Clear From

United States Department of Agriculture

NRCS-PDM-20

Natural Resources Conservation Service

DAMAGE SURVEY REPORT (DSR)

Emergency Watershed Protection Program – Recovery

NRCS Entry Only	
Eligible:	Yes ✔ No ___
Approved:	Yes ✔ No ___
Funding priority number (from sect. 4)	3e
Limited Resource Area:	Yes ___ No ✔
✔ 1	Major disaster declaration
2	Emergency declaration
3	Fire management assistance declaration
4	Local declaration

Section 1A

Date of report: 12/16/2024

DSR number: 50-01-24-5042-017

Project number: 5042-017-126

Section 1B - Sponsor Information

Sponsor Name: Town of Plainfield

Address: 149 Main Street PO Box 217

City/State/Zip: Plainfield, VT 05667

Telephone Number: (802) 454-8461 Fax:

Section 1C - Site Location Information

County: 023 State 50 Congressional District 01

Latitude 44.27492° Longitude -72.432355° UTM Coordinates

Drainage name Winooski River Site name 203 Martin Meadow Road

Reach

Damage description 35 foot high streambank eroded laterally towards driveway which is only access to a building used as a meeting house.

Section 1D - Site Evaluation

All answers in this section must be YES to be eligible for EWP assistance.

Site Eligibility	YES	NO	Remarks
Damage was a result of a natural disaster?[1]	✔		
Recovery measures would be for runoff retardation or soil erosion prevention?[1]	✔		
Threat to life and/or property?[1]	✔		Building
Event caused a sudden impairment in the watershed?[1]	✔		
Imminent threat was created by this event?[2]	✔		
For structural repairs, not repaired twice within 10 years?[2]	✔		
Site Defensibility			
Economic, environmental, and social documentation adequate to warrant action? (See completed NRCS-CPA-52 and sections 3 and 4 of DSR.[3])	✔		
Proposed action technically viable? (See section 6.[3])	✔		

[1] Statutory

[2] Regulation

[3] The completed DSR and Form NRCS-CPA-52, "Environmental Evaluation Worksheet," are required to support the decisions recorded on this summary page. If additional space is needed on this or any other page in this form, add appropriate pages.

Have all the appropriate steps been taken to ensure that all segments of the affected population have been informed of the EWP program and its possible effects? YES ☑ NO ☐

Comments:

Aerial imagery taken after the July 2024 storm shows about 650 feet of this outside bend is eroding laterally which will eventually threaten two additional residences, one on Martin Meadow Road and one on Walker Lane.

Another possible ingress route for the repair would from the farm field across the river from the project.

Section 1E - Proposed Action

Describe the preferred alternative (same as NRCS CPA-52, boxes M and G)

Armor 180 feet of streambank with 15-foot-high x 5-feet-thick riprap with earth slope covered in grubbing material and erosion control blanket.

Total installation cost identified in this DSR from section 6:	$ 300,500.00
NRCS 75% cost-share:	$ 225,375.00
Sponsor 25% cost-share:	$ 75,125.00

Section 1F - NRCS State Office Review and Approval

Reviewed by: _____ Date reviewed 12/18/24

State EWP Program Manager

Approved by: _____ Date approved 12/20/24

State Conservationist

DSR NO: 50-01-24-5042-017

Section 2 - Environmental Evaluation and Special Environmental Concerns

See attached NRCS-CPA-52, Environmental Evaluation Worksheet

Section 3 - Economic Considerations

This section must be completed for each alternative considered (attach additional sheets as necessary).

	Future Damages ($)	Damage Factor (%)	Near Term Damage Reduction
Properties protected (private)			
203 Martin Meadow Road	$ 31,800.00	100	$ 31,800.00
			$ 0.00
			$ 0.00
			$ 0.00
Properties protected (public)			
			$ 0.00
			$ 0.00
			$ 0.00
			$ 0.00
Business losses			
			$ 0.00
			$ 0.00
			$ 0.00
			$ 0.00
Other			
			$ 0.00
			$ 0.00
			$ 0.00
			$ 0.00
			$ 0.00
Total near term damage reduction $			$ 31,800.00
Net benefit (total near term damage reduction minus Cost from section 6)			-$ 268,700.00

Completed by: A. Hook Date: 12/16/24

DSR NO: 50-01-24-5042-017

Section 4 - Social Consideration

This section must be completed for each alternative considered (attach additional sheets as necessary).

	YES	NO	Remarks
Has there been a loss of life as a result of the watershed impairment?	☐	☑	
Is there the potential for loss of life due to damages from the watershed impairment?	☐	☑	
Has access to a hospital or medical facility been impaired by watershed impairment?	☐	☑	
Has the community as a whole been adversely impacted by the watershed impairment (life and property ceases to operate in a normal capacity)	☑	☐	
Is there a lack or has there been a reduction of public safety due to watershed impairment?	☐	☑	

Completed by: A. Hook Date: 12/16/24

DSR NO: 50-01-24-5042-017

Section 5 - Group Representation Information

This section is completed only for the preferred alternative selected.

Group Representation	Number
American Indian/Alaska Native Female Hispanic	1
American Indian/Alaska Native Female Non-Hispanic	4
American Indian/Alaska Native Male Hispanic	1
American Indian/Alaska Native Male Non-Hispanic	5
Asian Female Hispanic	0
Asian Female Non-Hispanic	1
Asian Male Hispanic	0
Asian Male Non-Hispanic	1
Black or African American Female Hispanic	1
Black or African American Female Non-Hispanic	3
Black or African American Male Hispanic	1
Black or African American Male Non-Hispanic	4
Hawaiian Native/Pacific Islander Female Hispanic	0
Hawaiian Native/Pacific Islander Female Non-Hispanic	0
Hawaiian Native/Pacific Islander Male Hispanic	0
Hawaiian Native/Pacific Islander Male Non-Hispanic	0
White Female Hispanic	4
White Female Non-Hispanic	594
White Male Hispanic	5
White Male Non-Hispanic	601
Total Group	1,226

Census tract(s) 55825

Completed by: A. Hook Date: 12/16/24

DSR NO: 50-01-24-5042-017

Section 6 - Engineering Cost Estimate

This section must be completed for each alternative considered (attach additional sheets as necessary).

Proposed recovery measure (including mitigation)	Quantity	Units	Unit cost ($)	Amount ($)
Armor 180 feet of streambank with 15-foot-high x 5-feet-thick	1	LS	$ 240,400.00	$ 240,400.00
riprap with earth slope covered in grubbing material and erosion				$ 0.00
control blanket.				$ 0.00
				$ 0.00
				$ 0.00
				$ 0.00
				$ 0.00
				$ 0.00
				$ 0.00
				$ 0.00
				$ 0.00
				$ 0.00
				$ 0.00
				$ 0.00
				$ 0.00
				$ 0.00
				$ 0.00
				$ 0.00
Subtotal				$ 240,400.00
25%	1	LS		$ 60,100.00
Total installation cost (enter in sections 1E and 3) $				$ 300,500.00

Unit Abbreviations

AC	acre
CY	cubic yard
EA	each
HR	hour
LF	linear feet
LS	lump sum
SF	square feet
SY	square yard
TN	ton
Other (specify)	

Completed by: M. Lapointe Date: 12/18/24

DSR NO: 50-01-24-5042-017

Section 7 - NRCS EWP Funding Priority

Complete the following section to compute the funding priority for the recovery measures in this application (see instructions on page 9).

Priority Ranking Criteria	Yes	No		Ranking Number Plus Modifier
1. Is this an exigency situation?	☐	☑		
2. Is this a site where there is serious, but not immediate threat to human life?	☐	☑		
3. Is this a site where buildings, utilities, or other important infrastructure components are threatened?	☑	☐		e
4. Is this site a funding priority established by the NRCS Chief?	☐	☑		
The following are modifiers for the above criteria			**Modifier**	
a. Will the proposed action or alternatives protect or conserve federally-listed threatened and endangered species or critical habitat?				
b. Will the proposed action or alternatives protect or conserve cultural sites listed on the National Register of Historic Places?				
c. Will the proposed action or alternatives protect or conserve prime or important farmland?				
d. Will the proposed action or alternatives protect or conserve existing wetlands?				
e. Will the proposed action or alternatives maintain or improve current water quality conditions?			x	
f. Will the proposed action or alternatives protect or conserve unique habitat, including but not limited to, areas inhabited by State-listed species, fish and wildlife management area, or State identified sensitive habitats?				

Enter priority computation in section 1A, "NRCS Entry Only" box, in "Funding priority number."

Remarks:

DSR NO: 50-01-24-5042-017

Section 8 - Findings

Enter NEPA compliance finding from section Q of the NRCS-CPA-52.

3) is a federal action that has been sufficiently analyzed in an existing Agency state, regional, or national NEPA document and there are no predicted significant adverse environmental effects or extraordinary circumstances.

The DSR was reviewed with the sponsors. Yes ☐ No ☑

NRCS representative of the DSR team: Allyson Hook

Title: Supervising Engineer Date: 12/16/24

Section 9 - Attachments:

A. Location map
B. Site plan or sketches
C. NRCS-CPA-52, Environmental Evaluation Worksheet
D. Other (explain)

Instructions for Completing the NRCS-PDM-20, DSR

-	Explanation of Requested Item	Who Completes
Section 1	Enter Site Sponsor, Location, Evaluation, Selected Alternative, and Reviewed and Approval Signatures.	NRCS completes with voluntary assistance from Sponsor except for NRCS-only portion of section 1A.
1A	Enter the Date, DSR Number, and Project Number. For NRCS only enter Eligible Yes/No, Approved Yes/No, Funding Priority Number, and Limited Resource Area Yes/No.	
1B	Enter Sponsor Name, Address, Telephone, Fax	
1C	Enter site location County, State, Congressional District, Latitude, Longitude, Section, Township, Range, UTM Coordinates, Drainage name, Reach within drainage, and Damage description.	
1D	Enter Yes/No and any Remarks for the Site Evaluation information. Any No response means the site is not eligible for EWP assistance and no further information is necessary to complete the DSR. (See NEWPPM 390-502.03 and 390-502-04) Enter Yes/No regarding whether the affected public has been informed of the EWP program.	
1E	Enter the proposed treatment and the cost of installation.	NRCS only.
1F	NRCS Review and Approval.	
Section 2	Attach NRCS-CPA 52 that addresses environmental evaluation and special environmental concerns	NRCS only.
Section 3	Identify Property protected both private and public, business losses and other economic impacts considered for each alternative. Enter the dollar value of the potential future damages if no action is taken in the Future Damage (5) column. This would be the estimate of the value lost if the EWP recovery measure is not installed. Use the repair cost or damage dollar method to determine the estimate of future damages. The repair cost method uses the costs to return the impaired property, good, or services based on their original prevent condition or value. The damage dollar method uses an estimate of the future damage to value (e.g., if the structure is condemned, then enter the value of the structure). Enter the estimated amount based upon existing information or information furnished by the sponsor, contractors, or others with specific knowledge for recovery from natural disasters for each alternative considered. Often market values for properties or services can be obtained from personnel at the local county/parish tax assessment office. The DSR team needs to determine the Damage Factor (%) which is a coefficient that indicates the degree of damage reduction to a property that is attributed to the effect of the proposed EWP recovery measures. Use an appropriate estimate of how much of the damage the EWP recovery measure will avoid for the alternative being considered. If the recovery measures from a single site will prevent 100 percent of the damage use 100 percent. The Near Term Damage Reduction is the Future Damage ($) times the Damage Factor (%). Sum the Near Term Damage Reduction values to calculate the Total Near Term Damage Reduction. Enter the Net Benefit which is computed by subtracting the Cost from Section 6 from the total near term damage reduction. The	NRCS completes with voluntary assistance from Sponsor.

-	Explanation of Requested Item	Who Completes
	economic section must be completed for each alternative considered. Attach additional sheets as necessary.	
Section 4	Enter information to describe the potential social impacts and considerations for each alternative. Answer Yes or No and any remarks necessary to adequately address each question. The information may be obtained through interviews with community leaders, government officials or sponsors. Factors such as road closures, loss of water, electricity, access to emergency services are used when answering whether the community as a whole has been impaired. This information is part of the environmental evaluation (NRCS-CPA-52) but may be pertinent in section 7 regarding funding priorities. The Social Considerations section must be completed for each alternative considered. Attach additional sheets as necessary.	NRCS completes with voluntary assistance from Sponsor.
Section 5	Enter the Group Representation for the preferred alternative. Use the most recent census tract information based upon where the EWP recovery measures are located.	NRCS completes using most recent U.S. Census data.
Section 6	Enter Proposed Recovery Measure(s) including Quantity, Units, Unit Cost, and Total Amount Cost. Enter sum of all Proposed Recovery Measure Costs to calculate Total Costs. Enter Total Installation Costs in Section 1E. The Engineering Cost Estimate must be completed for each alternative considered. Attach additional sheets as necessary.	NRCS completes with voluntary assistance from Sponsor.
Section 7	This section is used to determine the Funding Priority for the preferred alternative and sequence for initiating recovery measures. Enter Yes/No for questions 1 through 4 and enter the number (exigency 1, serious threat to human life 2, etc.) in the right column, Ranking Number Plus Modifier. Complete the Modifier portion by placing the alphabetic indicator a through f in the Modifier column. Complete the Ranking Number Plus Modifier column by entering the alphabetic indictor(s) that exists within the site. The number of the site designates the priority (e.g., a site with a designation of 2 is a higher priority that a site with a designation of 3). The modifiers increase the priority for the same numeric site (e.g., a site with a designation of 1a, would be a higher priority than a site with a designation of 1, a site with a designation of 2bc would be a higher priority than a site designated as 2b). Enter the Funding Priority in Section 1A.	NRCS completes with voluntary assistance from Sponsor.
Section 8	Insert the number of the Finding that was checked in section Q of the NRCS-CPA-52. If action is required to meet NEPA requirements, state whether an EA or EIS will be prepared or adopted."	NRCS only.
Section 9	Include attachments for location map, site sketch or plan, a completed NRCS-CPA-52, Environmental Evaluation Worksheet, and other information as needed.	NRCS completes with voluntary assistance from Sponsor.

U.S. Department of Agriculture
Natural Resources Conservation Service

NRCS-CPA-52
04/2023

ENVIRONMENTAL EVALUATION WORKSHEET

A. Client Name: Town of Plainfield

B. Conservation Plan ID # (as applicable): 50 01 24 5042 017-126
Program Authority (optional): EWP

D. Client's Objective(s) (purpose):
To stabilize an actively eroding stretch of Winooski River that is threatening infrastructure along Martin Meadow Road in the Town of Plainfield.

C. Identification # (farm, tract, field #, etc. as required):
203 Martin Meadow Road, Plainfield, VT

E. Need for Action:
To address the resource concerns identified in Section F by stabilizing actively eroding streambanks and protecting infrastructure.

H. Alternatives

No Action √ if RMS ☐	*Alternative 1* √ if RMS ☐	*Alternative 2* √ if RMS ☐
Streambank will continue to erode, further threatening infrastructure.	580 (Streambank & Shoreline Protection). Rock riprap will be installed to stabilize the streambank.	

Resource Concerns

In Section "F" below, analyze, record, and address concerns identified through the Resources Inventory process. (See FOTG Section III - Resource Planning Criteria for guidance).

F. Resource Concerns and Existing/ Benchmark Conditions (Analyze and record the existing/benchmark conditions for each identified concern)	**I. Effects of Alternatives**					
	No Action		***Alternative 1***		***Alternative 2***	
	Amount, Status, Description *(Document both short and long term impacts)*	**√ if does NOT meet PC**	**Amount, Status, Description** *(Document both short and long term impacts)*	**√ if does NOT meet PC**	**Amount, Status, Description** *(Document both short and long term impacts)*	**√ if does NOT meet PC**
SOIL						
Bank erosion from streams, shorelines or water conveyance channels Banks are NOT stable and NOT protected by roots of natural vegetation, wood, or rock or a combination of materials.	Increased concerns without NRCS assistance due to further streambank erosion.	☑ NOT meet PC	Banks will be stabilized with structural measures (rock riprap), protecting against further erosion and threats to infrastructure.	☐ NOT meet PC		☐ NOT meet PC
		☐ NOT meet PC		☐ NOT meet PC		☐ NOT meet PC
		☐ NOT meet PC		☐ NOT meet PC		☐ NOT meet PC
		☐ NOT meet PC		☐ NOT meet PC		☐ NOT meet PC
WATER						
Sediment transported to surface water Excessive sediment entering the surface water from bank failure.	Sediment will continue to enter the surface water from the eroding streambank.	☑ NOT meet PC	Sediment loss from the streambank will be significantly reduced.	☐ NOT meet PC		☐ NOT meet PC
		☐ NOT meet PC		☐ NOT meet PC		☐ NOT meet PC
		☐ NOT meet PC		☐ NOT meet PC		☐ NOT meet PC

F. Resource Concerns and Existing/ Benchmark Conditions (Analyze and record the existing/benchmark conditions for each identified concern)	I. (continued)					
	No Action		*Alternative 1*		*Alternative 2*	
	Amount, Status, Description *(Document both short and long term impacts)*	**√ if does NOT meet PC**	**Amount, Status, Description** *(Document both short and long term impacts)*	**√ if does NOT meet PC**	**Amount, Status, Description** *(Document both short and long term impacts)*	**√ if does NOT meet PC**
AIR						
No resource concern identified	No Effects	☐ NOT meet PC	No Effects	☐ NOT meet PC		☐ NOT meet PC
		☐ NOT meet PC		☐ NOT meet PC		☐ NOT meet PC
PLANTS						
No resource concern identified	No Effects	☐ NOT meet PC	No Effects	☐ NOT meet PC		☐ NOT meet PC
		☐ NOT meet PC		☐ NOT meet PC		☐ NOT meet PC
		☐ NOT meet PC		☐ NOT meet PC		☐ NOT meet PC
ANIMALS						
Aquatic habitat for fish and other organisms Current level of sedimentation reduces the quality of aquatic habitat.	Excessive sediment from continued erosion of the streambank degrades aquatic habitat.	☑ NOT meet PC	Impacts to aquatic habitat due to sediment loss will be decreased with bank stabilization.	☐ NOT meet PC		☐ NOT meet PC
		☐ NOT meet PC		☐ NOT meet PC		☐ NOT meet PC
		☐ NOT meet PC		☐ NOT meet PC		☐ NOT meet PC
ENERGY						
No resource concern identified	No Effects	☐ NOT meet PC	No Effects	☐ NOT meet PC		☐ NOT meet PC
		☐ NOT meet PC		☐ NOT meet PC		☐ NOT meet PC
Human Economic and Social Considerations						
Risk Infrastructure at risk.	Increased risk with actively eroding streambank.		Decrease risk associated with stable streambank.			
Labor Town labor time.	Town crew time wil be required to repair damage.		Bank will be stabilized decreasing town labor in the future.			
Capital Town costs.	Town will have to cover cost of continued maintanence and repair		Bank will be stabilized minimizing costs of maintanence and repair.			

Special Environmental Concerns: Environmental Laws, Executive Orders, policies, etc.

In Section "G" complete and attach Environmental Procedures Guide Sheets for documentation as applicable. Items with a "●" may require a federal permit or consultation/coordination between the lead agency and another government agency. In these cases, effects may need to be determined in consultation with another agency. Planning and practice implementation may proceed for practices not involved in consultation.

G. Special Environmental Concerns (Document existing/ benchmark conditions)	J. Impacts to Special Environmental Concerns					
	No Action		***Alternative 1***		***Alternative 2***	
	Document all impacts (Attach Guide Sheets as applicable)	√ if needs further action	Document all impacts (Attach Guide Sheets as applicable)	√ if needs further action	Document all impacts (Attach Guide Sheets as applicable)	√ if needs further action
●Clean Air Act *Guide Sheet* Clean Air Act: No Nonattainment or Maintenance areas designated for non-attainment of air quality standards AND there are no Class 1 areas nearby. Source: https://www.epa.gov/outdoor-air-quality-data/interactive-map-air-quality-monitors	No Effect Not applicable	☐	No Effect Not applicable	☐		☐
●Clean Water Act / Waters of the U.S. *Guide Sheet* Clean Water Act: Surface waters in the planning area are potential Waters of the US	May Effect Clean Water Act: Without NRCS assistance, continued erosion will increase sediment in stream.	☐	May Effect Sediment in stream will be decreased as a result of stabilizing bank. Potential permitting consultation should occur with Army Corps of Engineers and State of Vermont, as applicable.	☑		☐
●Coastal Zone Management *Guide Sheet* Coastal Zone Management Areas are not in or near the planning area.	No Effect Not applicable	☐	No Effect Not applicable	☐		☐
Coral Reefs *Guide Sheet* Coral Reefs or associated water bodies are not present in or near the planning area.	No Effect Not applicable	☐	No Effect Not applicable	☐		☐
●Cultural Resources / Historic Properties *Guide Sheet* Cultural Resources or historic properties may be present in the Area of Potential Effect. See documentation in case file.	May Effect Cultural Resources may be present in the planning area. Chance for negative impacts exists with continued streambank erosion.	☐	May Effect Cultural Resources evaluation to be conducted to determine impacts of planned practices.	☑		☐
●Endangered and Threatened Species *Guide Sheet* E&T Species: Northern long-eared bat presence and habitat is statewide. Wood Turtle habitat mapped in project proximity. Based on: USFWS, VTFWS & VTDEC Datasets.	No Effect E&T Species: No Effect from client's actions without NRCS assistance.	☐	May Effect E&T Species: Practices will be implemented in accordance with the Terms and Conditions and Reasonable and Prudent Measures of the Biological Opinion from USFWS & VTFWS.	☑		☐
Environmental Justice *Guide Sheet* Environmental Justice: 15 percentile people of color and 51 percentile low income in the planning area. Source: https://ejscreen.epa.gov/mapper/	No Effect Not applicable	☐	No Effect Environmental Justice: No disproportionately high and adverse environmental or human health effect on a low-income population, minority population, or Indian Tribe will occur because no adverse environmental or human health effects are anticipated to result from planned practices.	☐		☐
●Essential Fish Habitat *Guide Sheet* Essential Fish Habitat is not present in or downstream of the planning area. Source : https://www.habitat.noaa.gov/protection/efh/efhmapper/	No Effect Not applicable.	☐	No Effect Not applicable.	☐		☐
Floodplain Management *Guide Sheet* Floodplain Mgnt: A 100-year floodplain is present in or near the planning area. Source: https://msc.fema.gov/portal/search & VT Natural Resource Atlas	No Effect Not applicable	☐	No Effect Floodplain Mgnt: No increased flood hazard or other adverse effect to the existing natural and beneficial values of the floodplain or lands adjacent or downstream is likely.	☐		☐

Invasive Species *Guide Sheet* Invasive species are not noted in the planning area.	No Effect Not applicable	☐	No Effect No invasive species in area of potential impact - disturbance sites should be monitored	☐		☐
●Migratory Birds/Bald and Golden Eagle Protection Act *Guide Sheet* Migratory birds, bald or golden eagles habitat is not present in or near the planning area. Source: Field observations & https://ecos.fws.gov/ipac/	No Effect Not applicable	☐	No Effect Migratory Birds: No take of any migratory bird, nest, or egg is expected to occur and planned practices will not take or disturb eagles.	☐		☐
Natural Areas *Guide Sheet* Natural Areas: There are no designated natural areas present in or near the planning area. Source: https://fpr.vermont.gov/vermont-natural-areas	No Effect Not applicable	☐	No Effect Not applicable	☐		☐
Prime and Unique Farmlands *Guide Sheet* Prime or unique farmlands or farmlands of statewide or local importance are present in the planning area.	No Effect Not applicable	☐	No Effect Prime/unique Farmlands: No conversion of farmland to nonagricultural use is planned.	☐		☐
Riparian Area *Guide Sheet* Riparian areas are present along impacted surface waters in the planning area.	May Effect Riparian Areas: Continuation of benchmark conditions will degrade/decrease water quality/water quantity/fish and wildlife benefits.	☐	May Effect Riparian Areas: Practice(s) will maintain or improve water quality, water quantity, and fish and wildlife benefits provided by the riparian area(s).	☐		☐
Scenic Beauty *Guide Sheet* Planning area is currently a residential development.	No Effect Scenic Beauty: No change from benchmark conditions.	☐	No Effect Scenic Beauty: Planned practice(s) are typical for the surrounding area and will blend into the scenic quality of the general landscape.	☐		☐
●Wetlands *Guide Sheet* Wetlands are present in the planning area. Source: Field determinations & Vermont State Wetland Inventory	No Effect Not applicable	☐	May Effect Wetlands: Practice will avoid adverse impacts to wetlands. Project design will need further evaluation.	☑		☐
●Wild and Scenic Rivers *Guide Sheet* WildScenic Rivers: No Federal or State designated Wild, Scenic, or Recreational river segments or rivers listed in the Nationwide Rivers Inventory (NRI) are present in or near the planning area. Source: https://www.rivers.gov/	No Effect Not applicable	☐	No Effect Not applicable	☐		☐

K. Other Agencies and Broad Public Concerns		No Action	Alternative 1	Alternative 2
Easements, Permissions, Public Review, or Permits Required and Agencies Consulted.		None Required	Vermont Stream Alteration and Army Corps 404 permit are potentially needed, consultation should occur.	
Cumulative Effects Narrative (Describe the cumulative impacts considered, including past, present and known future actions regardless of who performed the actions)		Direct impacts to infrastructure, along with continued degradation of water quality, soil resources and aquatic habitat.	Stabilized streambank will protect infrastructure. Decreased sediment impacts to stream.	
L. Mitigation (Record actions to avoid, minimize, and compensate)		None Required	Any potential actions will be dictated by individual permits.	
M. Preferred Alternative	√ preferred alternative	☐	☑	☐
	Supporting reason		Selected alternative in anticipation of receiving EWP assistance. Will protect existing infrastructure and reduce sediment load to surface water.	

N. Context (Record context of alternatives analysis) The significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality.	Local
	Regional

O. To the best of my knowledge, the data shown on this form is accurate and complete:

In the case where a non-NRCS person (e.g. a TSP) assists with planning they are to sign the first signature block and then NRCS is to sign the second block to verify the information's accuracy.

Signature (TSP if applicable)	Title	Date
Signature (NRCS)	**Title**	**Date**
	Resource Conservationist	**12/20/2024**

If preferred alternative is not a federal action where NRCS has control or responsibility and this NRCS-CPA-52 is shared with someone other than the client, then indicate to whom this is being provided.

The following sections are to be completed by the Responsible Federal Official (RFO)

NRCS is the RFO if the action is subject to NRCS control and responsibility (e.g., actions financed, funded, assisted, conducted, regulated, or approved by NRCS). These actions do not include situations in which NRCS is only providing technical assistance because NRCS cannot control what the client ultimately does with that assistance and situations where NRCS is making a technical determination (such as Farm Bill HEL or wetland determinations) not associated with the planning process.

P. Determination of Significance or Extraordinary Circumstances

To answer the questions below, consider the severity (intensity) of impacts in the contexts identified above. Impacts may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.

If you answer ANY of the below questions "yes" then contact the State Environmental Liaison as there may be extraordinary circumstances and significance issues to consider and a site specific NEPA analysis may be required.

Yes	No	
☐	☑	• Is the preferred alternative expected to cause significant effects on public health or safety?
☐	☑	• Is the preferred alternative expected to significantly affect unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas?
☐	☑	• Are the effects of the preferred alternative on the quality of the human environment likely to be highly controversial?
☐	☑	• Does the preferred alternative have highly uncertain effects or involve unique or unknown risks on the human environment?
☐	☑	• Does the preferred alternative establish a precedent for future actions with significant impacts or represent a decision in principle about a future consideration?
☐	☑	• Is the preferred alternative known or reasonably expected to have potentially significant environment impacts to the quality of the human environment either individually or cumulatively over time?
☐	☑	• Will the preferred alternative likely have a significant adverse effect on ANY of the special environmental concerns? Use the Evaluation Procedure Guide Sheets to assist in this determination. This includes, but is not limited to, concerns such as cultural or historical resources, endangered and threatened species, environmental justice, wetlands, floodplains, coastal zones, coral reefs, essential fish habitat, wild and scenic rivers, clean air, riparian areas, natural areas, and invasive species.
☐	☑	• Will the preferred alternative threaten a violation of Federal, State, or local law or requirements for the protection of the environment?

Q. NEPA Compliance Finding (check one) The preferred alternative:		Action required
☐	1) is **not a federal action** where the agency has control or responsibility.	Document in "R.1" below. No additional analysis is required
☐	2) is a federal action **ALL** of which is **categorically excluded** from further environmental analysis **AND** there are **no extraordinary circumstances as identified in Section "O".**	Document in "R.2" below. No additional analysis is required
☑	3) is a federal action that has been **sufficiently analyzed** in an existing Agency state, regional, or national NEPA document **and** there are no predicted significant adverse environmental effects or extraordinary circumstances.	Document in "R.1" below. No additional analysis is required.
☐	4) is a federal action that has been sufficiently analyzed in another Federal agency's NEPA document (EA or EIS) that addresses the proposed NRCS action and its' effects **and has been formally adopted by NRCS**. NRCS is required to prepare and publish its own Finding of No Significant Impact for an EA or Record of Decision for an EIS when adopting another agency's EA or EIS document. (**Note: This box is not applicable to FSA)**	Contact the State Environmental Liaison for list of NEPA documents formally adopted and available for tiering. Document in "R.1" below. No additional analysis is required
☐	5) is a federal action that has **NOT** been sufficiently analyzed or may involve predicted significant adverse environmental effects or extraordinary circumstances and may require an EA or EIS.	Contact the State Environmental Liaison. Further NEPA analysis required.

R. Rationale Supporting the Finding	
R.1 Findings Documentation	Emergency Watershed Protection Program, Natural Resources Conservation Service, Programmatic Environmental Impact Statement, April 2005
R.2 Applicable Categorical Exclusion(s) **(more than one may apply)** 7 CFR Part 650 *Compliance With NEPA*, subpart 650.6 *Categorical Exclusions* states prior to determining that a proposed action is categorically excluded under paragraph (d) of this section, the proposed action must meet six sideboard criteria. See NECH 610.116.	

I have considered the effects of the alternatives on the Resource Concerns, Economic and Social Considerations, Special Environmental Concerns, and Extraordinary Circumstances as defined by Agency regulation and policy and based on that made the finding indicated above.

S. Signature of Responsible Federal Official:

	Resource Conservationist	12/20/2024
Signature	**Title**	**Date**

Additional notes

50-01-2024-5042-017-126

November 8, 2024 Plainfield


11/8/24 9:57 AM


11/8/24 9:57 AM


11/8/24 10:05 AM


11/8/24 10:10 AM

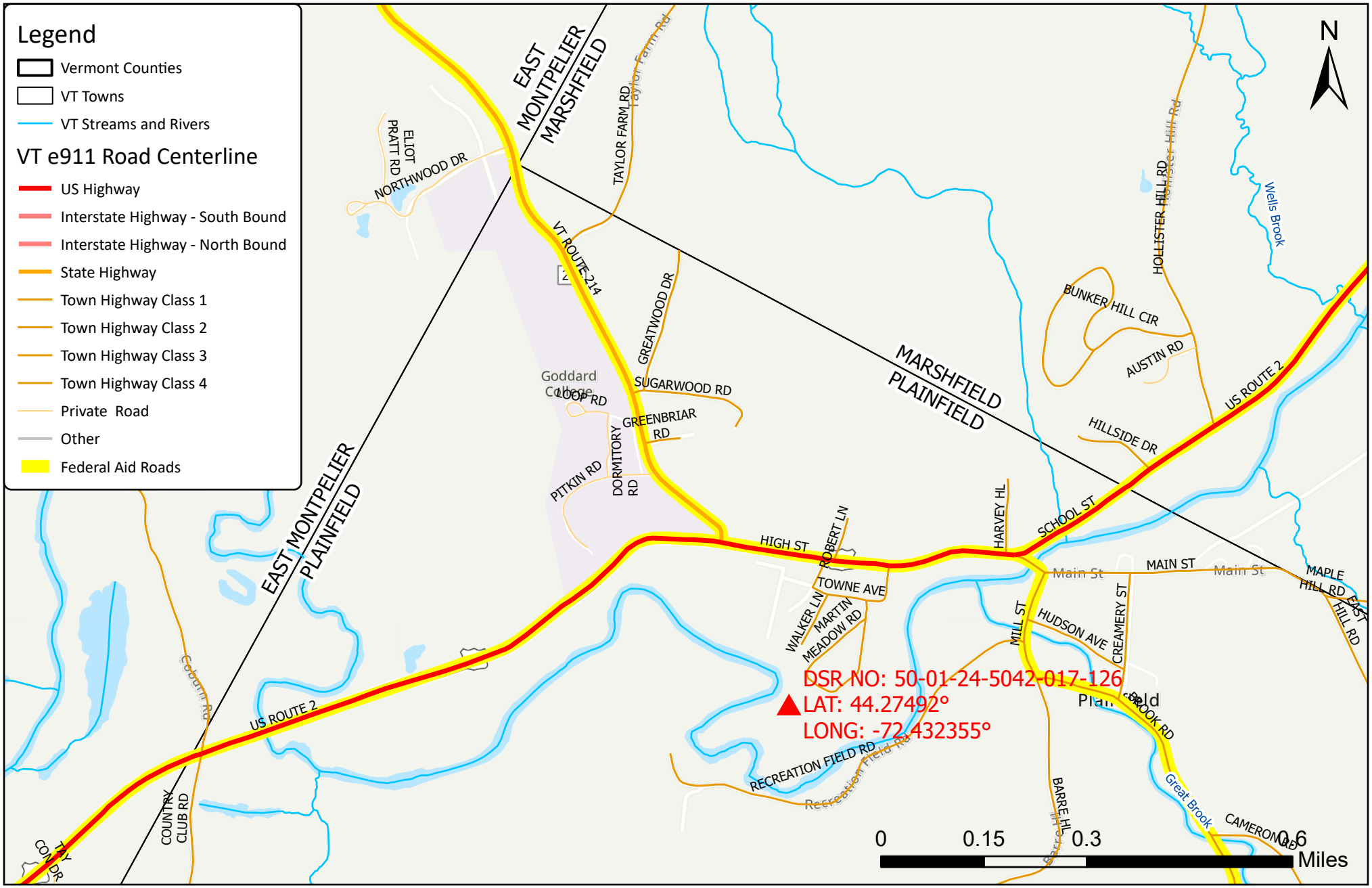

11/8/24 10:11 AM

LOCATION MAP

Town of Plainfield

DSR 50-01-24-5042-017

VT Local DSR Number: 5042-017-126



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Scale in Feet

DRAFT
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Date
NOT FOR CONSTRUCTION

United States Department of Agriculture
Natural Resources Conservation Service

HAZARD CLASS
SIGNIFICANT

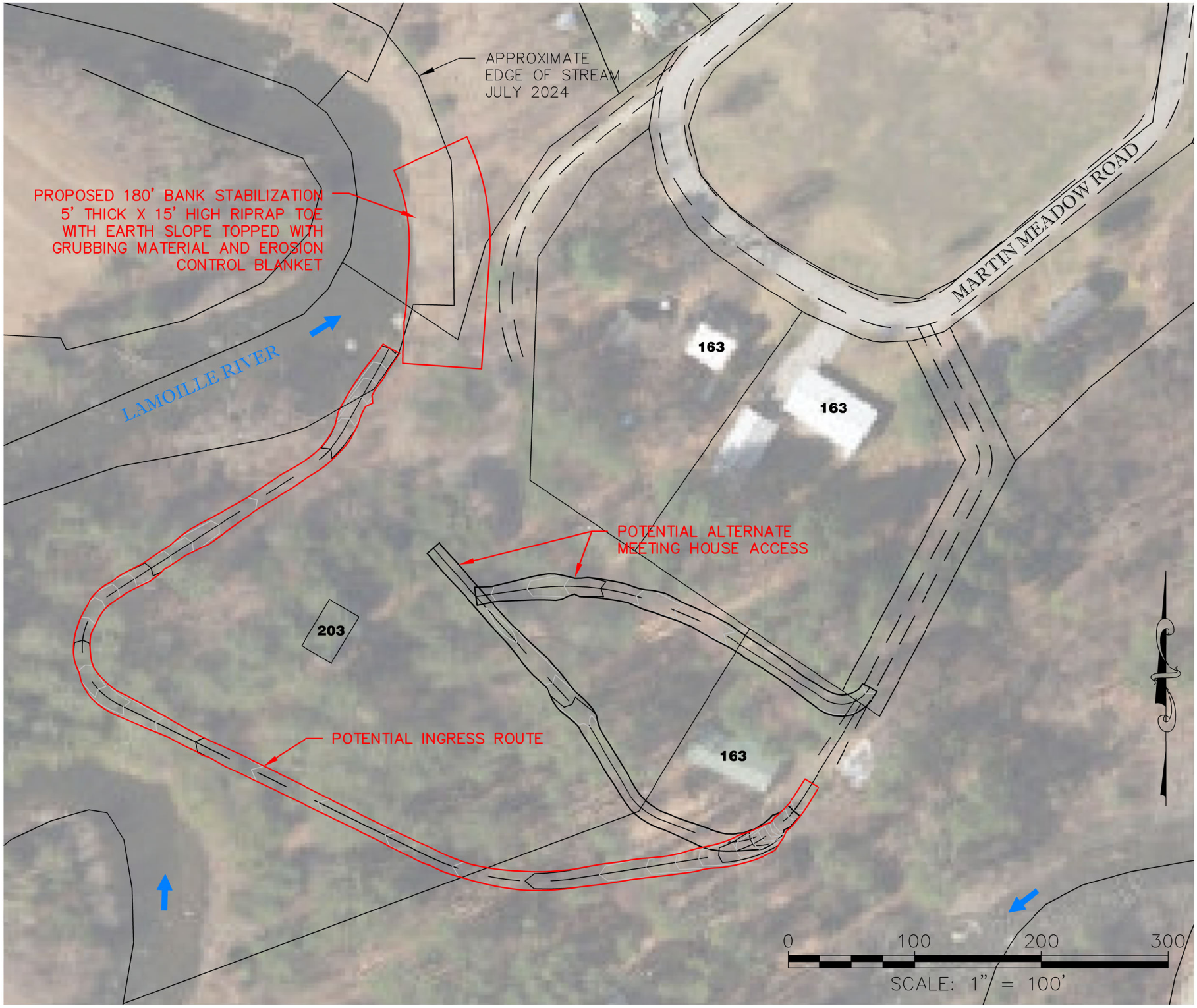
JOB CLASS
VI

EWP PROJECT 5042-017-126
EWP
MARTIN MEADOW ROAD
SURVEY
PLAINFIELD
VERMONT

File Name

Drawing Name
5042-017-126

Sheet 1 of 1



Date 12/16/2024

Designed

Drawn MJL

Checked

Approved by

United States Department of Agriculture

Natural Resources Conservation Service

HAZARD CLASS
SIGNIFICANT

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PLAINFIELD
EWP 5042
50-01-24-5042-017-126
DSR SKETCH

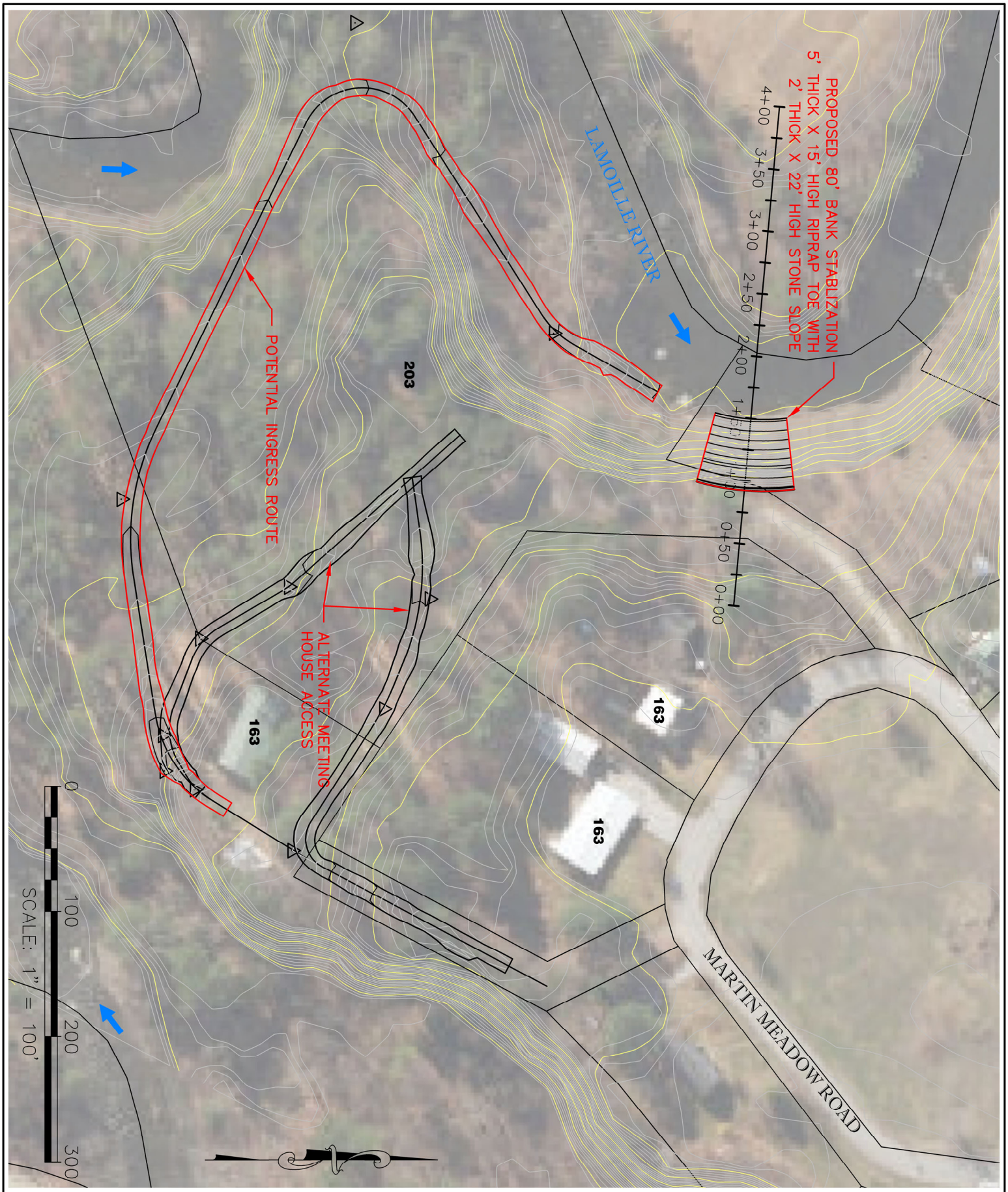
VERMONT

PLAINFIELD

File Name

DSR Number

Sheet 1 of 2



Sheet 1 of 2	DSR Number	File Name	PLAINFIELD EWP 5042 50-01-24-5042-017-126 DSR SKETCH PLAINFIELD VERMONT	HAZARD CLASS SIGNIFICANT JOB CLASS VI	USDA United States Department of Agriculture Natural Resources Conservation Service	Designed Drawn MJL Checked Approved by Date 12/16/2024

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MA Office

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Suite #1
Amherst
MA, 01002

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SUBJECT: Geologic Consultation, Bank Stability **DATE:** 05/27/2025

TO: Ally Hook
Bob Thompson

FILE CODE: ENG - Geology

Purpose: This report presents a review of available geologic data used to evaluate conditions which may affect the planning, design and scope of a proposed stream bank stabilization project. After a brief initial desk review it was determined that a field reconnaissance investigation was required to properly assess the site. The results and interpretations of the desktop and field investigations are summarized here.

The field investigation was conducted on 05/08/2025, in attendance was Jesse Armfield (Geologist, NRCS), Ally Hook (Supervisory Engineer, NRCS), George Springston (Professor & Volunteer, Norwich University & Plainfield Friends), and Charlie Cogbill (Volunteer, Plainfield Friends).

Introduction: Investigation of this site was prompted by bank failure caused by flooding in 2024. The site was initially investigated by NRCS in November 2024 as the bank failure was reportedly threatening infrastructure. Evidence of bank failure due to this event is clear when comparing pre and post flood aerial imagery (Figures 1-3). Since the 2024 flood bank failure has progressed and further failure is imminent as evidenced by comparing photos from 7/12/2024 (Figure 3) to photos from 11/9/2024 (Figure 4) as well as to photos from 5/8/2025 (Figure 5). Stream bank stabilization is currently proposed to mitigate bank failure and prevent infrastructure damage.

Previous Site-Specific Work: This reach of the Winooski River had been previously inventoried during an assessment commissioned by the Winooski Resources Conservation District beginning in 2006. This reach along with most other reaches in the Upper Winooski River were considered have the potential for continuous widening and erosion (Johnson Company, 2007). Specifically, this reach was assessed as stage IV in the channel evolution model indicating the channel may continue to severely erode side terraces resulting in aggradation and widening (Round River Design, 2009, Channel Evolution Model VT Agency of Natural Resources, 2007). Note that bank failure(s) are generally required for a stage IV stream reach to achieve equilibrium without mitigation. This site was inventoried again by George Springston in 2011 as a reported landslide due to Tropical Storm Irene. In his report Springston noted active sliding in 2 areas in the vicinity of the cut bank of this proposed project (Springston, 2017). Imagery of this site was collected in July 2024 by the VT spatial analysis lab as part of flood response (Figure 3).

Site Characteristics and Interpretations: The following section briefly reviews published site characteristics (cited), summarizes field observations, as well as provides interpretations of current and past field conditions.

Streambank stabilization is proposed on the approximately 35-50ft high cut bank (river right) of the Winooski River near 203 Martin Meadow Road in Plainfield VT.

The site is underlain by the Waits River Formation, a calcareous/carbonaceous phyllite-schist with quartzite beds, which dips steeply to the W/NW (Kim and Ruksznis, 2011). Depth to bedrock from the terrace above the cut bank is approximately 100ft based on local water well drillers logs (VT Private Wells Database). Surficial materials near the cutbank are mapped as stream terrace deposits, alluvium, ice-contact deposits, and lake bottom deposits, see surficial materials map (Springston, 2011).

The currently active stream channel is primarily composed of gravel-cobbles but grain size ranges from sand-boulders. The floodplain is primarily composed of fine-medium sands which coarsen toward the currently active channel, the periphery of which approached a similar gradation to the currently active gravel-cobble channel (Figures 6-7). The floodplain and currently active channel contain various anthropogenic and natural debris presumably from recent flooding, most notably large tree pileups (Figures 7, 23).

Based on field observations the interpreted stratigraphy of the cut bank is variably exposed Glacial Lake Winooski fines overlain by a coarse bedded esker deposit (fine sand with silt – boulder), overlain by a thin (<3ft) veneer of fluvial sand, topped off with organic soil derived from the underlying fluvial deposit (Figure 8). The generalized geometry of the exposed cut bank is soil overhang of 1-5ft underlain by 15-30ft of coarse material at a high or nearly vertical angle, underlain by 10-20ft of colluvial material near the angle of repose. Glacial lake fines are generally not exposed so were not noted in the generalized geometry but this deposit presumably underlies the whole length of the failing bank at varying depths.

The exposed glacial lake deposits are described as massive (lack of bedding), deformed, gray, and have a USCS CL texture (Figure 9). The most downstream exposure of glacial lake material is considerably different and is described as varved, gray, rotated (bedding is now vertical), and has a USCS CL/CH texture (Figure 10). The glacial lake material is variably exposed, the surface of it was likely differentially eroded away as the overlying esker flowed and deposited coarse material.

The glacial lake deposits appear to be less erodible than the overlying material, these deposits stick out of the bank and colluvium accumulates on the upstream and downstream sides (Figure 11). Further evidence of these deposits' erosion resistance can be found at the downstream contact between the ice contact deposit (esker) and lake bottom deposits (glacial lake deposits). At the contact the bank failure ends and does not progress into the glacial lake material demonstrating the difference in erosion potential (Figure 12).

The coarse material comprising most of the bank is interpreted as an esker deposit. This loose granular bedded deposit is well graded on the macro scale (silt-boulder), but is poorly graded at the bedding scale. Individual beds likely classify primarily as SP or GP soils, but composite samples likely classify as SM or GM depending on how thick of an interval and where the sample is composited from. Beds range from <0.5" to >1', generally finer grained materials have smaller beds and beds dominated by gravel-cobbles are thicker. The extent of this deposit is mapped accurately on the published surficial materials map by George Springston. In the field the deposit appeared to pinch out more rapidly on the upstream and downstream ends, but this minor discrepancy is likely due to the difference in scale (1:24,000 map versus this site). Note that the mapping was done prior to tropical storm Irene (and other subsequent erosive events) so the upstream and

downstream extent may have been accurate when mapped but are no longer accurate due to erosion. This site was documented as an active landslide post Irene (Springston, 2017) and has likely been failing iteratively during events since.

A significant portion of the esker deposit is covered by colluvium. Two distinct types of colluvium cover this slope, intact blocks of organic soil presumably held together by plant roots and granular colluvium from the esker itself presumably slumping as the bank fails (Figure 13). Fractures running parallel to the bank are exposed on the grass surface above the bank near the access road. Fractures similar to these are likely responsible for the intact blocks of organic soil seen at various locations across the colluvial slope. These fractures will likely propagate due to the over steepened slope below, and failure will progress. Colluvium from the esker deposit may fail in blocks but due to the nature of the deposit the colluvial slopes from this deposit are granular and loose.

The esker deposit also hosts “cave” features (3 noted), described as large voids with openings near the top of colluvium (Figure 14). These cave features were likely formed as 2024 flood waters cut into the bank and undermined it. The cave features in figure 15 (11/2024) and figure 3 (7/2024) appear larger and more numerous than during the investigation on 5/8/2025 (Figure 16). Soil fractures above the cave features (and in other locations) reveal complex block movement as the void spaces are filled with collapsing material from above (Figure 17). These caves are thought to further the imminent risk of further collapse/bank failure. Note that it is possible additional “caves” are covered by or filled in by colluvium and were not noted.

The esker deposit also hosts numerous active and inactive groundwater seeps (Figure 18-19). Three active groundwater seeps were noted during the field investigation that were visibly eroding around where they emerged and eroded material was presumably being added to the colluvium below (Figure 11). The water from these active seeps saturated the colluvium below and these areas slid when additional load was added (they slid when walked on). It’s hypothesized that the seeps are causing material to sluff off the intact bedded material which then increases the volume and slope of the colluvium until small scale sliding periodically occurs (Figure 20). These small-scale slides end up in the active channel, or become inundated during events, and are subsequently eroded furthering the instability of this slope. Further evidence of this hypothesis and of continued slope failure through other mechanisms is presented in the following paragraph. Seeps that were inactive during the field investigation were marked by beds weakly cemented by calcite or small stalactites containing fines (Figure 19).

The lack of rill erosion in colluvium (Figure 21) suggests colluvial slopes are actively being replenished through erosion from above or sliding and eroding away but most likely a combination of the two. Erosion rills present in figure 15 in bedded material suggest that enough time and precipitation has occurred since the original event for rill formation. Furthermore, rills can be seen in drone imagery taken on 7/12/2024 in both colluvium and bedded material (Figure 3). The rills in figure 15 (11/9/2024) indicate a period of stability, but the lack of rills at this location in figure 16 (5/8/2024) suggest that further erosion and sliding or some combination of the two has occurred since 11/9/2024. The near complete absence of pioneer vegetation and sprouted seedlings also provides another line of evidence suggesting continual bank erosion. Despite the lack of severe events between the initial and follow-up investigations the length of the cut bank shows numerous signs

of continued erosion. This bank is poised to catastrophically fail in an intense event and poses an imminent risk to nearby infrastructure.

Risk Summary: Infrastructure at risk includes a utility pole, an access road, a home, and a health center. The threat of progressive failure or another event-based failure to the utility pole and access road is imminent. Without mitigation these structures will be compromised, potentially even without a flood event as the bank shows evidence of progressive and cyclical failure as it continues to equilibrate. The utility pole is <10ft from overhanging soil above an increasingly unstable slope and within the zone of fractured soil. The road is <20ft from overhanging soil above the increasingly unstable slope and is <10ft from the zone of fractured soil. Based on aerial imagery the bank moved 20-25ft toward the road and utility pole through losses from the 2024 event, a similar loss of material would completely undermine this infrastructure.

The house and the health center both sit approximately 120ft from the top of overhanging soil underlain by the increasingly unstable cut bank. Despite the distance of these structures to the top of the bank they are also at risk, the portion of the bank they overlie lost a significant amount of material during the 2024 event and the bank is currently over steepened. This area of the bank also appears to be experiencing the most significant nonevent-based changes based on photographs and field observations. The risk to these structures could be increased if mitigation measures are only implemented to protect the access road and utility pole. While a mitigation measure protecting the road and utility pole would likely succeed for the practice lifespan this may direct higher velocity water at the bank underlying the house and health center. It should be noted that during high flows water runs over the bar toward this face (Figure 22) which may contribute to erosion.

Design Recommendations: As illuded to in the previous section it is recommended to stabilize the entire length of the failing/unstable bank (Figure 1). The entire length of the bank is unstable due to toe erosion and over steepening. There is evidence of cyclical incremental failure progressing and the site has a significant potential for catastrophic event-based failure. Armoring only the portion of the cut bank underlying the access road to stabilize the slope would likely succeed but would also potentially exacerbate the risk to more significant structures just downstream through the redirection of water at increased velocity toward an unstable over steepened slope. If stabilizing the whole bank is not feasible it is highly recommended to include some features in the design to redirect water away from the downstream portion of the bank underlying the house and health center.

Closing Summary: In summary this landslide is considered active due to both regularly occurring cyclical small-scale slides with subsequent toe erosion as well as event-based losses through similar mechanisms. Evidence of failures and potential mechanisms are presented in the report above, but cyclical and event-based failure is clear when comparing pre-event (2), immediate post event (1,3), first reconnaissance (4), and recent photographs (5) (Figures 1-5). The generalized failure mechanism at this site is hypothesized to be: granular material on the toe is eroded by the river, over steepened slopes are created through toe erosion, translational slides occur due to the over steepened slope and highly erodible material is deposited on the toe, repeat. This bank is not in equilibrium with the Winooski River and poses an imminent threat to property. In order to protect all of the infrastructure it is highly recommended to mitigate the entire length of the failing bank.

This report has been prepared for the exclusive use of the Natural Resources Conservation Service for the above-mentioned project. The findings, opinions and recommendations contained in this document have been prepared exercising reasonable ordinary care and diligence in the application of professional knowledge and skill. The interpretation of subsurface conditions, conclusions, and recommendations contained herein is for in-service use only. NRCS will not be responsible for conclusions drawn from this data by others. If you have any questions or need additional information, please reach out.

Jesse Armfield
Geologist

References:

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List of Figures:

2024 Aerial Imagery

Figure 1: Aerial imagery with the approximate 2023 streambank outlined in blue to show movement. Black arrow shows areas that appear to have the most land movement. Dotted line highlights approximate area of instability.

2023 Aerial Imagery

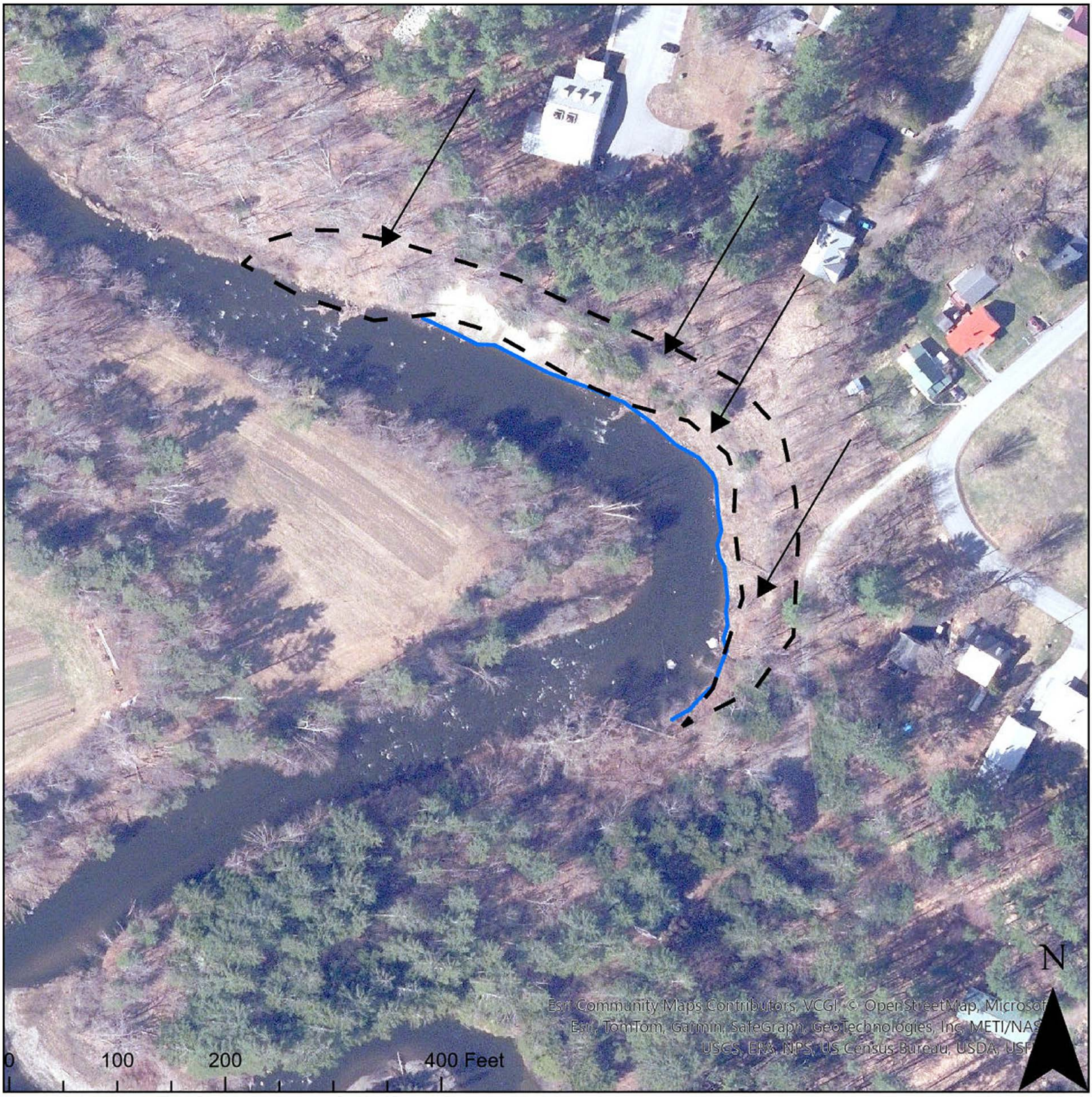

Figure 2: Aerial imagery with the approximate 2023 streambank outlined in blue. Black arrow shows areas that appear to have the most land movement. Dotted line highlights approximate area of current instability.

Figure 3: Drone imagery captured as part of flood response on 7/12/2024 by the UVM Spatial Analysis Lab. Zoom in to see numerous "cave" features as well as rills in colluvium and in intact bedded material above.

Figure 4: Photo taken by George Springston on 11/9/2024. Note condition of bank and colluvial slopes as compared to figure 5.

Figure 5: Photo taken by Jesse Armfield on 5/8/2025. Note condition of bank and colluvial slopes as compared to figure 4, taken from nearly identical locations.

Figure 6: Photo taken by Jesse Armfield on 5/8/2025. Note the sand-cobble bar composition that coarsens toward the active channel, which is composed primarily of gravel-boulders.

Figure 7: Photo taken by Jesse Armfield on 5/8/2025. Note the sandy deposition and the large woody debris pileup on the inner bend of the Winooski River across from the proposed site.

Figure 8: Panoramic photo taken by Jesse Armfield on 5/8/2025. This photo shows the entire failing bank as well as the health center, house, utility pole, and the location of the road on top of the bank to the right of the pole. Note that the image is distorted because it was captured as a panoramic photo.

Figure 9: Photo taken by Jesse Armfield on 5/8/2025. This photo shows the most upstream exposure of glacial lake fines protruding from the bank and the colluvium collecting on the upstream side. Also of note is the small "cave" feature just above the collvium.

Figure 10: Photo taken by Jesse Armfield on 5/8/2025. This photo shows the most downstream exposed glacial lake fines. Note that the varved beds are rotated so they are now nearly vertical.

Figure 11: Photo taken by Jesse Armfield on 5/8/2025. Photo shows the most upstream glacial lake deposit exposed at this site. Colluvium collects on the upstream and downstream sides of this protruding deposit. An active seep emerges on the downstream (left) side of this deposit and presumably replenishes the colluvial slope below through erosion from above.

Surficial Materials Map

Figure 12: Surficial materials map overlayed on 2024 aerial imagery with the approximate 2023 streambank outlined in blue. Note how the bank failure begins and ends approximately where the ice-contact (esker) deposit is in contact with the river. Created using shapefiles from Springston, 2011.

Figure 13: Photo taken by Jesse Armfield on 5/8/2025. This photo shows both types of colluvium at this site; intact blocks of organic soil held together by plant roots and granular colluvium from the esker deposit.

Figure 14: Photo taken by Jesse Armfield on 5/8/2025. Photo zooms into a "cave" feature, inside is granular material presumably from above.

Figure 15: Photo taken by George Springston 11/9/2024, compare to Figure 16. The yellow arrow points to rills with cave features below that appear to partially collapse between 11/9/2024 and 5/8/2025. The blue area points to an area with significant colluvium buildup between the above mentioned dates. The health center is also labeled for clarity.

Figure 16: Photo taken by Jesse Armfield on 5/8/2025, compare to Figure 15. Notice that the area highlighted by the yellow arrow is collapsed, rills are gone, caves are smaller, and there is minimal colluvial buildup. The area highlighted by the blue arrow shows significant colluvial buildup between this date and 11/9/2024.

Figure 17: Photo by Jesse Armfield taken on 5/8/2025. This photo shows complex soil fracturing with downward movement in blocks.

Figure 18: Photo taken by Jesse Armfield on 5/8/2025. This photo shows an active groundwater seep emerging from the bank. Fines are removed from the area of flowing water and a nearly vertical wall is above the seep presumably due to erosion caused by the seep.

Figure 19: Photo taken by Jesse Armfield on 5/8/2025. This photo shows evidence of an inactive seep that presumably activates when the water table is higher. The stalactite features in the center of the photo are weakly cemented together and have an ML texture.

Figure 20: Photo by Jesse Armfield taken on 5/8/2025. This photo shows a highly unstable colluvial slope, the base of which appears to have eroded away due from the toe. Multiple sets of fractures parallel to streamflow may suggest multiple cyclical slides. An active seep above the top of this colluvial slope has saturated it and appears to be eroding the esker deposit above and is contributing material to this slope. Multiple sets of fractures perpendicular to streamflow spanning the entire colluvial deposit suggest this deposit slides as a whole.

Figure 21: Photo taken by Jesse Armfield on 5/8/2025. This photo shows a colluvial slope and intact bedding all with a lack of rill erosion which suggests colluvial slopes are replenished by material failing from the bedded deposit above.

Figure 22: Photo by Jesse Armfield taken on 5/8/2025. This photo shows woody debris piled on the upstream side of trees. This photo was taken from the inside of the stream bend directly across from the health center.. This photo shows that during high flows water flows over the bar and diurectly toward the slope below the health center..