

5: Mitigation Strategy

The State of Vermont intends to create an efficient, effective, and consistent Hazard Mitigation Strategy that will focus efforts and priorities, enhance mitigation capabilities, and integrate State, regional, and local planning and risk assessment efforts in the short-term and long-term. The goals, objectives and actions stated herein are meant to serve as practical policy guidance for State of Vermont decision-makers in allocating resources for the Pre-Disaster Mitigation (PDM) Program, Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA) Program, and existing and future State resources, among many others. Additionally, this action list is intended to be a resource to VEM and partner agencies, as they continue to collaborate with non-governmental stakeholders throughout Vermont during implementation. As the actions contained within this Plan reach significantly beyond what any one entity would be able to implement or fund, continued collaboration is considered necessary for more effectively leveraging resources, thereby improving likelihood of implementation.

For an overview of the robust stakeholder engagement process undertaken to develop the vision, mission, goals, guiding principles, and actions that follow, see: [Planning Process](#). To better understand how the actions relate to the identified hazards and the specific vulnerabilities created by those hazards, see: [Hazard Assessment](#).

VISION: Vermont will be safe and resilient in the face of climate change and natural disasters.

MISSION: To protect life, property, natural resources and quality of life in Vermont by reducing our vulnerability to climate change and natural disasters.

GOALS

Protect, restore and enhance Vermont's natural resources to promote healthy, resilient ecosystems.

Enhance the resilience of our built environment – our communities, infrastructure, buildings, and cultural assets.

Develop and implement plans and policies that create resilient natural systems, built environments, and communities.

Create a common understanding of – and coordinated approach to – mitigation planning and action.

Guiding Principles for Mitigation Planning and Action:

- We will ensure that hazard mitigation work strengthens and protects Vermont's economy and affordability.
- We will reduce the risks and impact of hazards on vulnerable populations.
- We will ensure that hazard mitigation action accounts for – and helps us adapt to – climate change.
- We will work to build relationships and partnerships for action across sectors and disciplines.

Action Development & Prioritization Process

In a March 2017 State Hazard Mitigation Planning & Policy Committee (SHMPPC) meeting, attendees approved the creation of a Steering Committee to guide the SHMP update process, with the specific instruction to devote considerable time to developing a robust, implementable mitigation strategy. Accordingly, over the course of the next year, using the Plan goals identified by the Steering Committee, Working Groups and Focus Groups developed a significant list of mitigation actions. These actions were sorted by goal and then further sorted according to similar themes, called “strategies”.

Given a healthy list of ninety-six (96) mitigation actions, organization by prioritization was necessary. Accordingly, the 96 mitigation actions were ranked based on the below criteria (Table 42), developed by the Steering Committee.

Table 42: Action Prioritization Criteria

	Impact	Feasibility
High	<ul style="list-style-type: none"> • Significantly benefit the environment, OR • Significantly benefit people/vulnerable populations, OR • Significantly reduce risk in our built environment, OR • Significantly benefit the economy, OR • Create the opportunity to do one of the above (e.g. filling a data gap), AND • Significantly reduce vulnerability to a high priority hazard (erosion, inundation, ice, snow) 	<ul style="list-style-type: none"> • Have political and community support, AND • Are consistent with current state laws/policies, AND • Have funding/other required resources available or identified, AND • Are technically/logistically feasible
Medium	<ul style="list-style-type: none"> • Moderately benefit the environment, OR • Moderately benefit people/vulnerable populations, OR • Moderately reduce risk in our built environment, OR • Moderately benefit the economy, OR • Create the opportunity to do one of the above (e.g. filling a data gap), AND • Moderately reduce vulnerability to a profiled hazard 	<ul style="list-style-type: none"> • Have political and community support, OR • Are consistent with current state laws/policies, OR • Have funding/other required resources available or identified, AND • Are technically/logistically feasible
Low	<ul style="list-style-type: none"> • Minorly benefit the environment, OR • Minorly benefit people/vulnerable populations, OR • Minorly reduce risk in our built environment, OR • Minorly benefit the economy, OR • Create the opportunity to do one of the above (e.g. filling a data gap), AND • Minorly reduce vulnerability to a profiled hazard 	<ul style="list-style-type: none"> • Have political and community support, OR • Are consistent with current state laws/policies, OR • Have funding/other required resources available or identified, OR • Are technically/logistically feasible

Using the High, Medium and Low rankings for Impact and Feasibility within the action list, the Focus Groups organized by goal area began the process of defining priority actions under each goal, which were reviewed and modified by the Steering Committee. Any action that received a High Impact and High Feasibility score, and that requires coordination to be implemented, was automatically considered to be a priority action. The Steering Committee decided to also consider inclusion of certain High Impact actions with lower Feasibility scores in the priority action list based on Feasibility being potentially flexible or subject to future change. Those priority actions with lower Feasibility scores were either highlighted by the Focus Groups or added by the Steering Committee. Taken together, this Plan includes twenty-four (24) priority actions, which are highlighted in the complete action list below (Table 44).

For more information on the process for development of the 2018 SHMP actions, the criteria and action prioritization, see: [Planning Process](#).

In addition to these priorities, the Steering Committee also voted individually on their top three actions from the priority list, resulting in the following top priority actions:

- ***Develop a cross-sector buyout program***
- ***Inventory and protect critical headwater and floodplain storage areas***
- ***Collaborate across flood resilience, water quality and habitat connectivity programs and funding***
- ***Audit State programs to assess and improve their support of mitigation goals***
- ***Coordinate State programs to promote development, sharing and maintenance of hazard-related data and mapping***

The complete mitigation action list includes all 96 actions, categorized by similar themes into 24 strategies that then fall under the appropriate overarching goal, of which there are four. The list also identifies the:

- source of the action,
- pertinent category (e.g. technical assistance, data gap),
- hazard(s) that the action addresses,
- entity(ies) responsible for implementing the action,
- potential resources to fund action implementation,
- timeline for completing the action, and
- the overall Impact and Feasibility ratings.

For those actions that use the term “hazard-prone areas”, the Steering Committee aimed to address all hazards to which that specific action may reduce vulnerability. To that end, “hazard-prone areas” can mean a FEMA-mapped Special Flood Hazard Area, an area identified as vulnerable to landslides, or those regions of the State that are more vulnerable to drought or extreme cold, for example.

Though the mitigation action list identifies the hazard(s) addressed, some hazard-specific actions and capabilities can also be found and further explained in the mitigation subsection within each of the hazard profiles (see: [Hazard Assessment](#)).

Table 43: 2018 State Hazard Mitigation Plan Actions Acronym List:

AAFM	Vermont Agency of Agriculture, Food & Markets	NRCD	Vermont Natural Resources Conservation Districts
ACCD	Vermont Agency of Commerce & Community Development	NRCS	USDA Natural Resources Conservation Service
ADS	Vermont Agency of Digital Services	PSD	Vermont Public Services Department
AHS	Vermont Agency of Human Services	RM	Readiness Matrix
ANR	Vermont Agency of Natural Resources	RPC	Regional Planning Commission
AOA	Vermont Agency of Administration	SHPO	Vermont State Historic Preservation Officer
ARC	Academic Resilience Collaborative	SC	Steering Committee
BGS	Vermont Buildings & General Services	TNC	The Nature Conservancy
CDBG	Community Development Block Grant	USDA	United States Department of Agriculture
CLF	Conservation Law Foundation	USDA-RD	USDA - Rural Development
COAD	Community Organizations Active in Disaster	USGS	United States Geological Survey
CRO	Community Resilience Organizations	UVM	University of Vermont
CVOEO	Champlain Valley Office of Economic Opportunity	VAAHM	Vermont Association of Hospitals and Health Systems
DPS	Vermont Department of Public Safety	VCGI	Vermont Center for Geographic Information
EMPG	Emergency Management Performance Grant	VEM	Vermont Emergency Management
EPC	Emergency Preparedness Conference	VHCB	Vermont Housing & Conservation Board
ERAF	Emergency Relief & Assistance Fund	VHS	Vermont Historical Society
EWP	Emergency Watershed Protection Program	VLCT	Vermont League of Cities & Towns
FEMA	Federal Emergency Management Agency	VLT	Vermont Land Trust
FHWA	Federal Highway Administration	VNRC	Vermont Natural Resources Council
GMP	Green Mountain Power	VOAD	Voluntary Organizations Active in Disaster
HWA	FEMA Hazard Mitigation Assistance	VRC	Vermont River Conservancy
HMGP	FEMA Hazard Mitigation Grant Program	VTrans	Vermont Agency of Transportation
HMTAP	FEMA Hazard Mitigation Technical Assistance Programs	WG	Working Group
NESEC	Northeast States Emergency Consortium	WUV	Watersheds United Vermont
NFIP	FEMA National Flood Insurance Program		

Table 44: 2018 State Hazard Mitigation Plan Actions

GOAL: Protect, restore and enhance Vermont’s natural resources to promote healthy, resilient ecosystems.

Strategy	Action	Source	Category	Hazard(s) Addressed	Entities	Potential Resources	Timeline	Impact	Feasibility
Promote land management standards for State and private lands	Implement ANR’s flood resilience guidelines on ANR Lands.	Aug 2017 WG (1.3.3)	Regulation/Policy	Inundation; Fluvial Erosion	ANR, ANR’s State Lands Sub-Committee	Existing State Resources	2019	Medium	High
	Expand ANR’s flood resilience guidelines into a consistent State land management policy to increase and maintain flood storage and attenuation on all state-owned land.	Expert Review (RM #5, 1.3.3)	Regulation/Policy	Inundation; Fluvial Erosion	ANR, BGS	Existing State Resources	2020	High	Medium
	Support ongoing efforts to identify strategies for funding and assisting private landowners with essential hazard mitigation and clean water projects.	Dec WG / SHMP 2013 (RM #87)	Funding/Incentive	Inundation; Fluvial Erosion	ANR, VEM, AAFM, VTrans, High Meadows Fund	Existing State and Nonprofit Resources	Ongoing	Medium	High
	Work with land conservation organizations to include river corridor and floodplain protection provisions, and/or headwater storage in conservation easements.	Expert Review	Partnership/Coordination	Inundation; Fluvial Erosion	ANR, VHCB, VRC, VLT, NRCD	Existing State and Nonprofit Resources	2019	High	High
Improve headwater storage	Develop an inventory of critical headwater and floodplain storage areas that would result in a measurable abatement of flooding.	WG June 2017	Data Gap	Inundation; Fluvial Erosion	ANR, USGS, TNC, VLT, UVM, VRC	TNC, State Resources	2019-2020	High	High
	Complete a pilot project in a strategic watershed, using the above inventory, to prioritize land conservation and determine the cost of averted flood damage.	Focus Group	Data Gap	Inundation; Fluvial Erosion	ANR, USGS, TNC, VLT, UVM, VRC	TNC, HMGP 5% Initiative	2020	High	High
	Conserve land identified in the critical headwater storage inventory through landowner outreach and existing conservation programs.	WG June 2017	Education/Outreach	Inundation; Fluvial Erosion	ANR, Watershed Groups, RPCs, Land Trusts, VRC	Existing State and Nonprofit Resources	Ongoing	High	Medium
	Identify critical headwater storage areas enrolled in the Current Use program and conduct outreach to inform landowners of the value of protecting these areas during harvesting operations.	Focus Group	Regulation/Policy	Inundation; Fluvial Erosion	ANR, AAFM, VRC	Existing State Resources	Ongoing	High	Medium
	Identify stormwater-impaired headwater storage areas where stormwater treatment and stream restoration would result in hazard mitigation co-benefits.	Expert Review	Data Gap	Inundation; Fluvial Erosion	ANR, RPCs, VEM, VRC	FEMA HMA	Ongoing	Medium	Medium
Reduce negative impacts of in-stream work	Create a working group to explore potential strategies to reduce negative impacts from heavy equipment operators who work in rivers (i.e., tailored Rivers and Roads Training Tier 3).	Expert Review / SHMP 2013 (3.4.1)	Technical Assistance	Inundation; Fluvial Erosion	ANR, VTrans, VEM, TNC, RPCs	Existing State and Nonprofit Resources	2019	High	Medium
	Develop a rapid-response field task force (river engineers, scientists, restoration specialists, transportation engineers and RPC staff) to provide regulatory, technical and administrative assistance for in-stream reconstruction projects and mitigation measures in the immediate aftermath of major flood disasters.	SHMP 2013 Priority (3.3.1)	Program Development	Inundation; Fluvial Erosion	ANR, RPCs, VTrans, VEM	Existing State Resources	Ongoing	High	Medium
	Institute an effective outreach and training program to assist municipalities in complying with Vermont’s new rules for conducting instream emergency protective measures.	Expert Review / SHMP 2013 3.1.4	Program Development	Inundation; Fluvial Erosion	ANR, RPCs, VTrans, VEM	Existing State Resources	Ongoing	High	Medium
	Incorporate ANR’s Standard River Management Principles and Practices into in the VTrans Orange Book to ensure municipalities adopt the same standards.	SHMP 2013 (RM #5)	Regulation/Policy	Inundation; Fluvial Erosion	ANR, VTrans	Existing State Resources	2020	High	Medium
Improve flood resilience of agricultural lands	Create a working group to develop a coordinated assistance strategy (funding mechanisms, technical support, directory of available resources) to further improve the resilience of agricultural lands and their contribution to flood resilience.	SHMP 2013 (RM #31, #33, #88)	Program Development	All Hazards	AAFAM, ANR, UVM Extension, NRCS, VLT, High Meadows, NRCDs, VRC, NRCD	Existing State and Nonprofit Resources	2020	High	High
	Expand use of USDA conservation programs to plant riparian buffers and flood chute grassed waterways to reduce future flood damage to farm fields, attenuate flood-borne sediment and debris, and reduce downstream flooding.	Expert Review / SHMP 2013 (3.2.6)	Funding/Incentive	Inundation; Fluvial Erosion	AAFAM, USDA, UVM Extension	USDA	Ongoing	Medium	Medium
Promote drought resilience	Expand the number of monitoring wells (in both bedrock and surficial materials) to include drilled wells which will provide data for tracking water level and responses to precipitation.	Expert Review	Data Gap	Inundation; Fluvial Erosion; Drought	ANR, USGS	USGS, Existing State Resources	Ongoing	Medium	Medium
	Analyze water level/monitoring data to use as predictor of drought and rates of recovery.	Expert Review	Data Gap	Drought	ANR, USGS	Existing State Resources	Ongoing	Medium	Medium
	Develop statewide groundwater resource maps, water use and water level data in order to determine water budgets for local areas in preparation for drought conditions.	SHMP 2013 (5.1.10)	Data Gap	Drought	ANR	HMGP 5% Initiative	2020	Medium	Low

Strategy	Action	Source	Category	Hazard(s) Assessed	Entities	Potential Resources	Timeline	Impact	Feasibility
Connect water quality, flood resilience and native habitat connectivity through co-benefits	Create a “Reconnect Vermont Rivers” initiative (or similar State planning, prioritization, and tracking mechanism) to enhance the funding eligibility and incentives for flood resilience, water quality, and habitat projects as co-benefits.	Expert Review	Partnership/Coordination	Inundation; Fluvial Erosion	ANR, TNC, AAFM, WUV, VTrans, VLT, VRC, NRCD	Existing State and Nonprofit Resources	Ongoing	High	High
	Develop hydraulic and stream power models for a range of flood frequencies to analyze and define valley areas supporting essential floodplains and river corridor functions that would increase the storage of flood flows, sediments, and nutrients.	Expert Review	Technical Assistance, Data Gap	Inundation; Fluvial Erosion	ANR, UVM, TNC, VLT, USGS, NRCD	Existing State and Nonprofit Resources	Ongoing	High	High
	Promote the use of Vermont Fish and Wildlife’s Conservation Design Plan to achieve and maintain habitat connectivity and havens for Vermont rare, threatened, and endangered species (aquatic and terrestrial).	Expert Review	Education/Outreach	Invasive Species; Inundation; Fluvial Erosion	TNC, ANR, VHCB, NRCS, Land Trusts, VLCT, RPCs	Existing State Resources	Ongoing	Medium	High

GOAL: Enhance the resilience of our built environment - our communities, infrastructure, buildings, and cultural assets.

Strategy	Action	Source	Category	Hazard(s) Addressed	Entities	Potential Resources	Timeline	Impact	Feasibility
Locate new development outside of hazardous areas	Secure funding to create a permanent all-hazard mapping position at ANR (as created by SHMP 2018 subgrant).	Expert Review / SHMP 2013 (RM #75)	Data Gap	All Hazards	ANR, VEM	USGS, FEMA, State Resources	2019	Medium	Medium
	Develop a mechanism for tracking new structural development in the river corridor so development patterns can be tracked over time.	WG June 2017	Data Gap	Inundation; Fluvial Erosion	ANR, UVM, VCGI, RPCs	NFIP, State Resources	2019	High	Medium
	Research reasonable steps developers can take to site new structural development outside of hazard-prone areas when the State is involved in funding, consistent with State river corridor standards and land use goals.	Dec WG / SHMP 2013 Priority (1.2.1, New 4.2)	Data Gap	Inundation; Fluvial Erosion; Landslide	ANR, AOA, VEM, VTrans	Existing State Resources	Ongoing	High	High
Develop resilient design and construction standards	Develop sample building standards for resilient design and construction (for buildings, construction sites, transportation infrastructure, etc.).	Expert Review	Technical Assistance	All Hazards	ANR, VTrans, RPCs, Norwich	Existing State Resources	2020	High	Medium
	Audit existing building codes to ensure that standards account for anticipated climate change impacts to Vermont, including but not limited to increased temperatures extremes and precipitation.	Expert Review	Data Gap	All Hazards	Norwich, DPS - Fire Safety	Existing State and Academic Resources	2020	Low	Low
	Create educational resources for contractors, municipalities and property owners on resilient design and construction techniques.	Dec WG	Education/Outreach	All Hazards	Norwich, VTrans, DPS (Partner with Efficiency VT)	Existing State and Academic Resources	2020	Medium	Medium
	Research how applicants can demonstrate they have taken reasonable steps to incorporate resilient design and construction in hazard-prone areas when the State is involved in funding, consistent with the objectives of the funding source.	Expert Review	Data Gap	All Hazards	All State Agencies, RPCs	Existing State Resources	2019	High	Medium
Incorporate flood resilience in transportation planning, engineering and programming	Secure funding to expand the VTrans Methods and Tool for Transportation Resilience application (as developed by the 2018 SHMP subgrant) to all watersheds in the State.	Aug 2017 WG	Data Gap	Inundation; Fluvial Erosion	VTrans, VEM, RPCs	Federal Highway, Existing State Resources, FEMA	2018-2023	High	High
	Incorporate metrics for flood resilience into the VTrans project prioritization process.	Aug 2017 WG	Regulation/Policy	Inundation; Fluvial Erosion	VTrans, ANR, VEM	Existing State Resources	2019	High	High
	Incorporate river and road resilience principles and practices developed by ANR and VTrans (through 2018 SHMP subgrants) into municipal technical assistance and funding to encourage local road maintenance and upgrades that reduce flood-related vulnerabilities.	Expert Review	Technical Assistance	Inundation; Fluvial Erosion	VTrans, ANR, VEM, RPCs	Existing State Resources	2020	High	Medium
	Identify, evaluate and implement design standards and operational practices for State transportation infrastructure necessary to accommodate extreme weather conditions.	SHMP 2013 (4.1.1, RM #17)	Regulation/Policy	All Hazards	VTrans, Norwich, RPCs	Existing State Resources, Federal Highway	Ongoing	High	Medium
Assess seismic vulnerability	Conduct thorough seismic analyses of select bridge sites, based on UVM’s seismic vulnerability ranking system, and prioritize projects.	SHMP 2013 (5.1.13)	Data Gap	Earthquake; Landslides	VTrans, ANR, UVM Transportation Research Center	USGS, Existing State and Academic Resources	Ongoing	Medium	Low
	Conduct detailed seismic analyses for critical facilities identified in the 2016 NESEC study as well as cultural facilities using HAZUS and ROVER.	SHMP 2013 (3.1.9, 5.1.11)	Data Gap	Earthquake; Landslides	ANR, NESEC, VEM, BGS, SHPO	NESEC, FEMA	Ongoing	High	Medium

Strategy	Action	Source	Category	Hazard(s) Addressed	Entities	Potential Resources	Timeline	Impact	Feasibility
Identify and protect vulnerable structures and critical infrastructure	Adapt the flood vulnerability methods developed by VTrans Methods and Tool for Transportation Resilience project (2018 SHMP subgrant) and the Vermont Economic Resiliency Initiative (ACCD) for use in identifying other structures, utilities, key employment areas, and critical infrastructure that are vulnerable to damage from floods.	SHMP 2013 (3.2.1)	Data Gap	Inundation; Fluvial Erosion	ANR, VTrans, VEM, ACCD, GMP	Existing State Resources, Utilities	2019-2023	High	Medium
	Secure funding to implement the priority mitigation actions list developed by Buildings and General Services (BGS) (2018 SHMP subgrant).	Aug 2017 WG / SHMP 2013 (3.2.1)	Funding/ Incentive	Inundation; Fluvial Erosion	BGS, All Agencies	FEMA HMA	2019-2023	Medium	Low
	Provide technical assistance to utilities in long-range planning for transmission and distribution line upgrades and relocation to improve resilience.	Expert Review	Technical Assistance	Wind; Ice; Snow	PSD, ANR	Existing State Resources	Ongoing	Medium	Low
	Assist Vermont Gas in evaluating the flood and seismic vulnerability of Vermont's natural gas pipeline network through the Integrity Management Program, and identify actions to mitigate this risk.	SHMP 2013 (4.7.1)	Technical Assistance	Inundation; Fluvial Erosion; Earthquake; Landslide	PSD	Existing State Resources	Ongoing	Medium	Low
	Require consideration of river corridors in the State permitting process for water and wastewater facility siting or improvement.	SHMP 2013 (1.1.1)	Regulation/ Policy	Inundation; Fluvial Erosion	ANR	Existing State Resources	2020	High	Medium
	Provide technical assistance to municipalities to assess the flood and erosion risks facing their drinking water and waste water systems and identify potential mitigation improvements.	SHMP 2013 (2.1.3)	Technical Assistance	Inundation; Fluvial Erosion	ANR, RPCs	HMGP 5% Initiative Funding	Ongoing	High	Medium
	Create a process for relocating or retrofitting at-risk mobile home parks at the time of sale or substantial rehabilitation using the DHCD's risk assessment tool.	Expert Review / SHMP 2013 (RM #104)	Data Gap	Inundation; Fluvial Erosion; Landslide	ACCD, CVOEO	FEMA HMA	2019	High	Low
Reduce structural vulnerability to landslide hazards	Provide technical assistance to local planners with using the Protocol for Identification of Areas Sensitive to Landslide Hazards to prioritize landslide projects based on risk and develop mitigation options.	SHMP 2013 (3.2.2, 5.1.7)	Technical Assistance	Landslide	ANR, RPCs	EMPG, Existing State Sources	Ongoing	Medium	Medium
	Expand landslide hazard mapping to statewide coverage.	Focus Group	Data Gap	Landslide	ANR, VEM	EMPG, HMGP 5% Initiative Funding	Ongoing	Medium	Medium
	Educate towns and citizens on reporting observed landslides (rockfalls, debris flows, other mass failures) via the landslide hazard online reporting form.	Expert Review	Education/ Outreach	Landslide	ANR, RPCs	Existing State Sources	Ongoing	Medium	High
Protect cultural and historic resources	Update inventories and mapping of cultural and historic resources located in hazard-prone areas (currently underway at the State level and regionally through FEMA).	Aug 2017 WG / Dec WG	Data Gap	Inundation; Fluvial Erosion	ACCD, VT Arts Council, RPCs, FEMA	FEMA, Existing State Resources	2018	Medium	Medium
	Use the updated cultural and historic resources inventory to identify and secure funding for priority cultural and historic structures that can be relocated out of hazardous locations or flood-proofed.	Aug 2017 WG	Funding/ Incentive	Inundation; Fluvial Erosion	ACCD, BGS, Arts Council, VHS	FEMA HMA	2019	High	Low
	Develop and share best practice guides and tool kits for proactive efforts to protect historic buildings, villages and downtowns in floodplains.	June 2017 WG meeting	Education/ Outreach	Inundation; Fluvial Erosion	ACCD, BGS, VT Arts Council, VHS	Existing State and Nonprofit Resources	2019	Medium	Medium
	Improve communications between mitigation project work and historic preservation review to allow for more rapid approval of shovel-ready projects.	Dec WG	Partnership/ Coordination	All Hazards	SHPO, VEM, ANR, VTrans, FEMA	Existing State Resources	Ongoing	High	High
Establish a statewide conservation and buyout program	Establish a working group to design a robust cross-sector buyout program, considering funding, ownership, use restrictions, incentives, stewardship, prioritization.	SHMP 2013 Priority (RM #91)	Partnership/ Coordination	Inundation; Fluvial Erosion; Landslide	VEM, ANR, VLCT, VRC, VHCB, ACCD, CLF	Existing State and Nonprofit Resources	2018-2019	High	High
	Create a dedicated State fund to support the purchase or local match of hazard-prone properties and the purchase of easements to conserve river corridors, floodplains, and wetlands identified as key flood attenuation areas.	DEC WG	Funding/ Incentive	Inundation; Fluvial Erosion; Landslide	EWP, ACCD, ANR, FHWA, VHCB, FEMA, USDA, NRCS	State, Federal and Nonprofit Resources	2019-2020	High	Low
	Expand the eligibility criteria and increase funding for VHCB's conservation and buyout program, to address any flood-vulnerable structures.	DEC WG	Regulation/ Policy	Inundation; Fluvial Erosion	ANR, VHCB, AOA	Existing State and Nonprofit Resources	2019	High	Medium
	Fund ERAF for non-federal disasters in towns that have adopted floodplain and/or river corridor bylaws and to support the 25% non-federal match for buyouts and develop criteria for distribution when funding is limited.	Aug 2017 WG	Regulation/ Policy; Funding/ Incentive	Inundation; Fluvial Erosion	ANR, VEM, AOA	ERAF, Other State Resources	2021	High	Low
	Create and maintain a database of tax-sale/foreclosed properties located within SFHA and State River Corridor maps to identify flood-vulnerable structures for removal.	2017 EPC	Data Gap	Inundation; Fluvial Erosion	ANR, VEM, VT Realtors	Existing State Resources	2020	High	Low
	Develop a priority list and map of community-identified properties that have been damaged repetitively but are not on the FEMA Repetitive Loss (RL) or Severe Repetitive Loss (SRL) list to be used for buyout/conservation prioritization.	SHMP 2013 (New 5.1)	Data Gap	Inundation; Fluvial Erosion; Landslide	VEM, ANR, RPCs	Existing State Resources	2019	High	Medium
	Develop a Benefit/Cost Analysis methodology to facilitate buyouts in areas at risk from flood-related erosion and outside of FEMA-mapped Special Flood Hazard Areas.	Expert Review (5.1.9)	Data Gap	Fluvial Erosion	VT Silver Jackets, VEM, ANR	HMGP 5% Initiative Funding	2019-2021	High	Low

Improve dam resilience	Conduct and/or update dam breach analyses on significant and high-hazard dams.	2017 EPC	Data Gap	Inundation; Fluvial Erosion	ANR, VEM	Dam Safety Program uses FEMA grant to work on ~3/year	Ongoing	High	Medium
	Develop rules around requiring Emergency Action Plans (EAPs) to be developed and updated annually or every other year (dam safety bill passed in 2018, Act 162).	Expert Review	Regulation/Policy	Inundation; Fluvial Erosion	ANR, VEM	Dam Safety Program uses FEMA grant to work on ~3/year	2020	Medium	Medium
	Complete development and digitize all dam inundation maps for all high hazard dams and perform tabletop exercises for new Emergency Action Plans (EAPs), once generated.	Expert Review / SHMP 2013 (5.1.2)	Data Gap	Inundation; Fluvial Erosion	ANR, VEM	Existing State Resources, USACE	2018-2020	High	High
	Develop a new Vermont Dam Inventory to better link data and digital inundation mapping, including more robust contact information for owners, ecological information and Emergency Action Plans (EAPs).	Expert Review	Data Gap	Inundation; Fluvial Erosion	ANR, VEM	Interagency/group formed to work on	2019-2021	High	Medium
	Develop guidance documents/criteria for the security improvement of high hazard dams throughout Vermont.	Expert Review	Preparedness	Inundation; Fluvial Erosion	ANR, VEM, DPS	VEM	2019-2021	Medium	Medium
	Utilize updated Dam Inventory to support the expansion of the Dam Removal Screening Tool beyond Champlain Basin.	Expert Review	Data Gap	Inundation; Fluvial Erosion	ANR, VEM, TNC, VNRC, Dam Task Force		2019	High	High

GOAL: Develop and implement plans and policies that create resilient natural systems, built environments and communities.

Strategy	Action	Source	Category	Hazard (s) Addressed	Entities	Potential Resources	Timeline	Impact	Feasibility
Ensure State programs support hazard mitigation goals	Audit all state/federal funding/technical assistance programs to determine the degree to which they directly or indirectly help or hinder the ability of the State to achieve Vermont's State Hazard Mitigation Plan goals.	SHMP 2013 Priority (1.2.1, RM #3)	Data Gap	All Hazards	AOA, ANR, VEM, ACCD, AAFM, CLF	Existing State Resources	2019-2020	High	High
	Following the audit above, develop a set of planning principles and recommendations as a means to align State programs.	Focus Group	Regulation/Policy	All Hazards	ACCD, ANR, VEM	Existing State Resources	2020-2023	High	Medium
Improve incentives for local hazard mitigation planning and action	Convene a working group of State agencies, academic partners, regional and local stakeholders to review the effectiveness of existing Emergency Relief & Assistance Fund (ERAF) criteria and river corridor bylaws.	Dec WG / SHMP 2013 (RM #43)	Regulation/Policy	Inundation; Fluvial Erosion	VEM, ANR, VTrans, UVM, RPCs	Existing State and Nonprofit Resources	2019	High	High
	Revise the Emergency Relief & Assistance Fund (ERAF) criteria to more effectively incentivize communities to improve their flood resilience.	Dec WG	Regulation/Policy	Inundation; Fluvial Erosion	VEM, ANR, VTrans, AOA	Existing State Resources	2020-2023	High	Medium
Improve local hazard mitigation planning	Create a working group to assess statutory updates to the municipal planning requirements to better coordinate municipal plans and local hazard mitigation plans.	Focus Group	Regulation/Policy	All Hazards	VEM, ACCD, RPCs	Existing State and Local Resources	2019-2020	Medium	Medium
	Develop a model of an integrated municipal plan and local hazard mitigation plan that meets the requirements of both planning processes.	Dec WG	Regulation/Policy	All Hazards	VEM, ACCD, RPCs	Existing State Resources	2019	Medium	Medium
	Create intuitive Local Hazard Mitigation Plan templates (single and multi-jurisdictional) and development resources, including local engagement tools.	2017 EPC, Dec WG	Technical Assistance	All Hazards	VEM, RPCs	Existing VEM Resources	2019	Medium	High
	Develop a Vermont-based potential mitigation actions list for Local Hazard Mitigation Plans from the findings of the ANR subgrant.	2017 EPC	Technical Assistance	All Hazards	VEM, ANR, VTrans	Existing VEM Resources	2019	Medium	High
	Host annual or biannual Local Hazard Mitigation Planning workshops and skill-shares.	Expert Review	Technical Assistance	All Hazards	VEM, FEMA	Existing VEM Resources	Ongoing	Medium	High
	Request approval from FEMA to participate in Program Admin by State to expedite Local Hazard Mitigation Plan (LHMP) approvals.	VEM	Program Development	All Hazards	VEM	Existing VEM Resources	2019-2020	Medium	Medium
Support RPCs in implementing municipal hazard mitigation project tables developed through the ANR subgrant (bake into annual work plans from ANR and VEM funding).	Focus Group	Education/Outreach	Inundation; Fluvial Erosion	ANR, RPCs	Existing State Resources	Ongoing	Medium	High	

Strategy	Action	Source	Category	Hazard(s) Addressed	Entities	Potential Resources	Timeline	Impact	Feasibility
Develop solutions to fund hazard mitigation	Host practical, biannual workshop sessions to help applicants prepare Hazard Mitigation Assistance (HMA) grant applications, including sessions on application development, e-Grants, benefit-cost analysis, engineering design and environmental permitting.	SHMP 2013 (2.2.1, RM#21)	Technical Assistance	All Hazards	VEM, FEMA	Existing VEM Resources	Ongoing	Medium	High
	Convene State, federal and private funders annually to identify ways to better leverage existing funding, fill funding gaps, increase funder alignment, and strengthen funding criteria that relate to hazard mitigation and climate adaptation.	Focus Group	Partnership/Coordination	All Hazards	VEM, ANR, VTrans, USDA RD, High Meadows, VHCB, Resilient VT, FHWA, FEMA	Existing State and Nonprofit Sources	Ongoing	High	High
	Develop a clearinghouse directory of mitigation funding opportunities including details on requirements, deadlines, and timeframes that can be available at the local level to implement mitigation action.	Aug 2017 WG	Technical Assistance	All Hazards	VEM, ANR, VTrans, ACCD, TNC	Existing State Sources	2019	Medium	High
	Implement the Hazard Mitigation Assistance (HMA) requirements of an Enhanced Plan for the 2023 State Hazard Mitigation Plan update in order to increase HMGP share following a disaster.	VEM	Program Development	All Hazards	VEM	Existing VEM Resources	2020-2023	High	Medium

GOAL: Create a common understanding of - and coordinated approach to - mitigation planning and action.

Strategy	Action	Source	Category	Hazard(s) Addressed	Entities	Potential Resources	Timeline	Impact	Feasibility
Improve local leaders' understanding of hazard mitigation	Complete loss-avoidance studies to better understand the positive impact of completed mitigation work, including the value of open space, forested and conserved land.	Focus Groups	Data Gap	All Hazards	VEM, ANR, VTrans, FEMA, TNC, VRC, UVM	FEMA HMTAP, HMA	2020	High	Medium
	Develop case studies to showcase replicable pilot projects that reduce community vulnerability.	June 2017 WG meeting	Education/Outreach	All Hazards	UVM, Norwich	HMGP 5% Initiative	2019-2020	High	High
	Develop strategic capital budgeting training and materials to incorporate mitigation and water quality projects, explain the cost of no action and include municipal liability concerns.	2017 EPC	Technical Assistance	Inundation; Fluvial Erosion; Landslide	VEM, ACCD, ANR, VTrans, TNC, VHCB, VNRC, VRC, RPCs	CDGB Planning Grant	2020	High	High
	Promote and maintain technical support to communities to adopt river corridor bylaws, limit development in floodplains and river corridors, and participate in the Community Rating System (CRS).	SHMP 2013 Priority (RM, New 4.2)	Education/Outreach	Inundation; Fluvial Erosion	ANR, ACCD, RPCs, VLCT	Existing State and Nonprofit Resources	Ongoing	Medium	High
	Integrate hazard awareness and disaster resilience education with existing training opportunities throughout the State.	Aug 2017 WG	Technical Assistance	All Hazards	VEM, ANR, VTrans, AHS	Existing State Resources	Ongoing	Medium	High
Increase public knowledge and literacy of hazards and mitigation	Develop an inventory of existing public outreach materials (hazard mitigation opportunities, steps to take following a disaster, etc.), compile or create effective aids and develop a distribution strategy.	Focus Groups	Education/Outreach	All Hazards	VEM, VDH, ANR, CVOEO, Watersheds United, RPCs	Existing State and Nonprofit Resources	2019	Medium	High
	Develop educational materials and dissemination strategy to increase public literacy regarding river science, floodplain function and benefits.	SHMP 2013 (RM #96)	Education/Outreach	Inundation; Fluvial Erosion	VEM, ANR, State Floodplain Manager, Norwich, Watersheds United, NRCD	Existing State and Nonprofit Resources	2019-2020	High	High
	Support education of the general public around invasive species and their role in altering the beneficial functions of natural ecosystems.	WG June 2017	Education/Outreach	Invasive Species	ANR, AAFM, TNC	TNC, Existing State and Nonprofit Resources	Ongoing	Low	Medium
Improve community resilience and local engagement	Develop educational resources to assist local entities and Regional Planning Commissions in creating and maintaining Community Organizations Active in Disaster (COADs).	Dec WG / SHMP 2013 (NEW 3.1)	Education/Outreach	All Hazards	AHS, RPCs, CROs, COADs	FEMA Disaster Recovery, VOAD	Ongoing	Medium	Medium
	Support the coordination and capacity of community resilience initiatives at the local level (such as Community Resilience Organizations) to reduce community and individual vulnerability to natural hazards.	Aug 2017 WG / SHMP 2013 (NEW 3.1)	Education/Outreach	All Hazards	AHS, Norwich, Watershed United, RPCs, CROs	FEMA HMP, CROs	Ongoing	High	Medium

Strategy	Action	Source	Category	Hazard(s) Addressed	Entities	Potential Resources	Timeline	Impact	Feasibility
Strengthen networks that support the resilience of vulnerable populations	Develop guidance and technical support for municipalities to identify and map populations that are potentially vulnerable to hazards.	June 2017 WG meeting	Education/ Outreach	All Hazards	VDH, AHS, RPCs, VCGI	Existing State Resources	Ongoing	High	Medium
	Gather and disseminate vulnerable population data and analysis for incorporation into municipal and regional plans so that the needs of Vermont's vulnerable populations are clearly identified and represented.	SHMP 2013 Priority (RM #77)	Technical Assistance	All Hazards	VDH, VEM, AHS, ACCD, RPCs, CVOEO, VCGI	Existing State, Academic and Nonprofit Resources	Ongoing	High	Medium
	Develop statewide database of rental properties using the mobile home database as a model.	Dec WG	Data Gap	All Hazards	CVOEO, DPS, ACCD	Existing State, Academic and Nonprofit Resources	2019-2020	High	Medium
	Support development of coordinated care network to provide consistent messaging on steps individuals can take to prepare for and reduce vulnerability to natural hazards.	Dec WG	Education/ Outreach	All Hazards	AHS, CVOEO, VAHHS	Existing State and Nonprofit Resources	Ongoing	High	Medium
	Support and strengthen the Disaster Case Management (DCM) Network to train case managers working with disaster-affected individuals to aid in their recovery and identify mitigation opportunities.	SHMP 2013 (RM #42)	Technical Assistance	All Hazards	AHS, VEM, VOAD, COADs, Red Cross	Existing State and Nonprofit Resources	Ongoing	High	High
Coordinate hazard mitigation mapping, data and research	Create inventory of available data across State government, universities and organizations to align conflicting information and identify gaps.	Dec WG	Data Gap	All Hazards	ANR, VEM, VTrans, ADS, ACCD, VCGI	Existing State, Academic and Nonprofit Resources	2020	Medium	Low
	Coordinate State programs to promote development, sharing and maintenance of hazard-related data and mapping across a common platform.	Dec WG/ SHMP 2013 (5.1.4)	Partnership/ Coordination	All Hazards	ANR, VEM, VTrans, ADS, ACCD, VCGI, ArmyCorps, NRC	FEMA, Existing State Sources	Ongoing	High	Low
	Develop a common and consistent statewide platform for collecting local and regional response and recovery data.	Expert Review	Partnership/ Coordination	All Hazards	ANR, VEM, VTrans, ADS, ACCD, RPCs	Existing State and Nonprofit Resources	2018-2019	High	High
	Support the development of an Academic Resilience Collaborative (ARC) of State agencies, academic partners, researchers, students and entities with research needs around hazard mitigation and resilience.	Dec WG	Partnership/ Coordination	All Hazards	Norwich, VEM, ANR, VTrans, High Meadows, RPCs	Existing State, Academic and Nonprofit Resources	2018-2019	High	High
	Host regular meetings to identify and discuss priority research and project needs for SHMP implementation.	Dec WG	Partnership/ Coordination	All Hazards	Norwich, VEM, High Meadows, ARC, Resilient VT	Existing State, Federal, Academic and Nonprofit Resources	Ongoing	Medium	High