TOWN OF WHEELOCK
REQUEST FOR BIDS
FALL BROOK ROAD BRIDGE

Work requested: Hydraulics and Hydrology study, and project design to repair the bridge. A FEMA site inspection report, H & H study guide, and next flood permit will be provided to interested bidders.

Please submit an itemized bid and a copy of current certificate of insurance in a sealed envelope with "**Fall Brook Road Bridge**" written on the outside of the envelope to Town of Wheelock, PO Box 1328, Lyndonville VT 05851 or deliver to the Town Office at 1192 VT RT 122 during regular office hours. Bids must be received by June 26, 2025. For a complete copy of the Bid Request please contact or visit the Wheelock Town Clerk (phone 802-626-9094, email wheelocktown@gmail.com) or go the bids list on our website https://townofwheelockvt.org.

AUTHORIZATION TO CONDUCT NEXT FLOOD MEASURES

Pursuant to Section F of the Vermont Stream Alteration General Permit

VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION
RIVERS PROGRAM

A. Permitted Project Information:

Project Number: NFM-4303

Applicant Name: Town of Wheelock

Mailing Address: PO Box 1328, Lyndonville, VT 05851

Email: alawless.townofwheelockvt@gmail.com

Project location: Fall Brook Road Bridge (44.58697, -72.08521)

Phone: (802) 626-3109

B. Findings:

The Secretary of the Vermont Agency of Natural Resources (VT ANR) has determined that:

1. This project authorizes: Repair to in-kind dimensions utilizing type IV stone fill with 4-ft keyway.
2. The proposed activity is eligible for coverage under the VT ANR Stream Alteration General Permit.
3. The proposed activity will meet the terms and conditions of the General Permit provided:
   a) The work is constructed to in-kind dimensions.
   b) Material removed from site is not deposited within a mapped Flood Hazard Area or River Corridor.

C. Standard Conditions:

1. The project is proportional to the threat and conditioned to cease when the threat to life or to improved property has ended.
2. The project will not result in a threat to life, public health or safety.
3. The project will meet the standards detailed in subsections E.2.1 and E.2.2 of the General Permit.
4. The project will meet Stream Alteration Standards to the greatest extent possible.
5. A pre-construction meeting is held between the contractor, owner/applicant, and the ANR River Management Engineer.
6. The River Management Engineer is notified by phone or email when construction begins and when the project is complete. Contact information is provided at the bottom of this authorization.
7. A final construction inspection is required for any culvert and bridge related work.
8. Additional conditions:
   - This permit shall expire on October 1st, 2027
   - Proposals for work before July 1st or after October 1st must submit a schedule of construciton and a water control plan for written approval by the Regional River Management Engineer.

If there are any changes in the project plan or deviation in construction from the plan, the Permittee must notify the River Management Engineer immediately. If the project is constructed as you have described, as shown on the above referenced approved plans and/or according to the above conditions, there is no reason to expect any violation of Vermont Water Quality Standards. This permit does not relieve the applicant from the responsibility of obtaining approvals and/or permits from other State Agencies or departments, landowners or local officials prior to construction.

D. Authorization:

Signed: 05/02/2025
Julia S. Moore, Secretary
Agency of Natural Resources
by: _____
Jaron Borg, River Management Engineer

E. Engineer Contact Information

Engineer Contact: **Jaron Borg**

Engineer Contact Phone: **(802) 371-8342**

Engineer Email Address: **Jaron.Borg@vermont.gov**

Vermont Emergency Management
Vermont Department of Public Safety
45 State Drive Waterbury, Vermont 05671-1300

STATE OF VERMONT: HYDROLOGIC AND HYDRAULIC (H&H) STUDY GUIDE

DEFINITION

A Hydrologic and Hydraulic (H&H) Study is the study of movement of water, including the volume and rate of flow as it moves through a watershed, basin, channel, or man-made structure.

PURPOSE

This Study Guide outlines State of Vermont and FEMA guidance regarding the contents of a Hydrologic and Hydraulic (H&H) Study and when it is necessary for FEMA PA Projects within Disaster DR4720. It is a summary of salient points related to H&H Studies from State of Vermont and FEMA policies. It *does not* supersede any official guidance from the State of Vermont or FEMA PAPPG v. 4.

WHEN AN H&H STUDY IS REQUIRED

- An H&H Study is required when a ***town highway structure*** conveys a perennial stream. While recommended, an H&H Study is not required for crossings that are not part of the transportation network.
    - Bridge and culvert work on perennial stream crossings must conform with the Vermont statewide DEC Stream Alteration Standard.[1]
- In the State of Vermont, H&H studies must be conducted by VTrans ***or consultants for H&H Studies, adhering to VTrans hydraulics standards*** outlined in the 2015 VTrans Hydraulics Manual.[2]

WHEN AN H&H STUDY IS *NOT* REQUIRED

- An H&H study is *not* required if the structure carries an intermittent stream.
    - Culvert sizing for crossings on intermittent streams are determined based on the Active Channel Width by field measurements. ***The culvert size must meet or exceed the Active Channel Width***, as required by the Vermont Department of Environmental Conservation (DEC) Municipal Roads General Permit (MRGP).[3]
    - The Vermont Stream Alteration Rule *does not apply* to intermittent streams.[4]

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[1] *Environmental Protection Rule* (Chapter 27), "Vermont Stream Alteration Rule," Agency of Natural Resources, Department of Environmental Conservation, Watershed Management Division, River Management Program, March 10, 2017.
[2] *Hydraulics Manual*, Vermont Agency of Transportation, May 28, 2015.
[3] *General Permit 3-9040*, "For Stormwater Discharges from Municipal Roads," Appendix C, Agency of Natural Resources, Department of Environmental Conservation, January 26, 2023.
[4] *Environmental Protection Rule* (Chapter 27), "Vermont Stream Alteration Rule."

- An H&H study is *not* required for Stream Alteration Permits.
    - State of Vermont culvert sizing criteria include geomorphic sizing standards and a hydraulic check by engineers.
- A post-disaster H&H study is *not* required when a structure has simply been repaired to pre-disaster condition.

CONTENTS OF AN H&H STUDY[5]

- Identification of upstream and downstream impacts (e.g. stage, velocity, duration) of alterations to the floodplain, including change to the extent or depth of the Special Flood Hazard Area (SFHA) or changes to the Base Flood Elevation (BFE).
- General site description, including location, latitude and longitude, drainage basin, FIRM, regulatory mapped flood zone (if applicable).
- Existing condition: pipe shape, material, length, inlet and outlet conditions, performance level.
- Proposed condition: pipe shape, size, material, length, inlet and outlet conditions, performance level.
- Will the proposed condition satisfy the local floodplain ordinance and local and state storm water management requirements?
- Review by a professional engineer in the State of Vermont to ensure compliance with 44 CFR 60.3.

H&H STUDY RESULTS

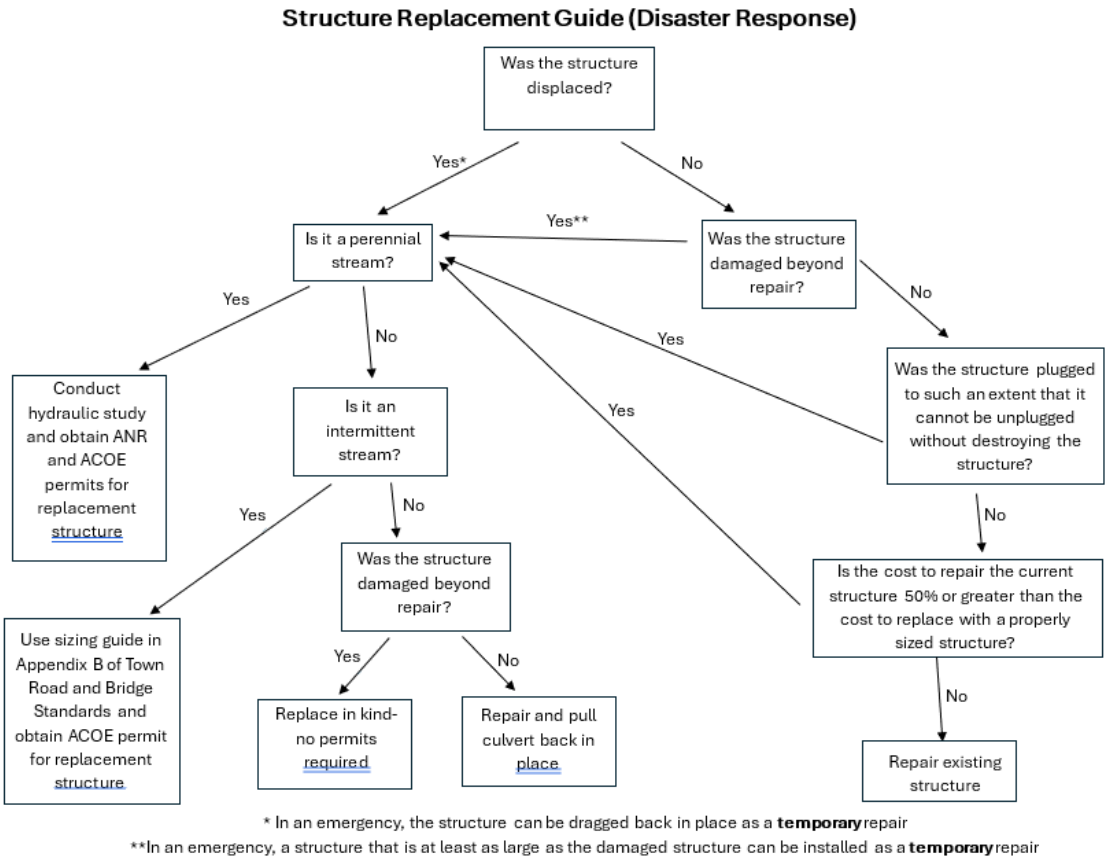
The analysis resulting from an H&H Study will determine sizing and fish passage ***requirements*** for the structure. In addition, analysis ***may recommend*** a structure type based on site constraints, provided it meets Vermont Codes and Standards for width, depth, embedment, fish passage and hydraulic capacity.

STRUCTURE REPLACEMENT GUIDE (DISASTER RESPONSE)

The following Structure Replacement Guide from the Vermont Agency of Transportation illustrates State of Vermont requirements for structures impacted during a storm event.

Note that "damaged beyond repair" means it is "not feasible to repair the existing damaged structure," as noted in the Vermont Stream Alteration General Permit (G.11.b). This includes instances when a culvert, pipe, and/or supporting fill need to be newly assembled, including when a culvert pipe plugged with debris cannot be unplugged. ***A replacement culvert pipe must meet State of Vermont Codes and Standards for size.***

[5] DHS FEMA Region 4 Policy Memo, "Hydrologic & Hydraulic (H&H) Study Quick Guide," V3.0, October 2017.



ADDITIONAL RESOURCES

The following resources represent official policy guidance from the State of Vermont and FEMA.

Issuing Agency	Policy	H&H Study-Related Guidance
Agency of Natural Resources, DEC	Vermont Stream Alteration Rule *Environmental Protection Rule, Chapter 27*	Subchapter 4 - Investigation; Standards for Issuance of Stream Alteration Permits (9)
Agency of Natural Resources, DEC	Municipal Roads General Permit *Permit 3-9040, ""For Stormwater Discharges from Municipal Roads"*	Intermittent Stream Crossing Specification (Appendix C, iii to iv)
Vermont Agency of Transportation	Hydraulics Manual	Chapter 3; Data Collection, Resources and Tools (3-1 to 3-10) Chapter 4; Hydrology (4-1 to 4-36)
Vermont Agency of Transportation	Town Road and Bridge Standards *The Orange Book, Part 7*	Town Road and Bridge Standards FAQ (7-3 to 7-4)
FEMA	Grant Programs Directorate Environmental Planning and Historic Preservation *Poli #108-023-1, Revision 2*	EHP Review Process (1 to 3)

PA Mitigation Site Inspection, Virtual and In-Person (Template)

Intended Use: Use this template when taking part in a site inspection, either in-person or virtually. The applicant, FEMA staff, or the SHMO (or their designee or tribal/territorial equivalent) may identify mitigation measures either during the Site Inspection or later during project formulation.

An in-person site inspection signifies that all FEMA personnel needed are physically present at the site. A virtual site inspection refers to attending a site inspection during which some FEMA personnel and the applicant are present at the damage site, but the PA Mitigation Specialist (and perhaps other attendees) is attending via FaceTime, Zoom, MS Teams, or another agreed upon virtual platform. Depending on the current health and safety protocols at the disaster or region and the type of damage, FEMA personnel might all be attending the site inspection virtually; check with your supervisor for the most up-to-date information about virtual site inspections. Information that you gather in this template should be uploaded into Grants Manager. This resource is available in the HPA HMFOG Version 5.0 folder on the HMDWW.

Table 23: PA Mitigation Site Inspection (Template)

Date: 5/20/2025			
Applicant: Wheelock, Town of	**Applicant Representative:** Ann Lawless, Selectboard Chair	**County**: Caledonia	
FEMA Site Inspector: Mark E. Gill		**Other staff present**: Sanford Ross Bender, HM Engineering & Architect Specialist, Town of Wheelock Road Foreman	
Work Order: 106319	**Damage #(s):** 1494373 1494374	**Category:** C Roads and Bridges	
Site Name: Fall Brook Road Bridge DI1494374 & Boulay Road (Town Highway) DI1494374			
Meeting Location: -1192 Route 122, Wheelock, Vermont 05851			
Latitude:44.587771	**Longitude**:-72082638		
The site inspection was conducted:		☒ On Site	☐ Virtually

Damage description (*note: the PDMG and Site Inspector will draft the formal Damage Description and Dimensions (DDD)*):

Applicant's Damage Description:

- **Damage #1494374** Category C (Roads and Bridges) Fall Brook Road Bridge #00023, Wheelock, Vermont 05851 Latitude: 44., Longitude:44.587140, -72.085130, Work order dated -03.17.2025 stated: "Flood waters (Miller's Run) rose above deck of bridge eroding approach road and fill at north and south sides of bridge: Location: 44.48714N, 72.08513W. South: 20-ft x 15-ft. x 3-ft. to 8 ft. depth. North: 30-ft. x 12-ft, x 1-ft -5-ft. depth. The material of the deck for the south side and north side appears to be fine gravel. What will be the method of repair for the deck approach is to be determined pending river engineer visit. Requested new site inspection for abutments and guard rails."

- **Damage #1494373** Category C (Roads and Bridges), Boulay Road (Town Highway 47), Wheelock, Vermont 05851 Latitude: 44.665840, Longitude: -72070870, "Heavy prescription caused problems with embankment. Embankment: 20-ft to 50-ft L x 10-ft to 20-ft W x 12-ft. H = CY. The damaged material of the embankment consists of natural materials, rocks, and soil. The method of repair for the embankment: we need guidance and permit from the river engineer. Spoke with Jason Borg, regional river engineer and Patrick Ross to set up visits." **

  * Applicant indicated on original work order dated 03.17.2025) that work is 50% work complete in reference to temporary infill work that has since subsided or been washed out without fulfilling its structural support intention. The bridge abutment appeared to be substantially damaged as noticed during the 05.20.202 site inspection. The Applicant will be consulting with a structural engineer to confirm whether the bridge should be replaced with a longer span pending on a hydrologic and hydraulic evaluation by the Vermont Agency of Transportation and Agency of Natural Resources.

  **Applicant indicated on site that the collapsed embankment was due to rising Miller's Run flood levels and an undersized an/or clogged culvert at the top of Boulay Road.

Describe the mechanism or cause of the damage:

Flooding caused by turbulent river overflow due to torrential rain and watershed snow melt. The site receives watershed runoff from surrounding mountains and perennial streams flowing from river tributaries.

- **Damage #1494374 Fall Brook Road Bridge #00023.** Riverine flooding (Miller's Run) over-topped bridge damaging the North and South approaches, guar rails, abutments, and wing walls.

- **Damage #1494373 Boulay Road (Town Highway 47).** Heavy precipitation caused Miller's Run to flood causing erosion to the embankment.

  * As reported by Applicant to Site Inspector with modifications by HM EASP.

Did the damage occur in a Special Flood Hazard Area (SFHA)?	☒YES*	☐NO
• **Damage #1494374**) **Fall Brook Road Bridge #00023**, Yes. *** • **Damage #1494373), Boulay Road (Town Highway 47**). Yes. *** *** As reported by Applicant to Site Inspector.		

If yes, what Zone (e.g., Zone A, Zone AO)? Unavailable

Does this site have any documented damages from previous events? Unknown.	☐YES	☐NO
If so, what are they? Unknown.		
Is the applicant interested in measures to prevent damage from a similar future event? • **Damage #1494374 Fall Brook Road Bridge #00023**: Yes. *** 1) Extend or underpin bridge footings below the scour line; 2) Install or extend bridge wing walls; 3) Elevate the bridge above the Advisory Base Flood Elevation (ABFE) or flood of record; 4) Increase the bridge span to increase the cross-sectional area of flow. A Hydrologic and Hydraulic Study will be needed. • **Damage #1494373 Boulay Road (Town Highway 47):** Yes. *** Add large armoring stone, revetment or integrated nature-based solutions such as live fascines, vegetated geogrids, live crib walls, brush mattresses, root wads, or similar methods. *** As reported by Applicant to Site Inspector and suggestions from Version 5 PAPPG-Appendix J: Cost-effective Public Assistance Hazard Mitigation Measures.	☒YES	☐NO
Facility Descriptions: **Damage #1494374**) **Fall Brook Road Bridge #00023**: "Facility is a 46-foot steel beam with a wooden deck. Facility consists of 5 rolled beams with 2 larger ones along wheel path and shallower beams along outer ends and along centerline. Decking is pressure-treated lumber with pressure-treated plank runners. Abutments consist of reinforced concrete headwalls and wingwalls. No armoring visible at abutment faces. Guard rails are 4-inch x 6-inch pressure-treated top and center rails supported by 6-inch x 6-inch pressure treated post." *** *** As reported by Applicant to Site Inspector.		
What is their intended repair method? The Applicant is hiring consulting engineers who will determine how to implement applicable 406 HM measures in coordination with repair-in-kind embankment stabilization with attention to Vermont Agency of Transportation and Agency of Natural Resources requirements. • **Damage #1494374) Fall Brook Road Bridge #00023: "Applicant had contractor replace lost road** surface material in-kind. Applicant will repair abutment based on recommendations from Engineer's report."*** • **Damage #1494373 Boulay Road (Town Highway 47): "**Applicant will repair damaged embankment in accordance with river engineer recommendations." *** *** As reported by Applicant to Site Inspector.		
Will the proposed Mitigation Project require engineering services to develop the project scope/cost?	☒YES	☐NO

Will the proposed Mitigation Project require a Hydrology and Hydraulics (H&H) study?	☒YES	☒NO
Does the applicant have preferred construction techniques or Codes, Standards, or Specifications not listed in Appendix A of *FEMA Recovery Interim Policy FP-104-009-11, Consensus-Based Codes, Specifications, and Standards for Public Assistance* (December 2019) on FEMA.gov?	☒YES	☐NO
Can the applicant provide local material costs (i.e., contractor quote, engineering estimate, etc.)?	☒YES	☐NO
Additional information: **Reference: PAPPG V. 5 Appendix J: Cost-effective Public Assistance Hazard Mitigation Measures: Section I. Drainage Structures: Erosion Control. II. Transportation Facilities: A. Bridges. 2. Install cables to restrain a bridge from being knocked off piers or abutments during floods or earthquakes. 3. Install girder and deck uplift tie-downs to prevent their displacement from the substructure. 4. Install Longitudinal Peaked Stone Toe Protection with nature planting, upstream of a failed abutment, to provide a stable floodplain bench for the protection of the abutment and the adjoining bridge approach. Consider other relevant nature-based solutions such as engineered logjams, log vanes or log bend way weir. C. Roadways and railways: Where shoulders are susceptible to overflow from adjacent water courses, stabilize shoulders and embankments with geotextile fabric (such as an erosion control blanket/rolled erosion control product (RECP) or a turf reinforcement mat) and revetments.**		

Report completed by:

Name: Sanford Ross Bender, HM EASP
FEMA Phone #: 971-276-8635
FEMA Email Address: sanford.r.bender@fema.dhs.gov

PHOTOS/MAPS	
	
Damage #1494374) Fall Brook Road Bridge #00023	Damage #1494374) Fall Brook Road Bridge #00023

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PHOTOS/MAPS

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Damage #1494373 Boulay Road (Town Highway 47):	Damage #1494373 Boulay Road (Town Highway 47):
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