

# Introduction

In Spring 2018 the Town of Rutland received a grant from the VTrans Better Roads Program to conduct a road erosion inventory, update the culvert inventory, prioritize identified projects and develop a capital improvement plan to implement the projects over a period of five years.

This CIP is a multi- year plan that lists anticipated needs for improvements and additions, as well as potential sources of financing those future needs. It prioritizes projects and creates a completion timeline while efficiently using available funds and current resources.

### **Highway Capital Reserve Fund**

Rutland Town has a capital reserve fund for the Highway Department and annually sets appropriations of \$15,000 for culverts, \$325,000 for paving and \$50,000 for equipment. The Road Commissioner's annual budget includes the annual maintenance/ highway needs as well as anticipated projects. Any remaining unspent funds carry over from the previous year.

The proposed Capital Improvement Program relies on the use of capital reserve funds to finance the program. Additional projects will be undertaken when grant funding allows.

#### **Components of Highway Department**

The Highway Department is made up of a 3-person crew, 46.09 miles of local roads (Class 1, 2 and 3), 1.34 miles of Class 4 roads, 2 bridges and 731 culverts, which are maintained by the Highway Department. In addition to year round maintenance and paving of the local roads, the Highway Department is responsible for the repair and/or replacement of street signs, roadside mowing, ditch and culvert work, maintenance of town equipment, and maintaining the town hall parking lot and landscape. They also provide support for other departments, including sewer, recreation and others as needed.

## **Capital Improvement Plan**

The Capital Improvement Plan (CIP) is a comprehensive plan for the equipment replacement, paving and road erosion and structures projects, with estimated costs and revenues. It was developed with the Road Commissioner, recognizing the need to concentrate work in areas so culvert replacements and drainage improvements are followed by paving projects. General maintenance, though part of the Highway Department's responsibility, is not included in a CIP.

The following discussion includes culvert and equipment replacement schedules, for culverts listed in poor condition, and details the projects from the road erosion

inventory segments that have the highest priority. Other segments in the vicinity were added into these projects to comprehensively address an area in need of improvements. These various types of projects were then combined into a final multiple year table, showing possible grant funding.

		TRADE IN	USEFUL	REPLACEMENT	SCHEDULED
ITEM	ACQUIRED	VALUE	LIFE	COST	REPLACEMENT
Dump Truck- 6 Wheel	2015	\$30,000	10	\$200,000	2025
Loader- 2 1/2 yard	2006	\$30,000	20	\$150,000	2026
Truck- One Ton	2015	\$15 <i>,</i> 000	5	\$50,000	2020
Sidewalk Tractor	2018	\$3 <i>,</i> 000	10	\$26,000	2028
Culvert Thawer/					
Pressure Washer	2007	\$500	20	\$10,000	2027

### Major Infrastructure Projects

#### Roads

Within the Capital Improvement Program, estimated paving projects have been identified to occur following culvert replacement projects. Generally the Town spends approximately \$325,000 annually, and additional grant funding could augment this. The goal is to rotate reconstruction based on need. Major storm damage or other circumstances may modify the schedule.

#### **Culvert Replacements/Retrofits**

Bridges, box culverts and culverts are used to transmit water during brief heavy runoff periods as well as to span year round and intermittent watercourses. Financing for the culvert replacements is anticipated to be by some combination of state grants (VTrans Structures and Better Roads grants (with a 20% match), municipal taxes, and/or use of reserve funds.

The culvert inventory yielded 731 culverts- 1 closed culvert, 5 in critical and 39 in poor condition. These are depicted on the following table and a complete inventory is in Appendix A. The costs for culvert replacements were estimated in the final CIP table using low (\$5000), medium (\$20,000) and high (\$50,000). The Capital Improvement Plan only includes culverts that would be replaced; if the poor condition was a result of simply the need for cleaning, which is a maintenance issue, these culverts are not included.

																		DIRECT		
											HEADER				OVERALL		POOR	STREAM		NEEDS
LATITUDE	LONGITUDE	ROAD	SEGMENT ID	HWY #	LOCAL ID #	EROSION	basic_info_cmnts1	TYPE	SHAPE	MATERIAL	MATERIAL	HEIGHT	WIDTH	LENGTH	CONDITION	DROP INLET	ALIGNMENT	OUTPUT	PERCHED	CLEANING
CLOSED																				
43.58580045	-73.00354991	QUARTERLINE RD	52159.1	22	2 22-18	None		Culvert	Round	Other	Unknown	12	12	25	Closed	No	No	No	No	Yes
CRITICAL																				
43.61330284	-72.94325536	DAVID RD	15509.1	96	6 96-1-A	None		Culvert	Round	Steel Corrugated		6	6	20	Critical	No	No	No	No	No
43.64127897	-72.99290414	MCKINLEY AVE	38847.1	18	3 18-1	None		Culvert	Round	Steel Corrugated	None	15	15	75	Critical	No	No	Yes	No	No
43.59823941	-72.9362271	PERKINS RD	new culvert	26	6 26-7		beyond 2nd gate-on legal trail	Culvert	Round	Steel Corrugated	Unknown	30	30	30	Critical					No
43.60180406	-73.01713495	SIMONS AVE	60873.1	43	3 43-1		filled in needs more exploration	Culvert	Round	Other	Unknown	15	15	1	Critical					No
43.60599343	-72.93980634	VICTORIA DR	69032.1	82	2 82-16			Culvert	Round	Steel Corrugated	None	8	8	23	Critical	No	No	No	No	Yes
POOR										Ŭ										
43.63528435	-72.96143655	BLUE RIDGE DR	4430.1	55	5 55-4	None		Culvert	Round	Steel Corrugated	Unknown	12	12	32	Poor	Yes	No	No	No	Yes
43.63827233	-72.96207491	BLUE RIDGE DR	4427.1	55	5 55-1	None	drains into stones	Culvert	Round	Steel Corrugated	None	4	4	75	Poor	Yes	No	No	No	Yes
43.64410011	-72.95961248	CHASANNA DR	10182.1	76	6 76-8	None	filled over	Culvert	Round	Steel Corrugated	None	6	6	78	Poor	No		No	No	Yes
43.62439931	-72.93963346	CONNOR DR	12962.1	65	5 65-4	None		Culvert	Round	Steel Corrugated	Unknown	15	15	32	Poor	No	No	No	No	No
43.66516792	-73.01058958	CRESTWAY DR	14511.1	71	1 71-4			Culvert	Round	Steel Corrugated	None	12	12	30	Poor		No	No	No	Yes
43.66554189	-73.01014445	CRESTWAY DR	14511.1	71	1 71-5			Culvert	Round	Steel Corrugated	None	12	12	30	Poor	No	No	No	No	Yes
43.61217639	-72.94322284	DAVID RD	15508.1	96	6 96-1	None		Culvert	Round	Steel Corrugated	Unknown	12	12	81	Poor	No	No	No	No	Yes
43.62185228	-72.93734368	GLEASON RD	23535.1	10	) 10-1	Low		Culvert	Round	Steel Corrugated	Unknown	12	12	36	Poor	No	No	No	No	Yes
43.63348115	-72.96509072	GLORIA AV	23640.1	77	7 77-2	None		Culvert	Round	Steel Corrugated	None	15	15	24	Poor	No	No	No	No	No
43.62851729	-72,9398394	HEATHER LN	27086.1	101	1 101-3	None		Culvert	Round	Steel Corrugated	Stone masonry	15	15	24	Poor	No	No		No	Yes
43.6284804	-72,94007018	HEATHERIN	27086.1	101	1 101-4	None		Culvert	Round	Steel Corrugated	None	12	12	24	Poor	No	No	No	No	Yes
43.62868085	-72,93921512	HEATHERIN	27087.1	101	1 101-8			Culvert	Round	Steel Corrugated	Stone masonry	12	12	20	Poor	No	No	No	No	Yes
43 62873024	-72 94133127	HEATHERIN	27085 1	101	1 101-2		inlet squished	Culvert	Round	Steel Corrugated	None	15	15	20	Poor	No	No	No	No	Yes
43 62841894	-72 93975956	HEATHERIN	270861	101	1 101-5			Culvert	Round	Steel Corrugated	None	12	12	20	Poor	No	No	No	No	Yes
43 62869202	-72 94113055	HEATHERIN	27085.1	101	1 101-1	None		Culvert	Round	Steel Corrugated	Stone masonry	15	15	32	Poor	No	No	No	No	Yes
43 64431701	-72 99552522	IESTERIN	34541.1	104	1 104-3	Low		Culvert	Round	Steel Corrugated	Stone masonry	15	15	20	Poor	No	No	No	No	Yes
43 63060443	-72 07743533		347171	60	1 60-1	None		Culvert	Round	Steel Corrugated	Unknown	12	12	48	Poor	No	No	No	No	Yes
43 63471881	-72 07070538	MCKINI FY AVE	38861.1	11	1 11-3	None		Culvert	Round	Steel Corrugated	Unknown	12	12	88	Poor	No	No	No	No	Yes
43 64595372	.72 00510118	N GROVE ST	430361		1 4-16		starts as 12 in plastic	Culvert	Round	Mixed	None	12	12	44	Poor	No	No	No	No	Yes
43 65905551	-72 99809068	N GROVE ST	43021.1		1 4-4	<u> </u>		Culvert	Round	Steel Corrugated	Unknown	12	12	35	Poor	Yes	No	No	No	Yes
43 65861421	-73 00114299	OLES DR	46844.1	52	2 52-5			Culvert	Round	Steel Corrugated	None	12	12	24	Poor	No	No	No	No	No
43 66156106	-73 00197445		472491	02	2 92-1	<u> </u>		Culvert	Round	Steel Corrugated	Unknown	12	12	40	Poor	No	No	Yes	No	No
43 6439681	-72 04437736	PARKIN	475041	(	9 9.4		outlet souished	Culvert	Round	Steel Corrugated	Unknown	12	12	25	Poor	No	No	No	No	No
43 64376362	-72 94596681	PARKIN	47588.1		9 9-8	None		Culvert	Round	Steel Corrugated	Stone masonry	15	15	28	Poor	No	No	No	No	Yes
43 6400584	-72 95366682	POST RD	51135 1		9 9-9	None	outlet OK	Culvert	Round	Steel Corrugated	None	15	15	60	Poor	No	No	Yes	No	No
43 64163506	-72 04040175	POST RD EXT	51163 1	16	5 16-1	None		Culvert	Round	Steel Corrugated	None	8	8	60	Poor	Yes	No	No	No	Yes
43 65265454	-72 97204797	PROSPECT HILL RD	51510.1	13	3 13-3	None		Culvert	Round	Plastic Corrugated	None	15	15	20	Poor	No	No	No	No	Yes
43 58142686	-73 00318057	OLIARTERI INE RD	52154.1	22	2 22-24	None	need to be ungraded to standards	Culvert	Round	Plastic Smooth	Linknown	4	10	30	Poor	No	No	No	No	Yes
43 58218714	-73 00319852	QUARTERLINE RD	52155.1	22	22.27	None		Culvert	Round	Plastic Corrugated	None	12	12	30	Poor	No	No	No	No	Yes
43 58650598	-72 05148481	STRATTON RD	64228.1	27	7 27.1	None		Culvert	Round	Steel Corrugated	Linknown	48	48	00	Poor	No	No	Yes	No	Yes
43 6652643	-72.00140401		64447 1	6/	1 64-18	NOTIC		Culvert	Round	Steel Corrugated	None	10	10	36	Poor	No	No	No	No	No
43.0032043	-72.00000000		6//56 1	6/	1 6/1-0	None		Culvert	Round	Steel Corrugated	None	10	10	30	Poor	No	No	No	No	NU
43 66/01100	.72.004000004		6///51 1	-0 -0/	1 64-5			Culvert	Round	Steel Corrugated	None	12	12	30	Poor	No	No	No	No	Yes
43.6665502/	.72 08/1/71		644/91.1	6/	1 64.8			Culvert	Round	Steel Corrugated	Inknown	12	12	JU //7	Poor	No	No	No	No	No
13 666/0251	-72.3044471		6//55.1	-0	1 6/-11			Culvert	Round	Steel Corrugated	Concrete	10	10	4/ 20	Poor	No	No	No	No	No
10.00040001 12 50280702	.73 00612692	TRAVIS TERR	67022.1	114	1 111.2	None	laid un stone inlet	Culvert	Other	Steel Corrugated	Stone maconny	12	12	20	Poor	No	No	No	No	No
13 60020717	-73 0272067		60882.1		6.13	None	inlat complately blocked	Culvert	Round	Steel Corrugated	None	10	15	20	Poor	No	No	No	No	No
43.00320/17 13.005/201	-13.0212301		6080/1	0/	1 94.4	None		Culvert	Round	Steel Corrugated	Inknown	10	15	4ر عد	Poor	No	No	No	No	No
13 6100004001	-72.04400007		60200 1	0/	1 0/-2		outlet unknown	Culvort	Pound	Stool Corrugated		10	10	10	Door	No	No	No	No	No
4J.01222/03	-12.3441304Z		03033.1	94	104-0			ouivell	Inound	OUCCI OUIUYALEU		I IZ	IZ	<del>4</del> 0		טייו	NU UII	INU	טיין	UNU

### **Municipal Road General Permit**

Act 64 of 2015 has shifted priorities for the State and Town Highway Departments. Starting in July 2018, ANR will annually issue to the town a general permit, which is intended to achieve significant reductions in stormwater-related erosion from both paved and unpaved roads. By addressing these erosion-related issues, town roads will be improved by stabilizing the road drainage systems, bringing them up to basic maintenance standards, and including additional corrective measure to reduce erosion and phosphorus runoff or other water quality restoration effort. Towns must develop a schedule and requirements for the inventory of roads, prioritization of projects, and project implementation.

This plan incorporates these priorities by comprehensively looking at the roads. In Spring 2018 an inventory of all Class 1, 2, 3 and 4 roads that have the potential to affect water quality was completed. Roads were divided into 100 meter or 328 feet segments, totaling 843 for the Town. These segments were assessed on drainage, conveyance area and culverts. Gully or rill erosion was noted.

A prioritization system was developed based on 3 factors- erosion risk, slope, and phosphorus export potential. Working with Addison County Regional Planning Commission, we adopted the comparison matrix idea but evaluated the variables in separate tables. The segment priorities found using the various tables were then combined to determine an overall segment priority. The segment priority is assigned a Very High Priority if it is identified in <u>any</u> of the tables, or averages lower priorities to arrive at a Low, Moderate or High Priority.

	Low Rd Erosion	Moderate Rd Erosion	
MRGP Status	Risk	Risk	High Rd Erosion Risk
Fully Meets	Fully Meets	Fully Meets	Fully Meets
Partially			
Meets	Low Priority	Moderate Priority	HIgh Priority
Does Not			
Meet	Moderate Priority	High Priority	Very High Priority

# Road Erosion Risk Priority

#### Road Field Slope Risk Priority

	0 - 4.9% Field		
MRGP Status	Slope	5 - 9.9% Field Slope	10%+ Field Slope
Fully Meets	Fully Meets	Fully Meets	Fully Meets
Partially			
Meets	Low Priority	Moderate Priority	High Priority
Does Not			
Meet	Moderate Priority	High Priority	Very High Priority

		Medium Rd TP	
	Low Rd TP Export	Export (25 – 60	High Rd TP Export
MRGP Status	(< 25 kg/yr)	kg/yr)	(> 60 kg/yr)
Fully Meets	Fully Meets	Fully Meets	Fully Meets
Partially			
Meets	Low Priority	Moderate Priority	High Priority
Does Not			
Meet	Moderate Priority	High Priority	Very High Priority

**Road Phosphorus Export Potential Priority** 

\*TP = Total Road Phosphorus export from catchment watershed (modeled value)

Phosphorus export values are interpolated from the Lake Champlain TMDL model for paved and unpaved roads and were developed by watershed catchment by the Vermont DEC.

## **Road Erosion Inventory Results**

All segments received a prioritization score. Rutland Town's segments comprised all categories, from fully meets the Municipal Road General Permit standards (282 segments), to very high (2 segments), high (3 segments), moderate (20 segments) and low priority (10 segments). The segments not assessed (29 segments) were those that are either not town roads or those that the town should consider reclassifying.

The first pie chart depicts all the segments that the Agency of Natural Resources identified to be inventoried and the second pie chart shows only the rating of those segments that are hydrologically connected, and excludes the segments that were determined in the field to not be hydrologically connected.





Detailed project sheets follow for the all the very high and high priority segments. Projects were defined by combining priority segments and culvert replacements/repairs when they are in the same vicinity. Cost estimates were developed by the Road Commissioner using local rates. Those that have slopes of 10% or more and do not fully meet the standards are required by the State to be addressed by 2025. This applies to one segment on Lester Lane (#34541.1) and one segment on McKinley (#38842.1).

# North Grove Street – Segment # 43015 & Culverts #4-3 & 4-4.

Rutland Town Road Erosion Inventory Map



This project involves armoring the end treatments on the inlet and outlet of Culvert #4-3 and ditching, cleaning and installing a stone apron on Culvert #4-4.

Material/Equipment	<b>Estimated Cost</b>		
Stone – 34 tons	\$255		
Dump Truck -14 cy for 8 hours	\$560		
Excavator75 cy for 8 hours	\$800		
Road Crew- 3 for 8 hours	\$640		
Total Cost	\$2,255		

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#### Lester Lane- Segment #34541.1 & Culvert #104-3

Rutland Town Road Erosion Inventory Map



This project involves reestablishing the ditch on the south side of the segment, replacing the stone with larger stone and installing a stone lined ditch on the north side. Culvert # 104-3 will be cleaned at the inlet and outlet.

Material/Equipment	<b>Estimated Cost</b>
Stone – 63 tons	\$473
Dump Truck -14 cy for 8 hours	\$560
Dump Truck – 7 cy for 8 hours	\$280
Excavator – .75 cy for 8 hours	\$800
Road Crew- 3 for 8 hours	\$640
Seeding & Mulch	\$150
Total Cost	\$2,903

# McKinley - Segments #38842.1

Rutland Town Road Erosion Inventory Map



This project involves establishing a ditch on north side of the segment and stone lining.

Material/Equipment	<b>Estimated Cost</b>
Stone for 328 feet- 105 tons	\$788
Dump Truck -14 cy for 8 hours	\$560
Dump Truck – 7 cy for 8 hours	\$280
Excavator –.75 cy for 8 hours	\$800
Road Crew- 3 for 8 hours	\$640
Total Cost	\$3,068

# Dyer Road – Segments # 17315.1 & 17317.1

Rutland Town Road Erosion Inventory Map



#### This project involves ditching along the east side both segments.

Material/Equipment	<b>Estimated Cost</b>
Dump Truck 14 cy for 12 hours	\$840
Dump Truck 7 cy for 12 hours	\$420
Excavator – .75 cy for 12 hours	\$1,200
Road Crew- 3 for 12 hours	\$960
Seeding & Mulch	\$500
Total Cost	\$ 3,920

# Simons Ave - Segments #60876.1 & #60871.1 & Culvert 43-3

### Old Falls Road – Segment #46335.1 & Culvert #44-1



This project involves cleaning and stone lining a ditch on Segment #60876.1 (Simons Ave.), fix erosion at Culvert 43-3 and armoring the outlet of Culvert #44-1.

Material/Equipment	<b>Estimated Cost</b>
Stone – 136 tons	\$1,020
Dump Truck -14 cy for 19 hours	\$1,425
Dump Truck- 8 cy for 19 hours	\$665
Excavator75 cy for 19 hours	\$1,900
Road Crew- 3 for 19 hours	\$1,520
Total Cost	\$6,530

# Cold River Road – Segments #12233.1 & # 12235.1 and Culverts #5-7 and #5-8

Rutland Town Road Erosion Inventory Map



This project involves building a headwall/ splash wall at the outlet side of Culvert #5-8 and cleaning Culvert #5-7.

Material/Equipment	<b>Estimated Cost</b>
Stone- 18 tons	\$135
Waste Blocks – 12	\$780
Dump Truck & Trailer- 14 cy for 8 hours	\$560
Dump Truck -7 cy for 8 hours	\$280
Excavator – 1 cy for 8 hours	\$800
Road Crew- 3 for 8 hours	\$640
Seeding	\$100
Total Cost	\$3,295

Town of Rutland Capital Improvement Plan for Highway Department							
Budget Year	Component	Cost (Culverts: Low=\$5k, Med=\$20k, High=\$50k)	Potential Source of Revenue/ Grant	Town Appropriation &/or Trade In			
2020							
	<b>Culverts</b> -David Rd (96- 1A), Victoria Dr (82- 16), McKinley (18-1), Simons (43-1) & Ox Yoke (92-1)	\$25,000	Better Roads	\$15,000			
	Roads- Pave 3 miles Road Erosion Segment Projects- 2 Very High Priority Segments on N. Grove and Lester (includes 3 culverts), 2 Moderate and 1 Low Priority Segments on McKinley and Cold River (includes 2			\$325,000			
	culverts)	\$11,521	Better Roads				
	MRGP Perrmit	ŚO					
2020 ROAD PROJECT TOTALS		\$36,521		\$340,000			
	<b>Equipment</b> -Replace 1 Ton Truck	\$50,000		\$15,000			
			Town Equipment Appropriation	\$50,000			
2020 EQUIPMENT TOTALS		\$50,000		\$65,000			
2021	I		l				
	Culverts- Post Rd (9-9)	\$20,000	Better Roads VTrans Class 2 Paving	\$15,000			
	Road Erosion Segment Projects -1 High and 1 Moderate Priority Segment on Dyer Road	\$3,920	Better Roads Grant	\$323,000			
2021 ROAD	IVIKGP Perrmit	\$0					
PROJECT TOTALS	Equipment-	\$23,920		\$340,000			
	Lyupinent-						
			Town Equipment Appropriation	\$50,000			
2021 EQUIPMENT TOTALS		ŚO		\$50.000			

2022		-	-	
	Culverts-		Better Roads	\$15,000
	Roads - Pave 3 miles			\$325,000
	<b>Road Erosion Segment</b>			
	Projects - 1 High & 1			
	Moderate Priority			
	Segment on Simons			
	Ave. and Old Falls			
	Roads (includes 2			
	culverts)	\$6.530		
	MRGP Perrmit	\$0		
2022 ROAD				
PROJECT				
TOTALS		\$6,530		\$340,000
	Equipment-			
			Town	
			Equipment	
			Appropriation	\$50,000
2022				
EQUIPMENT				
TOTALS		\$0		\$50,000
2023	1	<u>1</u>	-	
	Culverts-			\$15,000
			VTrans Class 2	
	Roads-Pave 3 miles		Paving	\$325,000
	Road Erosion Segment			
	Projects-		Better Roads	
	MRGP Perrmit	\$0		
2023 ROAD				
PROJECT				
TOTALS		\$0		\$340,000
	Equipment			
			Town	
			Equipment	
			Appropriation	\$50,000
2023				
EQUIPMENT				
TOTALS		\$0		\$50,000
2024				
	Culverts-	\$	Better Roads	\$15,000
	Roads - Pave 3 miles			\$325,000
	Road Erosion Segment			
	Projects		Better Roads	
	MRGP Perrmit	\$0		
2024 ROAD				
PROJECT				
TOTALS		N III		\$340,000
	Equipment			
			lown	
			Equipment	<b>A</b>
			Appropriation	\$50,000
2024				
EQUIPMENT		4-		Å=0.000
IUTALS		50		550.000

2025	-		-					
	Culverts-Ox Yoke (92-							
	1) & Park Lane (9-4)	\$10,000	Better Roads		-\$1,971			
			VTrans Class 2					
	Roads-Pave 3 miles		Paving	\$325,000	-\$1,971			
	Road Erosion Segment							
	Projects		Better Roads		-\$1,971			
	MRGP Perrmit	\$0			-\$1,971			
2025 ROAD								
PROJECT								
TOTALS				\$325,000	-\$1,971			
	<b>Equipment</b> - 6 Wheel Dump Truck							
		\$200,000		\$30,000	\$45,000			
			Town Equipment Appropriation	\$50,000	\$95,000			
2025								
EQUIPMENT								
TOTALS		\$200,000		\$80,000	\$95,000			
2026								
	Culverts-	\$		\$15,000	\$13,029			
	Roads - Pave 3 miles			\$325,000	\$13,029			
	Road Erosion Segment		VTrans					
	Projects		Structures		\$13,029			
	MRGP Perrmit	\$0			\$13,029			
2026 ROAD PROJECT TOTALS				\$340,000	\$13,029			
	Equipment- Loader	\$150,000		\$30,000	-\$25,000			
			Town Equipment Appropriation	\$50,000	\$25,000			
2026			·					
EQUIPMENT TOTALS		\$150,000		\$80,000	\$25,000			