



FY17 Vermont Better Roads Grant Application

Please complete this page ONCE and return with your Grant Category Application(s)

Town/Organization: WESTFIELD Contact Person(s): ERIC KENNISON

Address: 38 SCHOOL STREET, WESTFIELD, VT 05874

Email: townofwestfield@comcast.net Phone: (802) 744 2484

DUNS #: 34932293 Fiscal Year End Month (MM): 12

Accounting System: Automated Manual Combination

Please use the suggested documentation checklist below to ensure that all of the relevant items regarding your application have been included.

- Grant application cover sheet (Only submit one)
- Grant application form (One per category/project)
- Itemized Cost estimate for labor, equipment, and materials (see enclosed Cost Estimate Worksheet). If applicable, please break down funding by source (i.e. different grant sources)
- Project Location Map (please show location of affected water)
- Sketch of proposed erosion control measures or other management practices, including distances in feet
Also show approximate location of town/other right-of-way and/or property lines
- Photo(s) of the project area
- Letters of Support (RPC, VTrans District Technical Staff, ANR Rivers and Streams Engineers, etc.)
- If Category C River/Road Conflict or Category D River/Stream Structure or Culvert, you must attach ANR/ACOE consultation



Drainage area under 1/4 sqmi which does not require a stream alterations permit. District Technical staff will review this site with Chris Brunelle to make sure ANR is okay with the scope of work.



Vermont Better Roads Grant Program Application

Please complete one application per category and/or project you are applying for. You may make copies of the application for multiple applications per category and/or multiple categories.

Please check the Category you are applying for:

- B. Correction of a Road Related Erosion Problem and/or Stormwater Mitigation Retrofit for both gravel and paved roads
- C. Correction of a Stream Bank or Slope Related Problem
- D. Structure/culvert upgrades

Town/Organization: Town of Westfield

Project Name: North Hill Rd Culvert Replacement

Road Name: North Hill Rd TH #: 1 Structure # (if applicable): 142

Road Type: Paved Uncurbed
Class 2

Watershed: Tributary to Coburn Brook & East Branch of Missisquoi River, (0.17 sqmi)

Please provide a thorough description of the problem (ex. Roadway has steep slope with no ditch which is causing roadway erosion):

The Invert of the existing culvert is completely deteriorated throughout its entire length, the culvert is hydraulically inadequate for this size drainage area, and there has also been issues in the past with beaver activity. There will also be some ditch work that needs to be done on the inlet to eliminate road bed saturation, which is prematurely aging the asphalt.

Description of Project and how you plan to complete the work (ex. Stone line 500' of ditch by reshaping ditch and stone lining, working from the top of the project down to the bottom):

This project will consist of replacing an undersized 24" culvert with a 57" x 38" x 50' polymer coated pipe arch, headwalls, and associated ditch work.

Expected Effects (+ & -) on water quality (ex. Erosion will be eliminated by placing the stone ditch):

Installing a culvert that is hydraulically adequate for this site, will aid in keeping this small stream in equilibrium, and help with any aquatic organism passage that may be present. The proper size culvert for this size drainage area will also reduce the water velocity tremendously, eliminating the erosion/scour which occurs at the outlet and inlet during peak flows.



Distance from end of project to nearest water (stream, lake, or stormwater system that outlets directly to water). 250'+

Progress to Date:

VTrans District #9 Technician has completed a hydraulic analysis, and sized a appropriate culvert. Project estimate has also been done.

Is there an emergency reason this project must be completed quickly? If yes, please explain:

No. However; any excessive stream flow could pull road bed material through the rotten pipe invert causing a road failure.

Has this project been identified through a municipal road inventory, capital budget plan, tactical basin plan, culvert inventory, or other management plan? If yes, please list which.

Yes: _____

No

Please list any professionals you may have contacted for assistance with this project (ANR River

Management Engineer, Army Corps of Engineers, VTrans District Technical staff, Basin Planner etc.):

VTrans District Technical staff has completed a hydraulic analysis for this site, and also recommended the proposed structure. This site is below 0.25 sqmi, and does not require river management engineer consultation. The town will be working directly with the District Technical staff through the completion of this project.

Is the project located in the town "Right of Way?" Yes, No, Both (if "Both" please explain further).

Yes

Will the town road crew complete this work? Yes, No, Some (if "some" please explain further).

The town road crew will complete this work, with the exception of the asphalt replacement.



Describe how the grant funds will be spent and/or attach a project budget:
See attached itemized estimate

How do you plan to meet the required 20% match on this grant?:
"In-Kind" services by Town Road Crew

Requested Grant Amount (\$20,000 max Category B, \$40,000 max Categories C & D): \$ 40,000.00
Estimated Total Project Cost (including 20% local match): \$ 41,546.00
Estimated Completion Date: 10/01/2016

REQUIRED ATTACHMENTS:

- Itemized Cost Estimate (labor, equipment, materials)
(For assistance, call Better Backroads at 802-828-4585)
- Project Location Map
(Please show location of affected water; 1:12,000 USGS map, if possible)
- Sketch of proposed erosion control measures, including:
 - Distances (ft.)
 - Estimate of waste & borrow quantities
 - Approx. location of town/other right-of-way and/or property lines
- Photo(s) of the project area.
- Agreement for Entry and/or Deed of Easement (if project is outside Town ROW).
- If project involves stream or river/road conflict, include documentation of consultation with a River Management Engineer.
- Other appropriate supporting documents.

By signing this application I certify that all the information provided is accurate to the best of my knowledge. We will comply with all the requirements of the grant including making our books available for audit if required.

SIGNATURE OF APPLICANT: (Must be Town Administrator/Manager or Select Board Chair)

Name: Yves Daigle Title: CHAIR SELECTBOARD

Cost Estimate Worksheet

Town and Road Name: North Hill Rd, Westfield

Project Name: N. Hill Rd Culvert Replacement

Labor	Rate	# Hours	Total (Rate x Hours)
Laborer	\$27/hr	80 hrs	\$2,160
Laborer	\$27/hr	80 hrs	\$2,160
Labor Total			\$4,320

Equipment	Rate	# Hours	Total (Rate x Hours)
Excavator	\$98/hr	80 hrs	\$7,840
Trucking	\$75/hr	40 hrs	\$3,000
Large Compactor (2 day Rental)	\$350/day	2 Days	\$700
Dozer	\$75/hr	10 hrs	\$750
Equipment Total			\$12,290

Materials	Rate	Amount	Total (Rate x Amount)
Granular Backfill For Structures	\$5/yd	60 yds	\$300
Gravel Subbase	\$5/yd	80 yds	\$400
Crusher Run Gravel	\$16/yd	40 yds	\$640
Clean Crushed Drainage Stone	\$16/yd	20 yds	\$320
Gabian Stone	\$16/yd	80 yds	\$1280
57" x 38" Poly Coated Pipe Arch	LS	1	\$6,000
Concrete	LS	1	\$6,000
Asphalt	LS	1	\$5,000
Steel Beam Guardrail	\$16.8/LF	120	\$2,016
G1-D Anchor for Steel Beam Guardrail	\$620/each	4	\$2,480
Materials Total			\$24,436

Miscellaneous	Rate	Amount	Total (Rate x Hours)
Erosion Control & Dewatering	LS	1	\$500
Miscellaneous Total			\$500

Grand Total \$41,546

Match \$8,309.20



State of Vermont
Highway Division
Maintenance & Operations Bureau
District 9
4611 US Route 5
Newport, VT 05855
vtrans.vermont.gov

Agency of Transportation

[phone] 802-334-7934
[fax] 802-334-3337
[ttd] 800-253-0191

April 13, 2016

Letter of Recommendation

To Whom It May Concern,

The Town of Westfield has expressed concern over the condition of a culvert on North Hill Rd, the invert is completely deteriorated and the size is hydraulically inadequate. The Town has been in close contact with the District 9 Office and we have performed a site visit and concur with their concerns. The Town is proposing to replace the 24" culvert with a 57" x 38" pipe arch, they will also install headwalls and perform associated ditch work.

It is of our opinion, being the District Project manager and Tech team, that this project is a good fit for a Better Roads Grant. We have assisted the town to determine best practices for this site, including proper hydraulic sizing and structural support and will continue to provide support and assistance throughout the project.

Thank You.

Sincerely,

Eric Pope
District 9 Technician

INLET



OUTLET



INLET



INLET

INLET



INLET



PROPOSED STONE DITCH

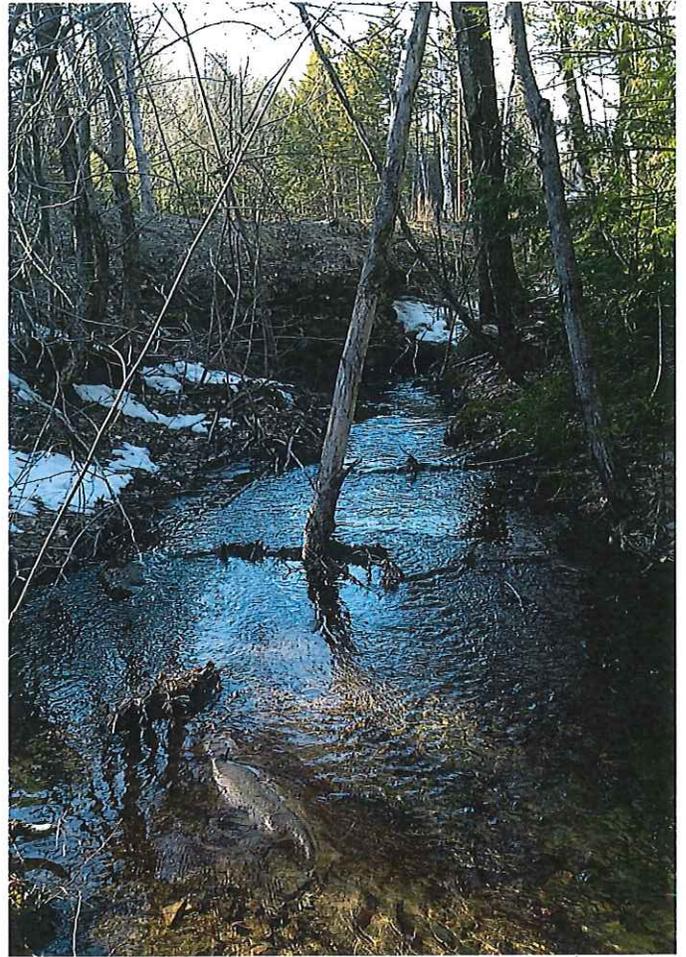


INLET

OUTLET



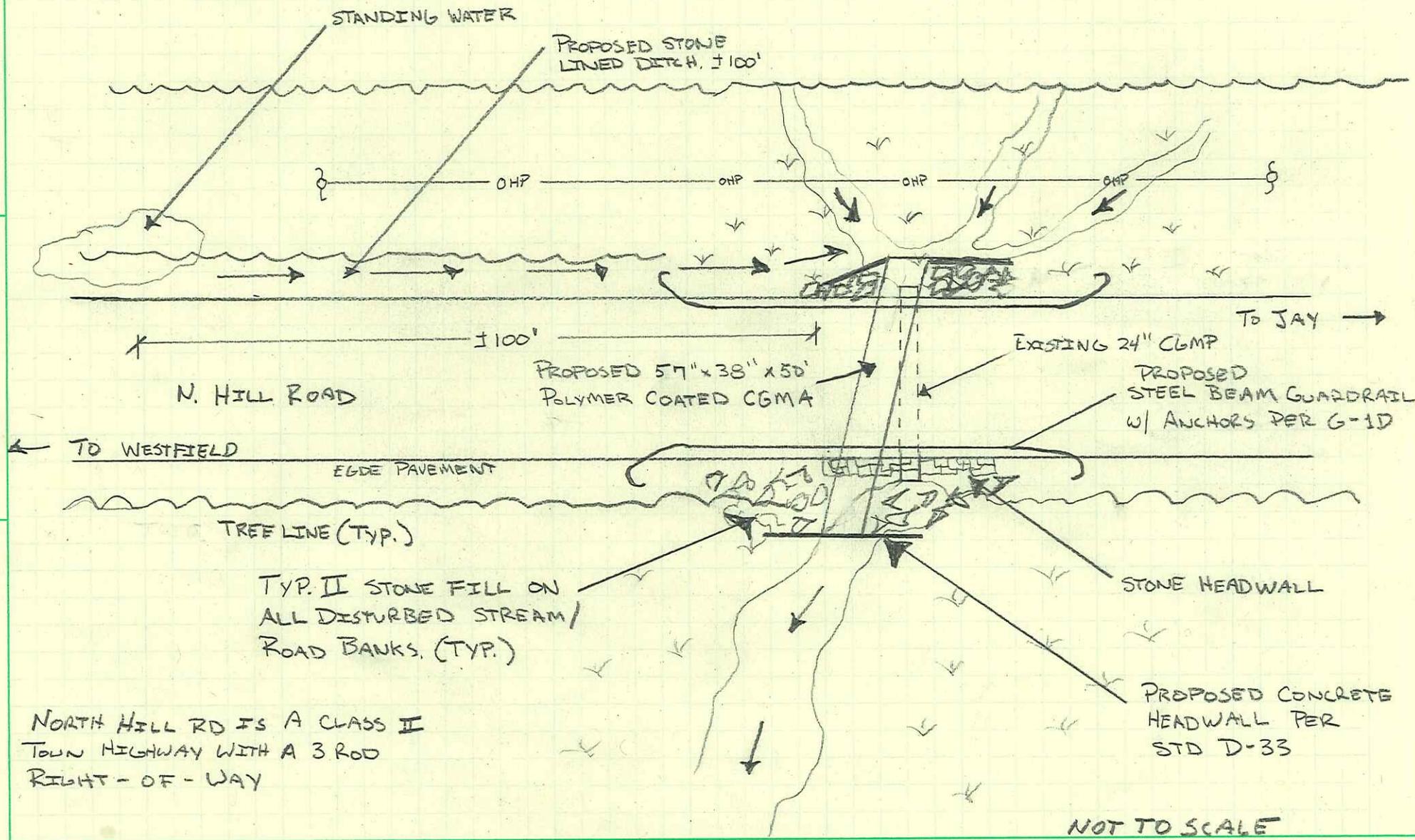
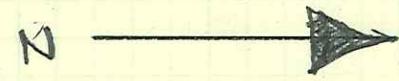
OUTLET



OUTLET

NOTE: This is a sketch only. If grant is awarded an actual survey will be done and construction Plans will be drawn. Construction will be overseen by VTrans District #9 Staff

Town of Westfield
4
2. Hill Rd Culvert Better Roads Grant



StreamStats Version 3.0

Flow Statistics Ungaged Site Report

Date: Mon Apr 4, 2016 7:48:49 AM GMT-4

Study Area: Vermont

NAD 1983 Latitude: 44.9233 (44 55 24)

NAD 1983 Longitude: -72.4323 (-72 25 57)

Drainage Area: 0.17 mi²

Peak Flows Region Grid Basin Characteristics			
100% Statewide Peak Flow (0.17 mi ²)			
Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	0.17 (below min value 0.18)	0.18	689
Percent Storage from NLCD2006 (percent)	0	0	18.5
Mean Annual Precip PRISM 1981 2010 (inches)	50.2	33.5	70.4

Warning: Some parameters are outside the suggested range. Estimates will be extrapolations with unknown errors.

Peak Flows Region Grid Statistics						
Statistic	Value	Unit	Prediction Error (percent)	Equivalent years of record	90-Percent Prediction Interval	
					Min	Max
PK2	13.7	ft ³ /s				
PK5	23.2	ft ³ /s				
PK10	31	ft ³ /s				
PK25	43	ft ³ /s				
PK50	53.7	ft ³ /s				
PK100	65.9	ft ³ /s				
PK200	79.6	ft ³ /s				
PK500	100	ft ³ /s				

<http://pubs.usgs.gov/sir/2014/5078/> (<http://pubs.usgs.gov/sir/2014/5078/>)

Olson_ S.A._ 2014_ Estimation of flood discharges at selected annual exceedance probabilities for unregulated_ rural streams in Vermont_ with a section on Vermont regional skew regression_ by Veilleux_ A.G.: U.S. Geological Survey Scientific Investigations Report 2014-5078_ 27 p. plus appendixes.

Accessibility FOIA Privacy Policies and Notices

U.S. Department of the Interior | U.S. Geological Survey

URL: http://streamstatsags.cr.usgs.gov/v3_beta/FTreport.htm

Page Contact Information: StreamStats Help

Page Last Modified: 11/24/2015 15:32:58 (Web2)

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StreamStats Version 3.0**Basin Characteristics Ungaged Site Report**

Date: Mon Apr 4, 2016 7:44:27 AM GMT-4

Study Area: Vermont

NAD 1983 Latitude: 44.9234 (44 55 24)

NAD 1983 Longitude: -72.4325 (-72 25 57)

Label	Value	Units	Definition
DRNAREA	0.17	square miles	Area that drains to a point on a stream
EL1200	64.4	percent	Percentage of basin at or above 1200 ft elevation
LC06STOR	0	percent	Percentage of water bodies and wetlands determined from the NLCD 2006
PRECPRIS10	50.2	inches	Basin average mean annual precipitation for 1981 to 2010 from PRISM
OUTLETX	505325	State plane coordinates	Basin outlet horizontal (x) location in state plane coordinates
OUTLETY	269245	State plane coordinates	Basin outlet vertical (y) location in state plane coordinates
CENTROIDX	504808.4	State plane coordinates	Basin centroid horizontal (x) location in state plane coordinates
CENTROIDY	269500.8	State plane coordinates	Basin centroid vertical (y) location in state plane units
LC11IMP	0.19	percent	Average percentage of impervious area determined from NLCD 2011 impervious dataset
LC11DEV	1.77	percent	Percentage of land-use from NLCD 2011 classes 21-24

Accessibility**FOIA****Privacy****Policies and Notices**

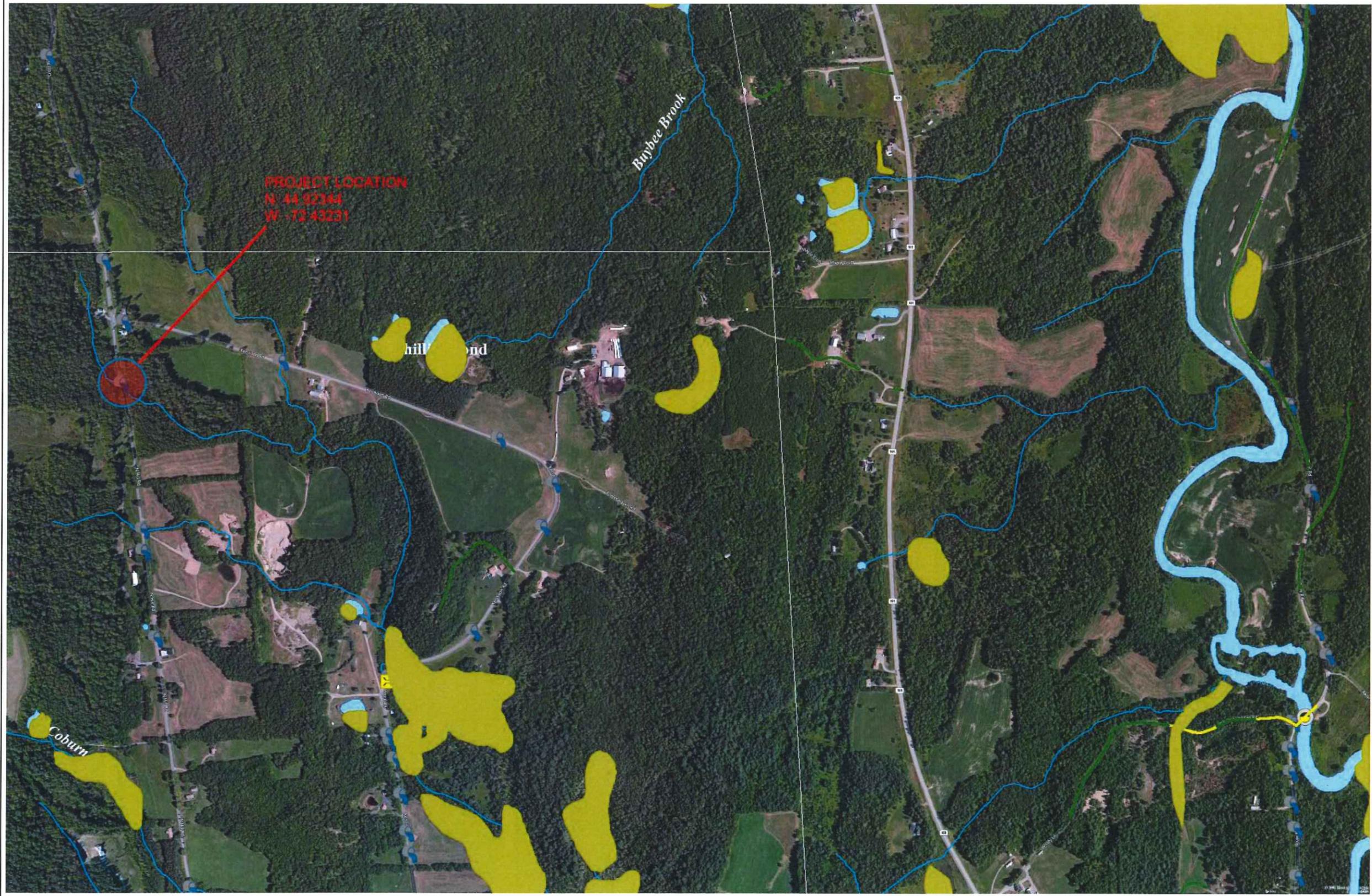
U.S. Department of the Interior | U.S. Geological Survey

URL: http://streamstatsags.cr.usgs.gov/v3_beta/BCreport.htm

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LEGEND

- Wetlands - VSWI
 - Class 1 Wetland (Red square)
 - Class 2 Wetland (Yellow square)
- Wetlands Advisory Layer (Green square)
- Road Erosion Risk Ranking
 - Low Risk, 0.5 - 4 (Thin black line)
 - Moderate Risk, 4.5 - 6 (Yellow line)
 - High Risk, >= 6.5 (Thick red line)
- VTRANS State and Town Long Structure (Yellow circle with black border)
- VTRANS State Short Structures (Blue circle with black border)
- Town Bridge (Yellow square with black border)
- Town Culvert (Blue square with black border)
- Waterbody (Light blue area)
- Stream (Blue line)
- Town Boundary (Thin black line)



WGS_1984_Web_Mercator_Auxiliary_Sphere
© Vermont Agency of Natural Resources. April 14, 2016

DISCLAIMER: This map is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. ANR and the State of Vermont make no representations of any kind, including but not limited to, the warranties of merchantability, or fitness for a particular use, nor are any such warranties to be implied with respect to the data on this map.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

1: 9,173
1in = 764 ft.
1cm = 92 meters

NOTES
Map created using ANR's Natural Resources Atlas