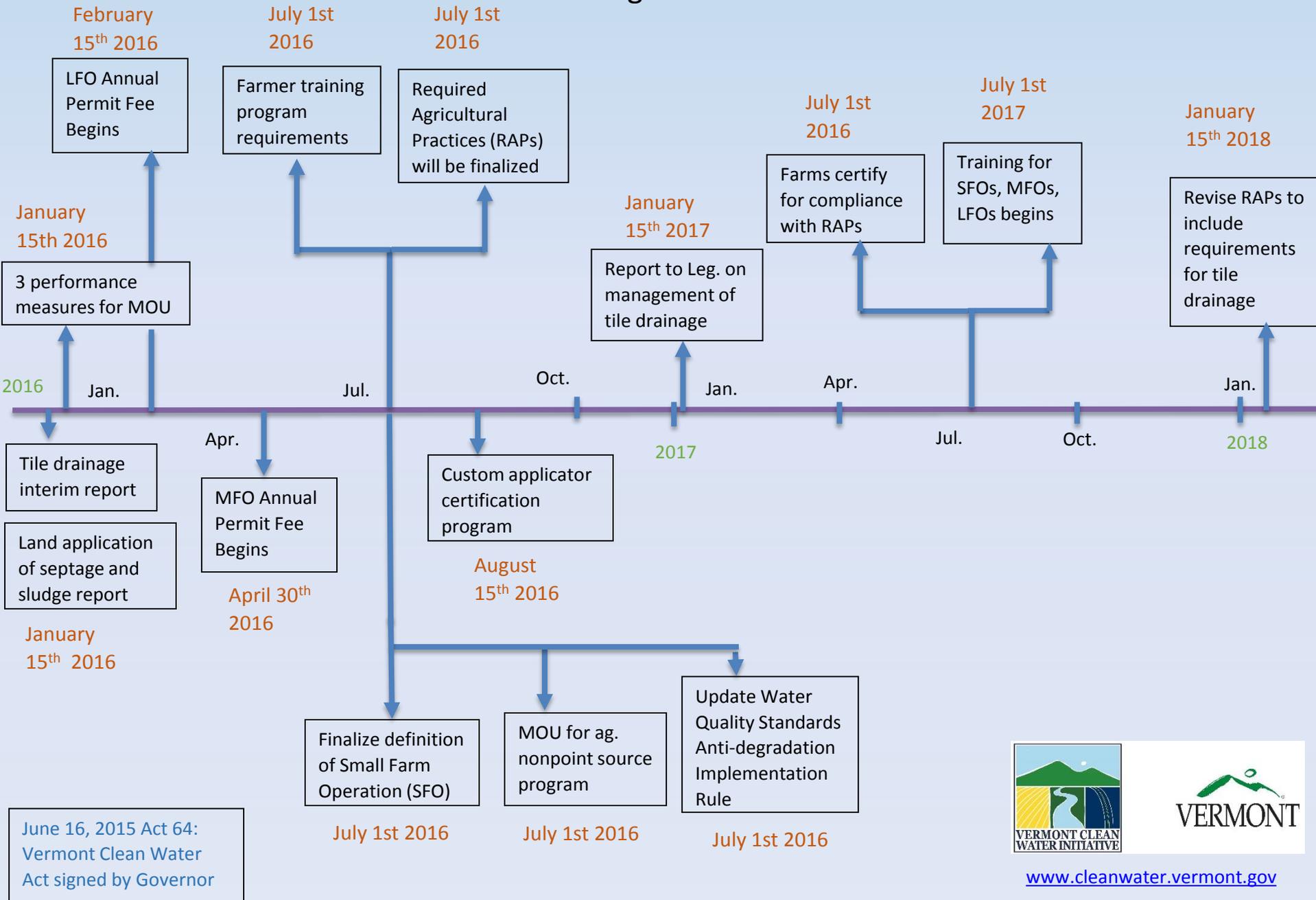
Specific permit application and implementation deadlines will vary and will be determined during the development process



Department of Environmental Conservation Timeline of deliverables



Agricultural Sector Timeline of deliverables



Municipalities & Clean Water

Roads



Developed Land
>3 acres



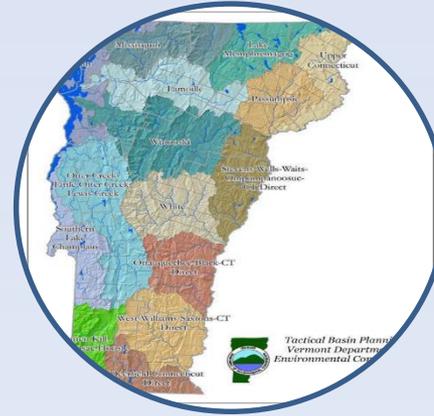
Wastewater
Treatment
Facilities



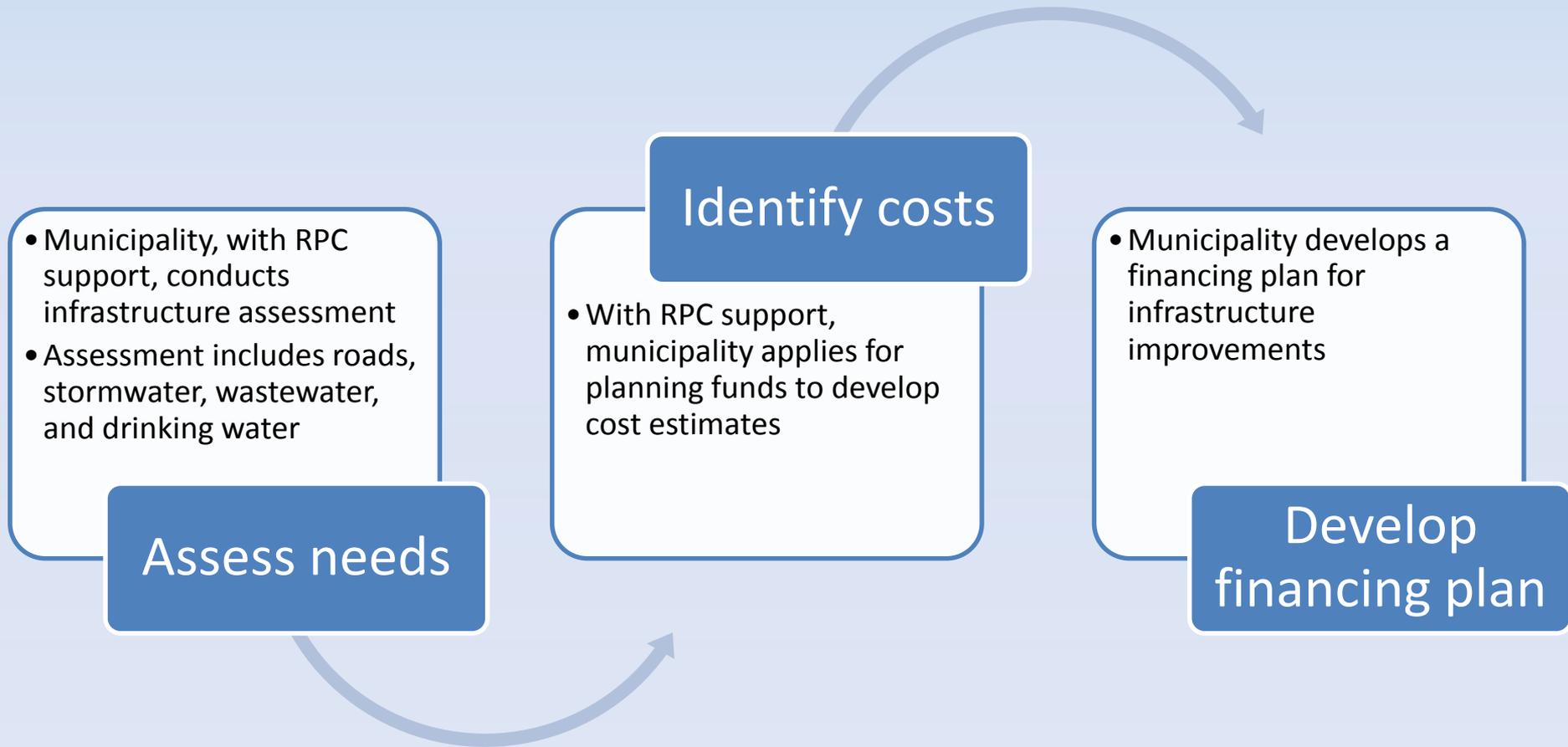
Drinking Water
Facilities



Tactical Basin
Planning



Asset Management Planning



Stormwater Management - Roads

Purpose of the Municipal Roads General Permit

- Bring “connected” road drainage systems up to basic maintenance standards

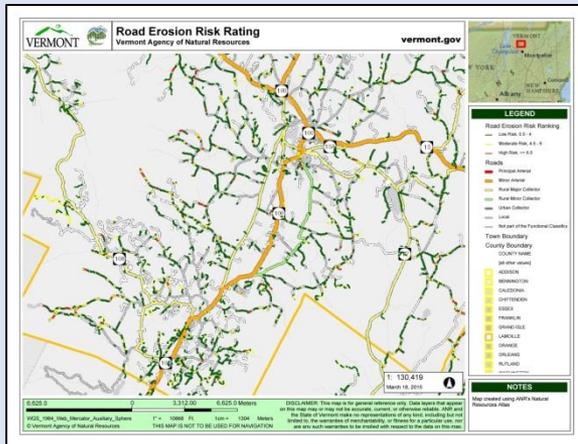


- Implement additional corrective measures necessary to reduce erosion to meet Lake Champlain Total Maximum Daily Load (TMDL) of phosphorus

Stormwater Management - Roads

- Municipalities develop Road Stormwater Management Plan

Inventory



Prioritize



Implement



Partnering with Municipalities - Educational, Technical, and Financial Assistance : The VT Better Back Roads Program



Key factors in identifying and prioritizing projects:

- The area of concern is near a stream or other surface water
- Sediment from the road is reaching surface water
- Degree of impact (function of topography, road condition, and length of ditch runs)

Support for Roads- outreach, technical assistance and funding

VTrans: Local Roads Program, Better Backroads grants, VTrans District staff

DEC: Various programs with Watershed Management Division

Regional Planning Commissions, Watershed groups, and Natural Resource Conservation Districts



Stormwater Management – VTrans

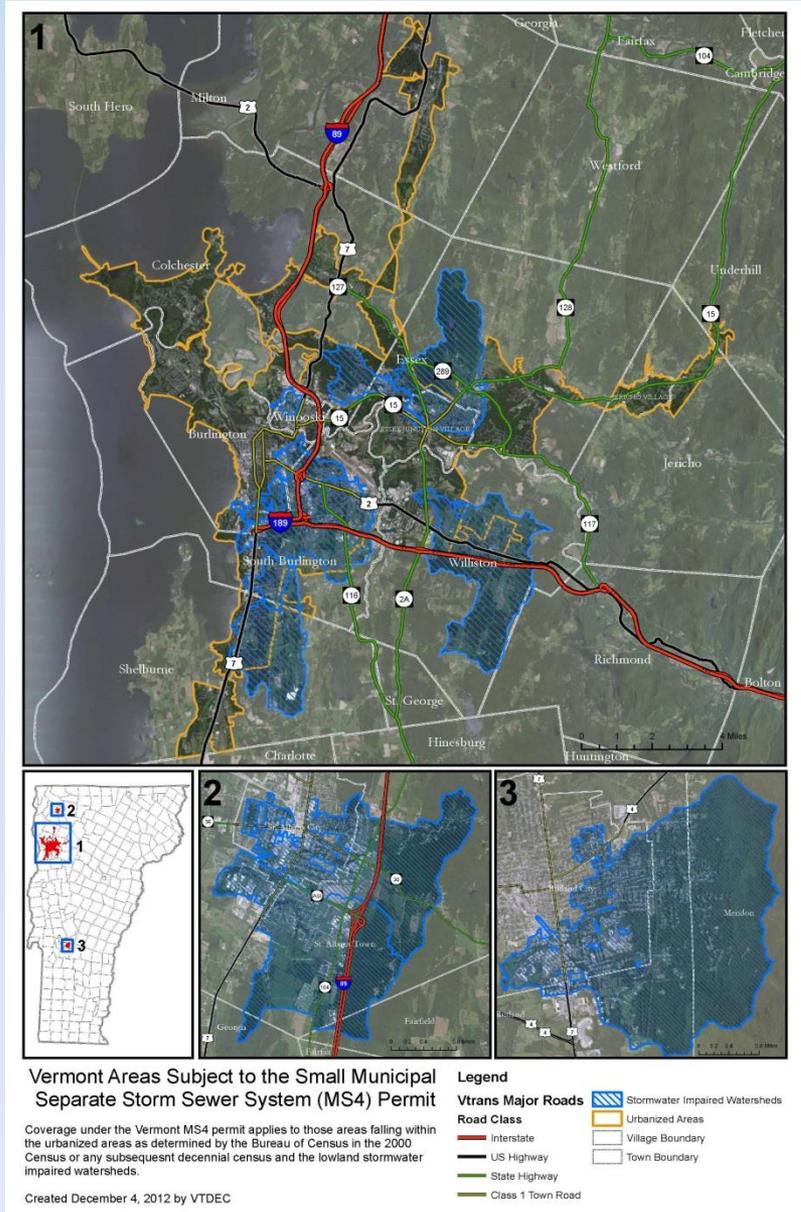
New TS4 Permit (Transportation Separate Storm Sewer System)

- Entire state transportation network and facilities
- Requires prioritized impervious surface retrofits



Stormwater Management – MS4s

- Municipal Separate Storm Sewer System (MS4)
- Only designated Cities and Towns



Stormwater Management – MS4s

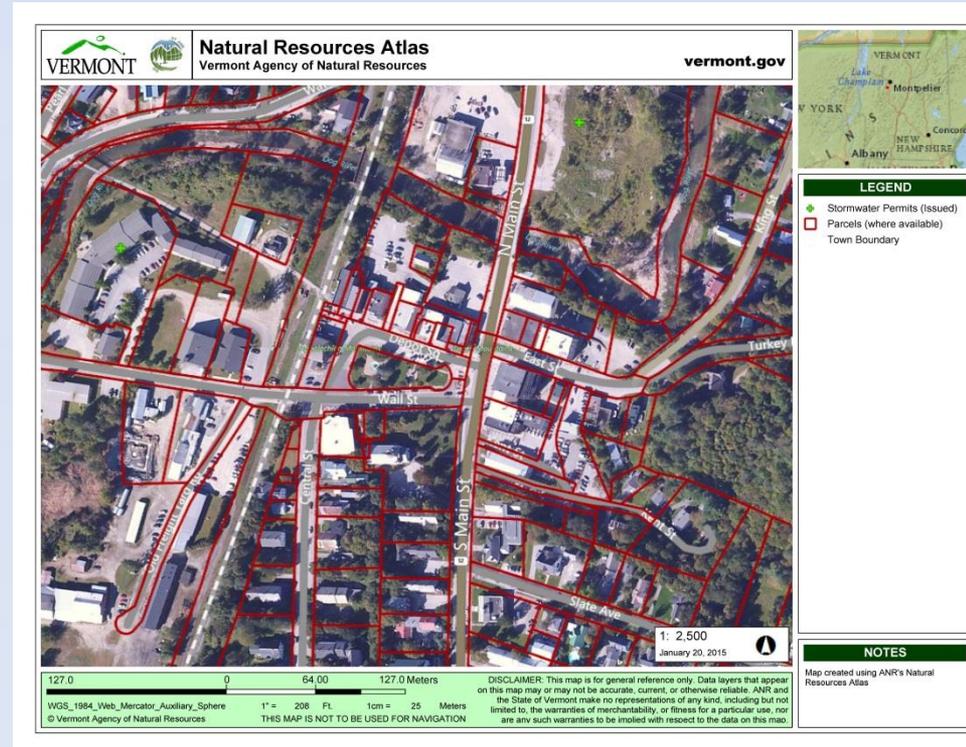
Amended MS4 permit requirements will include:

- Long-range Phosphorus Control Plans (PCPs)
- Municipal Road permit requirements
- Reissuance process for the MS4 permit will begin within 3 months of the issuance of the TMDL.
- Entire municipality will be designated (including areas outside of the **UA & SW** impaired watersheds)

Stormwater Management – Existing Development

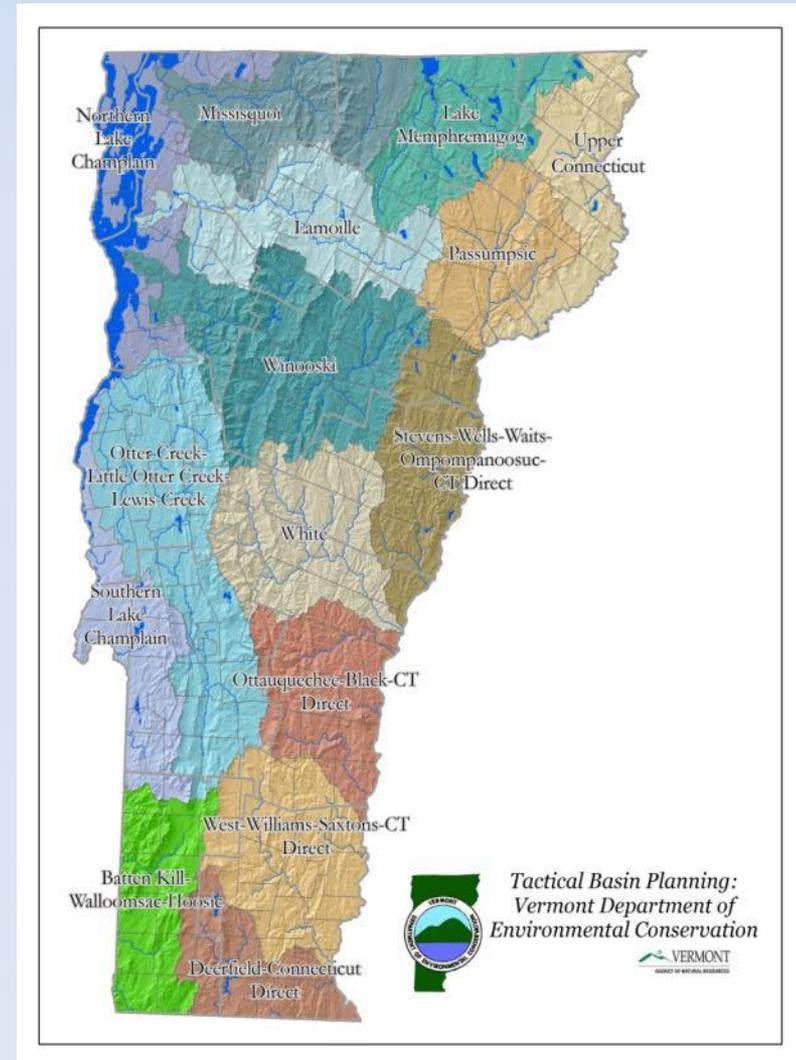
Goal: Treat stormwater runoff from existing impervious surfaces

- Current target: Parcels with ≥ 3 acres of impervious surface
- Require stormwater retrofits of existing impervious surface
- Standards developed as part of permit development process



Tactical Basin Planning - Clean Water Implementation

- 15 Planning Basins / 5 Planners
- Planner has one district in :
 - Monitoring + Assessment
 - Planning
 - Implementation
- Plans revisited every 5 years
- Plan Implementation table updated continuously

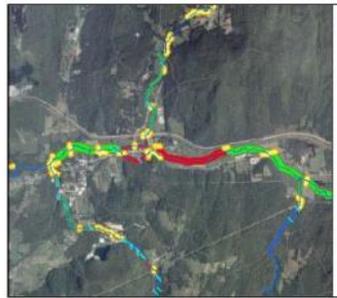


Tactical Basin Plans Integrate: Monitoring & Assessment Results

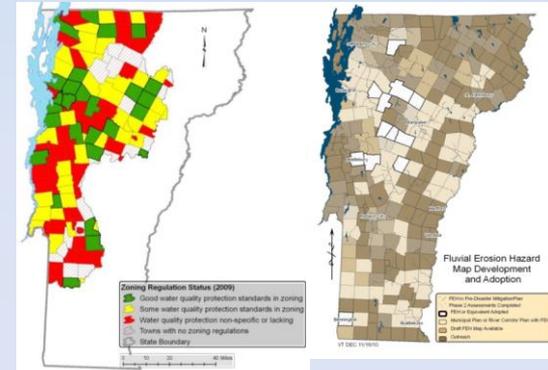
Water Quality Monitoring

Macroinvertebrate Site Summary										
Location:	Rice Brook				Location ID:	502096				
Town:	Warren				Bio Site ID:	494042000004				
Description:	Located below WWTF, and Access Road about 100m.				WBID:	VT09-20				
Date	Sample Method	Density	Richness	EPT Richness	PMA Q	BI	Oligo.	EPT / EPT + C	PPCS F	Community Assessment
10/18/1999	KN	46	16.5	10.5	60.9	1.45	6.34	0.92	21.6	
8/29/1999	KN	68	19.0	9.0	75.3	3.41	0.00	0.63	47.7	
5/28/1999	KN	40	16.0	9.0	70.0	2.29	5.00	0.91	47.5	Poor
9/27/1991	KN	47	13.0	9.0	68.8	1.16	4.26	0.95	30.4	Poor
9/18/1992	KN	107	19.0	11.0	66.9	2.14	3.74	0.92	43.7	Poor
9/10/1993	KN	72	13.0	8.0	58.4	2.90	35.84	0.88	41.8	Poor
9/9/1994	KN	98	17.0	11.0	60.8	2.56	11.22	0.97	37.9	Poor
9/7/1995	KN	141	16.0	10.0	72.0	2.10	4.97	0.81	47.3	Poor
9/1/1996	KN	116	22.0	11.0	71.1	1.55	0.86	0.81	41.1	Poor
9/8/1997	KN	120	23.0	12.0	63.8	1.45	14.17	0.87	51.4	F-Poor
10/18/1998	KN	82	18.0	9.0	56.4	3.15	3.66	0.98	33.7	Poor
10/17/1999	KN	177	25.7	14.7	67.1	2.04	3.44	0.86	51.3	Fair
9/10/2000	KN	327	22.0	11.0	50.1	0.93	0.00	0.87	41.6	Fair
9/3/2001	KN	209	27.0	17.0	73.7	2.22	1.12	0.68	55.2	Fair
9/2/2002	KN	229	13.0	11.0	49.5	0.48	0.00	0.00	36.2	Fair
9/2/2002	KN	190	20.0	11.0	61.6	2.18	1.09	0.62	57.4	Fair
9/7/2003	KN	465	27.0	12.0	55.3	1.72	0.65	0.74	44.4	Fair
9/3/2004	KN	522	36.0	18.0	61.6	1.55	9.00	0.84	48.3	Good
8/12/2005	KN	350	34.5	17.5	56.1	2.76	4.08	0.60	61.3	Good
9/5/2006	KN	236	29.0	18.0	66.0	2.87	2.97	0.65	43.5	Fair
9/4/2007	KN	374	35.0	17.0	73.1	1.87	2.14	0.77	52.0	Good
9/5/2008	KN	253	36.0	18.0	77.1	3.20	12.26	0.72	48.9	G-Fair
9/5/2008	KN	297	31.0	19.0	70.0	2.16	5.39	0.92	42.9	G-Fair
9/26/2009	KN	277	40.0	22.0	73.7	2.69	9.75	0.70	55.6	G-Fair
9/26/2009	KN	305	30.0	20.0	69.4	1.80	0.61	0.84	43.5	Good
8/27/2011	KN	305	34.0	19.0	76.1	3.09	9.32	0.66	50.1	Good

Stream Geomorphic Assmt



Town Zoning and FEH

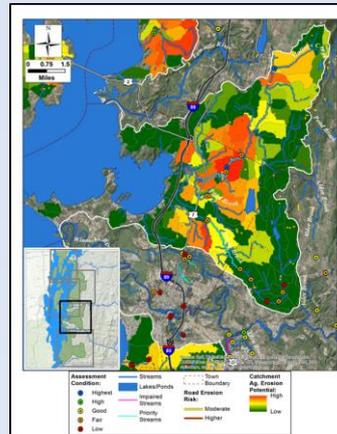


Stormwater Master Plans

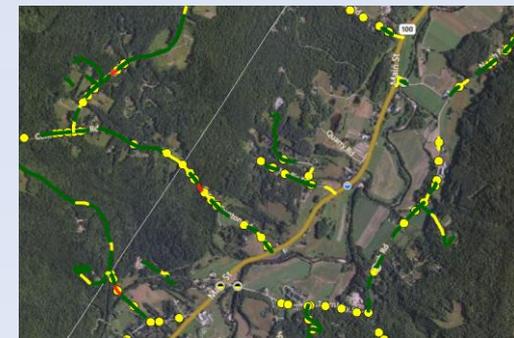


Figure 4. Subsurface drainage to a culvert at the southeast corner of the 'Fountains Door' and 'Window' business at the corner of Rt. 78 and Brooklyn St.

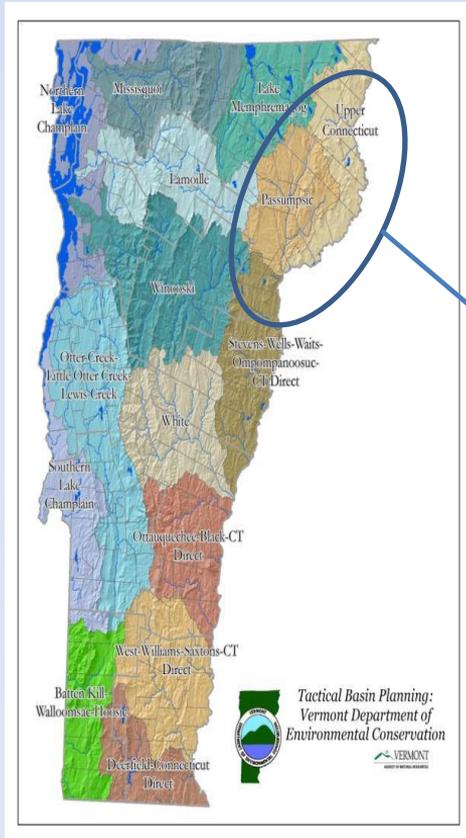
Agricultural Assessments



Road Inventory and Erosion Risk



Tactical Basin Plans and their implementation tables are the Implementation Roadmap for TMDLs and the Vermont Clean Water Initiative



Tactical Plans and Municipalities

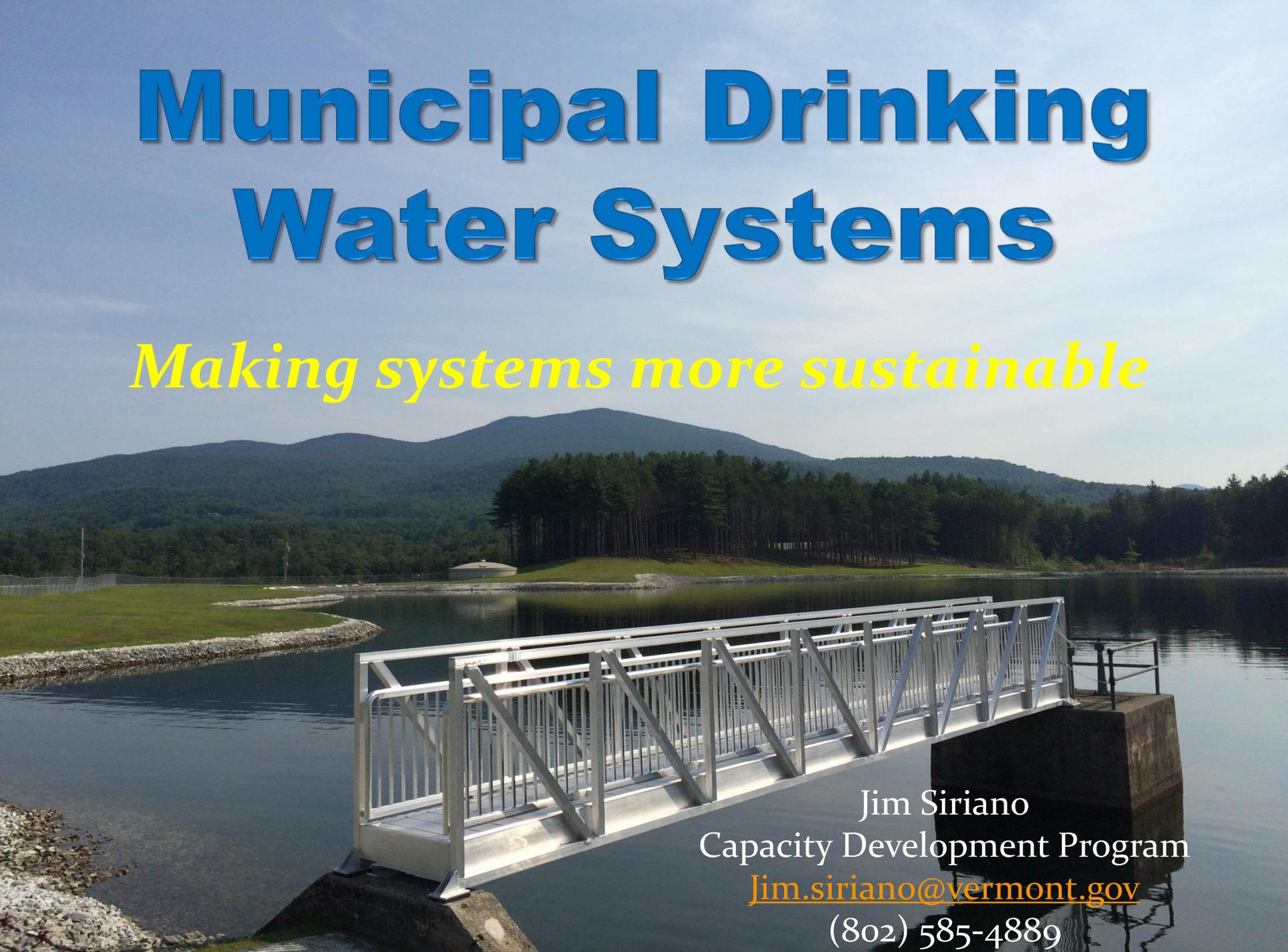
- River Corridor plan priorities- crossings and river corridor protection
- Flood Resilience and Hazard Mitigation Planning
- Stormwater Infrastructure reports and Master Plans
- Road erosion inventories and town priorities

WasteWater Treatment Facilities

- Reductions from currently permitted phosphorus loads at 25 of 59 facilities in the Lake Champlain Basin
- Discharge permits issued according to five-year tactical basin planning schedule (2016-2020).

Municipal Drinking Water Systems

Making systems more sustainable



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Services

Disease protection

Fire protection

Basic sanitation

Economic development

Quality of Life



Challenges

New regulations

Retiring staff

Emerging contaminants

Changing climate and populations

Financial Viability



Challenges - Continued

The background image shows a weathered, single-story building with a corrugated metal roof. The walls are made of concrete or plaster that is significantly peeling and cracked, indicating age and neglect. The building is surrounded by tall grass and some trees in the background, suggesting a rural or undeveloped area.

Aging & inadequate infrastructure
Resistance to rate increases
Lack of investments

More Risk of Failures



A high-angle photograph of a construction site. A worker wearing a bright green safety vest and dark work boots is standing in a trench. The trench floor is covered with grey gravel. A large, dark metal pipe runs horizontally across the bottom of the frame. In the center, a section of the pipe is held together by two red metal clamps. To the right, a yellow metal beam is visible, and a thick, dark chain hangs down. The scene is dimly lit, with some water or mud visible in the trench.

**Vermont needs to invest
\$510 million in next 20
years**

Asset Management Program

**Provides a framework to help run
and improve a water system**



Components of an Asset Management Program

A construction site is shown in the background. A large yellow crane with 'CCS' written on its boom is positioned on the left. A worker in an orange safety vest is standing on a circular concrete structure under construction, which is supported by a metal scaffolding. To the right, a red scissor lift bucket is extended upwards. The sky is bright blue with scattered white clouds, and green trees are visible in the distance.

Asset inventory and map
Level of service goals and performance measures
Risk assessments
Life-cycle strategies
Financial planning



Benefits of an Asset Management Program

Operate more efficiently

Prolong life of assets

Make more informed decisions

Justify needs and priorities

Plan and pay for future repairs and replacements

How to Get Started

A photograph of a workshop or meeting. In the foreground, several people are seated at long tables, viewed from behind. In the middle ground, a woman in a light-colored jacket is standing and speaking to a group. Other people are seated around the room, some looking towards the speaker. The room has large windows on the right side, showing an outdoor scene with trees and buildings. A whiteboard is visible on the left side of the room.

Asset Management Workshops
Asset Management Guidance and Assistance
Asset Management Planning Grants/Loans

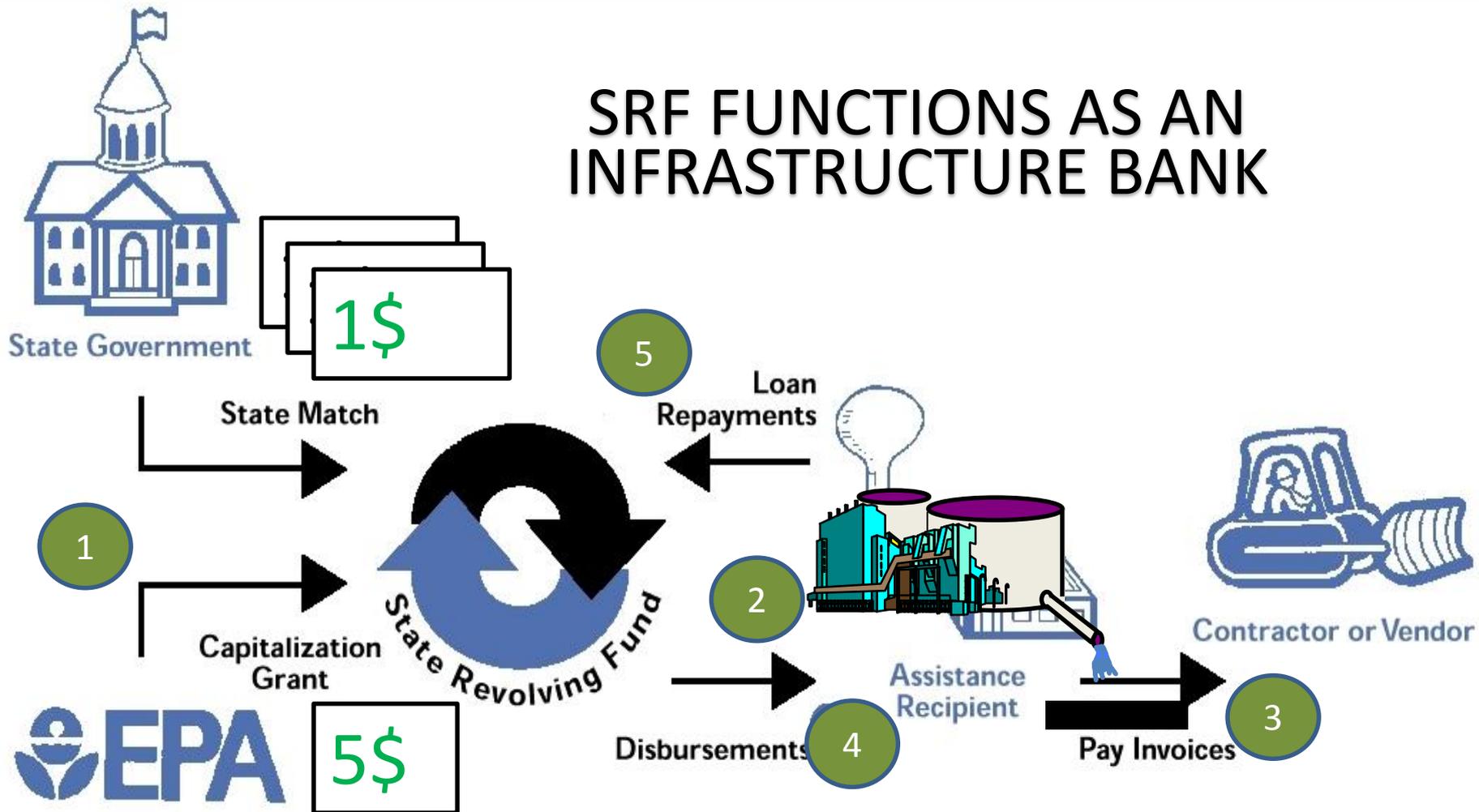
***“You cannot have a first rate community
...with third rate infrastructure”***



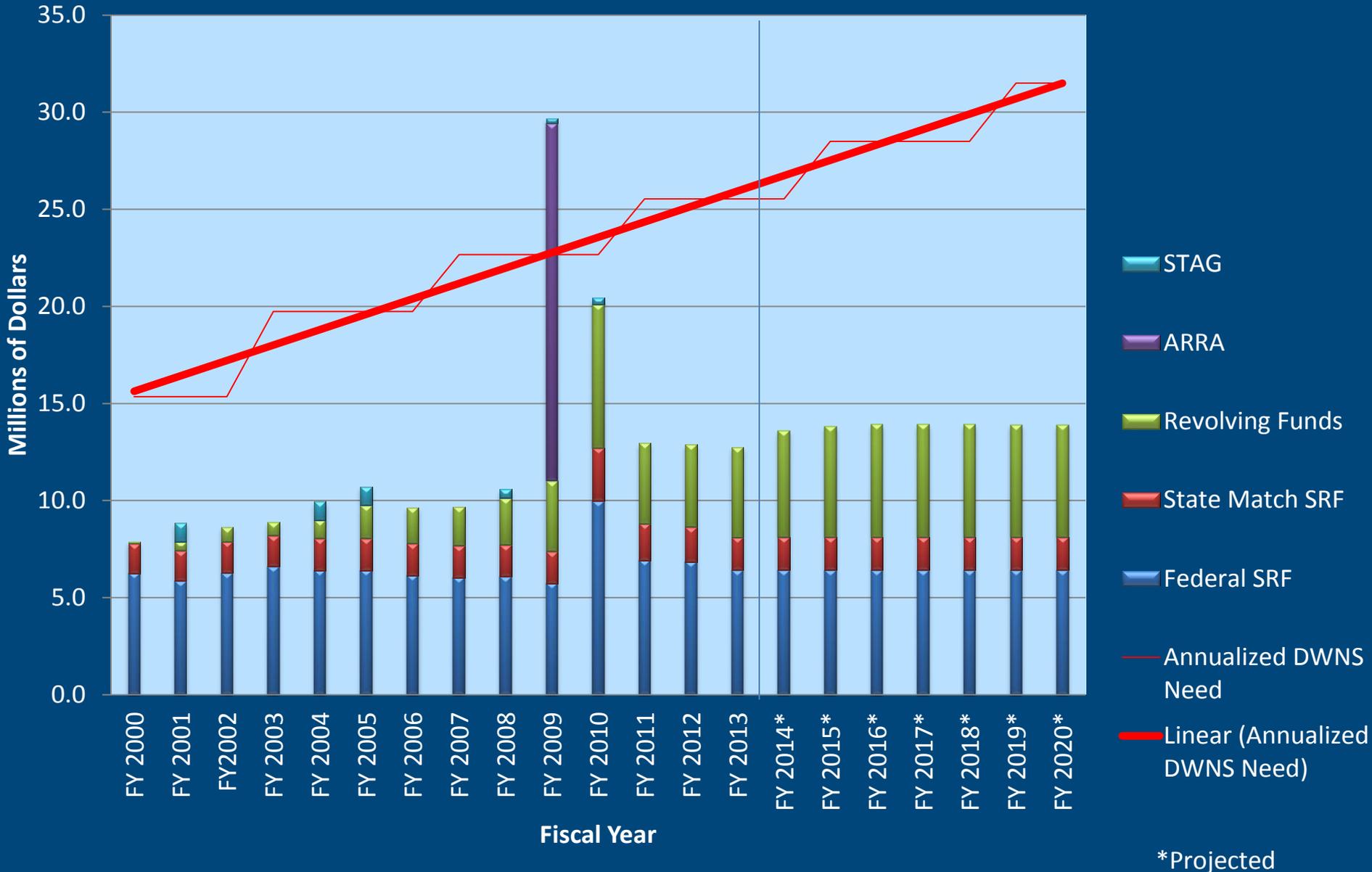
Funding for municipal water-related projects

- How the programs work
- Opportunities Available
- Getting Started
- Advantages

SRF FUNCTIONS AS AN INFRASTRUCTURE BANK



Drinking Water State Revolving Fund: Loans and Grants

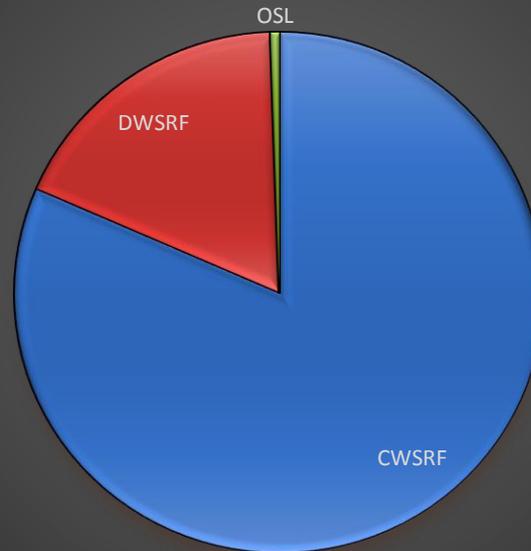


*Projected

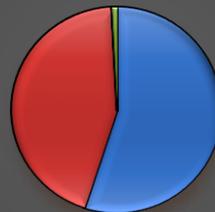


Funding is available!

\$83.4 M Available Now



\$32.7 M Available Annually



■ CWSRF ■ DWSRF ■ OSL

Types of Projects

- ◆ Wastewater treatment facilities
- ◆ Wastewater collection systems
- ◆ Wastewater/stormwater separation
- ◆ Combined sewer overflow abatement
- ◆ Pollution abatement
- ◆ Decentralized systems
- ◆ Stormwater treatment
- ◆ Stormwater conveyance
- ◆ Watershed projects
- ◆ Brownfields
- ◆ Anaerobic digesters
- ◆ Master planning
- ◆ Asset management
- ◆ Climate and flood resiliency
- ◆ Project level planning
- ◆ Final design
- ◆ And more



Funding opportunities

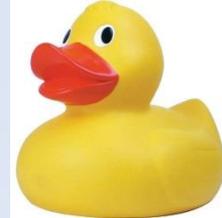
- 💧 **Clean Water State Revolving Fund**
- 💧 **Drinking Water State Revolving Fund**

- 💧 Water Planning Loans
- 💧 Water Source Protection Loans
- 💧 Vermont Only Clean Water Loans
- 💧 Vermont Only Drinking Water Loans
- 💧 On-Site Loans
- 💧 Vermont Pollution Control Grants
- 💧 Planning Advances



Steps for Problem Solving: Getting your ducks in a row...

The Steps	Description
Step 0	Definition: What's the problem?
Step I	Planning: What can we do?
Step II	Design: What should we do?
Step III	Construction: Let's do it!
Step IV	Repayment: It's not over yet...



Advantages

- 🔹 Subsidy
- 🔹 Delayed Repayment
- 🔹 Technical Assistance and Project Oversight
- 🔹 Develop projects so they are fundable by other agencies.



Thank you!

Questions?

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