

**Draft Environmental Assessment  
Melrose Terrace Demolition and Floodplain  
Restoration  
Brattleboro, Windham County, VT**

**PDMC-PJ-01-VT-2016-001**

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**FEMA**

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## LIST OF ACRONYMS

ACHP–Advisory Council on Historic Preservation	SHPO–State Historical Preservation Office
APE–Area of Potential Effect	USACE–U.S. Army Corps of Engineers
BHA–Brattleboro Housing Authority	USC–U.S. Code
BMP–Best Management Practice	USDA–U.S. Department of Agriculture
CDP–Community Development Project	USFS–U.S. Forest Service
CEQ–Council on Environmental Quality	USFWS–U.S. Fish and Wildlife Service
CERCLA–Comprehensive Environmental Response, Compensation, and Liability Act	USGS–U.S. Geological Survey
CFR–Code of Federal Regulations	UST–Underground Storage Tanks
C-LOMR–Conditional Letter of Map Revision	VDEC–Vermont Department of Environmental Conservation
CRS–Community Rating System	VSA–Vermont Statutes Annotated
CWA–Clean Water Act	VT ANR–Vermont Agency of Natural Resources
EA–Environmental Assessment	VEM–Vermont Emergency Management
EIS–Environmental Impact Statement	VTDHP–Vermont Division of Historic Preservation
EJ–Environmental Justice	VTrans–Vermont Agency of Transportation
EO–Executive Order	WCS–Wetlands Classification Standard
EPA–Environmental Protection Agency	WMPD–Waste Management and Prevention Plan
ESA–Endangered Species Act	
FEMA–Federal Emergency Management Agency	
FIRM–Flood Insurance Rate Map	
FONSI–Finding of No Significant Impact	
HUD–Housing and Urban Development	
IPaC–Information for Planning and Consultation	
MBTA–Migratory Bird Treaty Act	
NEPA–National Environmental Policy Act	
NFIP–National Flood Insurance Program	
NHPA–National Historic Preservation Act	
NOAA–National Oceanic and Atmospheric Administration	
NPDES–National Pollutant Discharge Elimination System	
NRCS–Natural Resources Conservation Service	
NPS–National Park Service	
NRHP–National Register of Historic Places	
NWI–National Wetlands Inventory	
PDM–Pre-Disaster Mitigation	
RCRA–Resource Conservation and Recovery Act	
SFHA–Special Flood Hazard Area	

## **1.0 INTRODUCTION**

The Brattleboro Housing Authority (B.H.A.) has applied for a FEMA Pre-Disaster Mitigation grant to fund a Proposed Action that would include demolition of eleven (11) residential structures at the Melrose Terrace public housing complex. The structures are in the Whetstone Brook floodplain and they have been flooded in the past, e.g. during Tropical Storm Irene in 2011. B.H.A. has also proposed to restore the floodplain on 4.4-acres of the project area by excavating approximately 28,000 cubic yards of historic fill, grading the area, adding rip-rap stone along the bank of Whetstone Brook, replacing stockpiled loam, and landscaping with native shrubs and grasses. In addition, an overflow culvert would be installed at the George F. Miller Bridge to increase flood water flow capacity under the bridge.

Vermont Emergency Management (V.E.M.) is the state agency partner for the Proposed Action; V.E.M. would be the grant recipient. B.H.A. would be the grant sub-recipient.

Since the initial application for this project was submitted, B.H.A. has changed its name to Brattleboro Housing Partnership. However, much of the supporting documentation for this project refers to B.H.A., so that acronym is used throughout this document to maintain consistency.

B.H.A. was incorporated in 1962. Melrose Terrace was constructed in 1966 as their first public housing complex, and the first in Vermont.

This environmental assessment is prepared in accordance with the National Environmental Policy Act (N.E.P.A.) and implementing regulations. The purpose of the environmental assessment is to analyze potential impacts of the Proposed Action and Alternatives on the human environment, and to determine whether to prepare an Environmental Impact Statement or a Finding of No Significant Impact.

## **2.0 PURPOSE AND NEED**

The purpose of the Melrose Terrace Demolition and Floodplain Restoration Project is to reduce the vulnerability of residents to flood risk at the Melrose Terrace public housing complex and to reduce the frequency and severity of Whetstone Brook flood events in the Town of Brattleboro. The Proposed Action is needed primarily because the Melrose Terrace public housing complex has experienced recurring flooding along Whetstone Brook. Past engineering of Whetstone Brook at the project site has reduced its ability to overflow onto a natural floodplain and store flood water, thereby increasing the frequency and severity of flood events impacting Melrose Terrace and the Town of Brattleboro.

## **3.0 PROJECT LOCATION AND BACKGROUND**

The Melrose Terrace public housing complex is approximately 1.5 miles west of downtown Brattleboro at the intersection of Melrose Street and George F. Miller Drive. Whetstone Brook borders the property. Melrose Terrace is upstream of Whetstone Brook's confluence with the Connecticut River (Appendix A-1).

The Melrose Terrace complex includes seventeen (17) buildings. Since the time of its establishment, Melrose Terrace has provided housing for many of Brattleboro's lowest income elderly residents. Prior to the construction, the area was a chicken farm. (Brattleboro Housing Authority, 2016a)

In November 2016, fifty-five (55) of Melrose Terrace's eighty (80) residents relocated away from the complex. Twenty-five (25) residents remain as of August 2018. The eleven (11) buildings identified for demolition have been repeatedly flooded and are now vacant except for four (4) residents who remain in one (1) building. It is anticipated that these remaining residents will be relocated as soon as possible.

The Town's *2015 All Hazard Mitigation Plan* identifies seven noteworthy flooding events along Whetstone Brook since 2000. During high precipitation events, "[Melrose Terrace] properties have faced frequent evacuations due to flood warnings or actual flooding. Precautionary evacuations and actual flood events place emergency workers at risk and have been an ongoing expense to the Town (of Brattleboro). Residents face risks to their lives and property; evacuations cause disruption, economic loss and stress."

#### **4.0 ALTERNATIVES**

This section describes the No Action Alternative, the Proposed Action, and Alternatives that were considered and dismissed. Guidance provided in N.E.P.A. and implementing regulations states that a federal agency must "rigorously explore and objectively evaluate all reasonable alternatives and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their elimination." The Proposed Action was selected by the Applicant to meet the Purpose and Need (Section 2.0). Engineering requirements, site constraints, environmental impacts and budgetary constraints were also considered.

##### **4.1 Alternative 1: No Action Alternative**

Under the No Action Alternative, there would be no change to existing conditions. B.H.A. would not receive federal assistance from FEMA to demolish eleven (11) buildings located within Melrose Terrace, restore the floodplain along Whetstone Brook, or install an overflow culvert on George F. Miller Drive.

Under the No Action Alternative, significant precipitation events would likely lead to continued repetitive flooding of Melrose Terrace at a frequency and extent consistent with patterns seen over the last twenty years. The George F. Miller Bridge would continue to restrict Whetstone Brook flood flow which would continue to cause an increase in upstream flood levels.

##### **4.2 Alternative 2: Proposed Action – Partial Melrose Terrace Demolition (11 Buildings), Floodplain Restoration, and George F. Miller Bridge Overflow Culvert**

Alternative 2 (Proposed Action) includes the demolition of eleven (11) structures within the Melrose Terrace development, floodplain restoration of approximately 4.4 acres on the north

side of Whetstone Brook, and installation of an overflow culvert at the George F. Miller Bridge. (Appendix A-2)

Prior to building demolition, a lead and asbestos survey would be conducted by a state-certified contractor. Lead and asbestos, if found, would be remediated before demolition

In addition to building demolition, the project area would be selectively cleared of trees, shrubs, and stumps, and 28,000 cubic yards of historic fill would be excavated. To mitigate the impact of demolition and excavation in the floodplain, silt fencing and hay bales would be installed to control stormwater erosion. Approximately 7,700 cubic yards of riprap stone would be installed along the north bank of Whetstone Brook and along George F. Miller Drive where it enters the Melrose Terrace complex. (Appendix A-3, Milone and MacBroom, 2018)

Approximately fifty (50) trees would be removed. Many of the trees are small and typical of a residential area. Species include maple (*Acer* sp.), birch (*Betula* sp.), and spruce (*Picea* sp.). Plantings of shrub willow, dogwood and native grasses are proposed to naturalize the proposed riparian slope and enhance riparian (river) habitat.

An overflow culvert would be installed at the George F. Miller bridge to increase the capacity to convey flood water beneath the bridge. The proposed culvert is a 35-foot long, 15-foot wide, 5-foot tall precast concrete box overflow culvert with precast headwalls and wingwalls. Installation of the culvert would require excavation of approximately 300 cubic yards of soil adjacent to the bridge. Approximately 200 cubic yards of backfill would be added for compaction during the culvert placement, and the bridge surface would require restoration. The section of George F. Miller Drive north of Whetstone Brook will be lowered and reinforced with rip-rap stone.

Following demolition, excavation and restoration, flood levels in the project area would be lowered by an estimated 2.8 to 4.8 feet. Project engineers anticipate some minor (0.1 to 0.5 feet) increases in flood levels at select cross sections associated with backwatering at the Route 9 bridge and George F. Miller bridge.

### **4.3 Alternatives Considered and Dismissed**

#### **4.3.1 Partial Melrose Terrace Demolition (6 Buildings), Floodway Restoration, and George F. Miller Bridge Overflow Culvert**

Six (6) buildings would be demolished in the floodplain of Whetstone Brook and floodplain restoration would occur only within the floodway. An overflow culvert would be installed at the George F. Miller Bridge as described in Alternative 2 (Section 4.2).

This alternative was dismissed because residents living in the S.F.H.A. outside the floodway would remain at risk during flood events.

### **4.3.2 Vermont State Route 9 Bridge Replacement**

This alternative would include replacement of the Vermont State Route 9 Bridge with a wider single span bridge. The bridge site is approximately 1000 feet downstream from Melrose Terrace and near the intersection of Melrose Street and Route 9. Under this alternative, no buildings would be demolished in the floodplain at Melrose Terrace.

This alternative was dismissed because replacement of the Route 9 Bridge would be cost prohibitive. In addition, seven (7) Melrose Terrace buildings would remain partially or fully in the floodway. The continued presence of these buildings increases risk of flooding in surrounding and downstream areas as well. This alternative would not meet the designated purpose of the project because it would not reduce the flood risk faced by the residents of Melrose Terrace.

### **4.3.3 Floodwall around Melrose Terrace**

This alternative would include the construction of a 12-foot floodwall around Melrose Terrace. This alternative was dismissed because the floodwall would increase water surface elevations and increase the risk of erosion damage to the George F. Miller Bridge and adjacent properties. A floodwall would also have an adverse visual impact on Melrose Terrace and surrounding properties. Finally, implementation of this alternative would shift recurring flooding to downstream areas in downtown Brattleboro.

## 5.0 AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS

N.E.P.A. implementing regulations at 40 C.F.R. § 1508.9 require federal agencies to evaluate potential effects on the environment from the implementation of considered alternatives, including the proposed alternative or action. This section discusses the Affected Environment and potential impacts of the No Action Alternative and Proposed Action on resources. Potential impacts, beneficial and negative, are characterized by criteria listed in Table 5-1.

**Table 5-1: Impact Significance and Context Evaluation Criteria for Potential Impacts**

Impact Scale	Criteria
Negligible	The resource would not be affected and there would be no impact or the changes (including benefits) would either be non-detectable or, impacts that would be slight, local, and/or temporary. Impacts would be well below regulatory standards, as applicable.
Minor	Changes to the resource would be measurable, but small, localized and within or below regulatory standards. Mitigation measures would reduce any potential adverse impacts.
Moderate	Changes to the resource would be measurable and have local or regional scale impacts. Impacts would be within or below regulatory standards, but historical conditions would be altered on a short-term basis. Mitigation measures would be necessary, and the measures would reduce potential adverse impacts.
Major	Changes to the resource would be readily measurable and would have substantial consequences on regional levels. Impacts would exceed regulatory standards. Mitigation measures to offset the adverse impacts would be required to reduce impacts, though long-term changes to the resource would be expected.

Potential effects [impacts] are defined in 40 C.F.R. part 1508.8 as follows:

- (a) Direct effects, which are caused by the action and occur at the same time and place.
- (b) Indirect effects, which are caused by the action and are later in time or farther removed in distance, but still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

The impact analysis in this EA evaluates the potential environmental direct and indirect effects of the No Action and Proposed Action alternatives. Table 5-2 provides a summary the potential effects of the No Action and Proposed Action alternatives:

**Table 5-2: Summary of Impacts and Proposed Mitigation or B.M.P.**

Affected Environment/ Resource Area	Alternative 1: No Action	Alternative 2: Partial Demolition, Floodplain Restoration, and George Miller Dr. Culvert (Proposed Action)	Best Management Practices (B.M.P.)/Mitigation Measures to Be Applied
<b>Topography and Soils</b>	Moderate	Moderate	B.M.P. for erosion control with silt fence and hay bales
<b>Water Quality</b>	Minor	Minor	B.M.P. for erosion control with silt fence and hay bales
<b>Floodplains (E.O. 1998)</b>	Moderate	Moderate	Evacuation plan for buildings in the 500-year floodplain.
<b>Wetlands (E.O. 11990)</b>	Negligible	Negligible	
<b>Threatened and Endangered Species</b>	Negligible	Minor	
<b>Migratory Birds</b>	Negligible	Negligible	
<b>Bald and Golden Eagles</b>	Negligible	Negligible	
<b>Invasive Species</b>	Negligible	Minor	Adherence to woody debris Quarantine guidelines
<b>Historic Properties</b>	Negligible	Moderate	Interpretive panel
<b>Archaeological Resources</b>	Negligible	Negligible	

Affected Environment/ Resource Area	Alternative 1: No Action	Alternative 2: Partial Demolition, Floodplain Restoration, and George Miller Dr. Culvert (Proposed Action)	Best Management Practices (B.M.P.)/Mitigation Measures to Be Applied
Environmental Justice	Major	Minor	
Transportation	Minor	Minor	
Noise	Negligible	Minor	
Public Services and Utilities	Negligible	Minor	
Land Use and Planning	Negligible	Minor	Deed restriction and open space requirement.

Not all federal laws, Executive Orders, and regulations are applicable to this project. Table 5-3 discusses the resources excluded from analysis in the EA and the rationale for their exclusion.

**Table 5-3: Resources and Topics Excluded from Analysis**

Resource/Topic	Reason
Coastal Barrier Resources Act and Coastal Zone Management Act	The project area is not in a coastal zone; the Acts do not apply to this project.
Magnuson-Stevens Fishery Conservation and Management Act	The project area is not located in or near Essential Fish Habitat; the Act does not apply to this project.
EO 12699 Seismic Safety	The project area is not in a seismically active area nor would it influence seismic activity.

<b>Resource/Topic</b>	<b>Reason</b>
Wild and Scenic Rivers Act	There are no designated Wild and Scenic Rivers within or near the project area.
Farmland Protection Policy Act	The project would not convert prime farmland to non-farmland uses.
Air Quality	The Town of Brattleboro is in an attainment area for all criteria pollutants. Therefore, there is no need to conduct air quality modeling or analysis for compliance with the Clean Air Act.
Noise	Construction activity will be temporary and produce negligible impacts because work will be confined to daytime hours.
Climate Change	Climate change is not a factor of consideration for this project or its alternatives
Public Service and Utilities	This project will have a negligible impact to public services and utilities as the same number of residents will be located within the Town of Brattleboro.

## **5.1 Physical Resources**

### **5.1.1 Topography and Soils**

The Soil Science Society of America defines soil as: "the unconsolidated mineral or organic material on the immediate surface of the Earth that serves as a natural medium for the growth of land plants."

#### ***5.1.1.1 Existing Conditions***

The area that surrounds the project site is a relatively flat floodplain terrace at the base of a steep slope. Whetstone Brook flows through the project area to its confluence with the Connecticut River in Brattleboro.

The primary soil type is a fine sandy loam typically found in floodplains of the region. The soil drains well and has the capacity to transmit water at rates up to one foot per hour. (U.S.D.A., 2018)

#### ***5.1.1.2 Potential Impacts and Proposed Mitigation***

##### ***Alternative 1 – No Action***

Under the No Action Alternative, flood-related erosion would continue to occur within the Melrose Terrace community and downstream. Buildings and asphalt-covered roads present in the floodway and floodplain would continue to contribute to the rate of erosion by channelizing

and thereby increasing the velocity of flood water. Under the No Action Alternative, impacts on topography and soil resources would be **moderate**.

### *Alternative 2 – Proposed Action*

Excavation associated with the Proposed Action would create additional flood water storage by lowering the floodplain across the project area. As a result, there would be a decrease in soil erosion due to moderation in the velocity of flood water flow; the floodplain would be larger and more accessible to floodwater overflow from the brook. Root growth from plantings of native vegetation would contribute to soil retention. Construction site best management practices to control storm water runoff (e.g. silt fencing and straw bales) would limit erosion. While there would be an overall decrease in the amount of soil erosion, there would be **moderate** impact to topography and soil from the removal of 28,000 cubic yards of fill to restore the floodplain.

## **5.2 Aquatic Resources**

Aquatic resources include surface and groundwater water quality, floodplains, and wetlands. Water quality is essential for human health and natural resources and is protected by state and federal law.

### **5.2.1 Water Quality**

The Clean Water Act (C.W.A.) authorizes the establishment and regulation of water quality standards (section 401); discharge of pollutants (section 402); and permitting for the discharge of dredged or fill material into the waters of the United States (section 404). The U.S. Army Corps of Engineers (U.S.A.C.E.) administers section 404 dredge and fill permitting while the Vermont Department of Environmental Conservation (V.D.E.C.) administers section 401 water quality permitting. The V.D.E.C. also administers construction site stormwater permitting for activities that disturb one (1) acre or more of ground.

#### **5.2.1.1 Existing Conditions**

##### *Surface Water*

The project area is in the Whetstone Brook watershed which spans twenty-seven (27) square miles of the southeast corner of Vermont. Lower elevations of the watershed, near the Connecticut River, include dense commercial and residential land use in Brattleboro.

The source of Whetstone Brook is west of the project area at Hidden Lake (1,500 feet elevation) in Marlboro, Vermont. From there, the brook flows year-round and eastward seven miles, through the project area, to its confluence with the Connecticut River (250 feet elevation) at Brattleboro.

Whetstone Brook has been straightened and its banks have been armored with rip-rap at various locations. These alterations have increased the velocity of flow, erosion of the banks, and the amount of sediment carried by the brook. In addition, impermeable surfaces (e.g. roads, roofs,

parking areas) associated with development in the watershed contribute to larger volumes of surface water runoff into the brook from stormwater outlets and ditches.

Under section 303(d) of the C.W.A., states are required to assess surface water quality and report a listing of impaired waters (i.e., waterways that do not meet state water quality standards) to the public. Whetstone Brook is on the Vermont list of impaired waters for contact recreation due to high bacteria levels. The impairment includes the area from Creamery Bridge (2.5 miles upstream from Melrose Terrace) to the confluence with Connecticut River. Potential sources of bacterial contamination include septic systems, leaking sewer lines, and stormwater runoff. Whetstone Brook is also on the list of impaired waters for aquatic habitat, secondary contact recreation (e.g. wading and fishing), and aesthetics. These impairments are likely caused by sedimentation, streambank erosion (including subsequent loss of riparian vegetation), and urban runoff. (Vermont Department of Environmental Conservation, 2014)

Incision (i.e. deepening) of the brook channel downstream from Melrose Terrace near the State Route 9 bridge prevents floodwater from overflowing onto its historic floodplain. Channel incision contributes to increased flow velocity and soil erosion, e.g. the embankment for Melrose Street which serves as an access road into the Melrose Terrace residential area. Channel incision also increases the probability of flooding upstream if flood debris is trapped and blocks flow under the State Route 9 bridge. (Milone and MacBroom, 2015)

### *Groundwater*

Aquifers in the watershed consist primarily of sand and gravel and groundwater quality is generally suitable to serve as a public water supply source. Infiltration of surface water from Whetstone Brook is a source of aquifer recharge. As required by the State of Vermont Water Supply Rule, a groundwater source protection area has been established around Brattleboro's public water supply system; potential and actual sources of contamination have been identified.

#### ***5.2.1.2 Potential Impacts and Proposed Mitigation***

##### **Alternative 1 – No Action Alternative**

Soil erosion would continue to contribute to sediment loading, including pollutants, in Whetstone Brook and the Connecticut River. Groundwater flow patterns and quality would remain relatively similar. Under the No Action Alternative, a high probability for periodic floods, flood-related erosion, and increased pollutant levels with impact to water quality, would continue to result in **minor** impacts to water quality.

##### **Alternative 2 – Proposed Action**

Under the Proposed Action, flood flow moderation and an increase in flood water storage from restoration of the floodplain would benefit water quality due to the reduction in sediment and pollutants transported downstream. During flood events, sediment and debris would settle out and collect on the restored floodplain. Installation of the overflow culvert at the George F. Miller bridge would increase flood water conveyance which would reduce the threat of flooding at Melrose Terrace and areas immediately upstream. Modification of the Whetstone Brook

floodplain and installation of the overflow culvert would require permitting from the U.S.A.C.E. and VT A.N.R.

Stormwater sediment and pollutant discharge into Whetstone Brook during project construction would be controlled by erosion control measures (e.g., silt fence or straw bales) as required by VT D.E.C. permitting. Revegetation of the floodplain, bank riprap with willow plantings is included in the project design as means to reduce soil erosion and pollutant discharge from stormwater runoff and flood waters. Compliance with conditions of the required permits for the Proposed Action would result in **minor** impacts to water quality.

## **5.2.2 Floodplain Management (Executive Order 11988)**

Executive Order 11988 directs federal agencies to avoid support of development within a floodplain whenever there is a practicable alternative to that location. A floodplain is an area of land that may be inundated by floods. FEMA uses Flood Insurance Rate Maps to determine whether a project area is in a flood plain.

Flood Insurance Rate Maps depict areas with 1-percent chance of flooding in any given year (the 100-year floodplain), and areas with 0.2-percent chance of flooding in any given year (the 500-year floodplain). The 100-year floodplain is formally known as the base floodplain.

Proposed FEMA-funded projects located in a base [100-year] floodplain require documentation of decision-making to demonstrate that there is no practicable alternative. Some projects, for which even a slight chance of flooding is too great, are known as a “critical action”. For a critical action, the ideal location for a project is an area above (or outside) the 500-year floodplain. Decision-making documentation for the Melrose Terrace project location is in Appendix A-4 and a summary is presented below.

### **5.2.2.1 Existing Conditions**

Based on Flood Insurance Rate Map panel 50025C0501E, the Melrose Terrace public housing complex is in a base [100-year] floodplain. Parts of the site are also located in a 500-year floodplain and in the floodway – an area where the velocity of flood water flow is greatest. The Melrose Terrace public housing complex is an area known to be prone to flooding. (Appendix A-5)

The severity of flooding along Whetstone Brook is primarily attributed to floodplain development (e.g. impervious surfaces, stormwater outlet discharges, and undersized-bridge clearances) and a rapid drop in elevation of 1,250 feet over seven (7) miles as the brook flows from its source to the Connecticut River. Whetstone Brook flows through narrow valleys bordered by steep hillsides, so development is generally limited to the floodplain, including the floodway.

### 5.2.2.2 *Potential Impacts and Proposed Mitigation*

#### **Alternative 1 – No Action Alternative**

Under the No Action Alternative, given the probability for continued floods, erosion, and impacts to infrastructure in the floodplain would continue to be **moderate**.

#### **Alternative 2 – Proposed Action**

A hydrologic and hydraulic analysis of the proposed action was conducted and a request for a Conditional Letter of [Flood] Map Revision (C.L.O.M.R.) was submitted to FEMA in accordance with N.F.I.P. regulations. The analysis determined that the Proposed Action would lower the elevation of flood waters in a range from 2.8 to 4.8 feet across the project area. FEMA concurred with the analysis (Appendix B-2).

None of the buildings that would remain on-site after the Proposed Action is complete would be in the base [100-year] floodplain or floodway. However, several buildings and twenty-five (25) residents would remain in the 500-year floodplain. To minimize the potential impact of flooding in the 500-year floodplain, FEMA will require an evacuation plan for the complex.

During building demolition and floodplain restoration, stormwater runoff from the project area could transport sediment and pollutants to Whetstone Brook. Silt fence and straw bales would reduce or eliminate the potential impact of stormwater runoff and will be included as a project condition through permitting requirements. Revegetation of the restored floodplain would protect the banks of Whetstone Brook from soil erosion and aide in the removal of pollutants from stormwater runoff and flood water. Installation of stone riprap and willow plantings along the waterfront edge of the floodplain would reduce erosion of the brook bank during flood events.

Based on the largely beneficial changes proposed to the floodplain, the Proposed Action would result in **moderate** impacts to the floodplain.

### **5.2.3 Protection of Wetlands (Executive Order 11990)**

Wetlands are areas that support vegetation requiring saturated soil conditions. Examples of wetlands include swamps, marshes, and bogs. Executive Order 11990, *Protection of Wetlands*, directs Federal agencies to avoid, to the extent possible, long and short-term adverse impacts associated with the destruction or modification of wetlands, and to avoid direct or indirect support of new construction in wetlands whenever there is a practicable alternative. FEMA uses the U.S. Fish and Wildlife Service's National Wetland Inventory, state-specific mapping tools, and on-site surveys, as necessary, to identify wetlands.

#### **5.2.3.1 Existing Conditions**

The National Wetlands Inventory map does not depict any wetlands in the project area.

### 5.2.3.2 *Potential Impacts and Proposed Mitigation*

#### **Alternative 1 – No Action Alternative**

Under the No Action Alternative, impacts to wetlands would be **negligible**, as no wetlands are present within or downstream of the project area. Future conditions would reflect current conditions.

#### **Alternative 2 – Proposed Action**

Under the Proposed Action, impacts to wetlands would be **negligible**, as there are no wetlands present at or immediately downstream of the project area.

## **5.3 Biological Resources**

Biological resources include threatened and endangered species, migratory birds, bald and golden eagles, and invasive species.

### **5.3.1 Threatened and Endangered Species**

In accordance with the Endangered Species Act of 1973, the project area was evaluated for the presence of federally-listed threatened and endangered species. The Act requires federal agencies that fund, authorize or carry out an action to ensure that their action is not likely to jeopardize the continued existence of endangered or threatened species or result in adverse modification of designated critical habitats. The law also prohibits any action that causes a “take” of any listed endangered species. The U.S. Fish and Wildlife Service defines “take” as, “to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or any attempt to carry out these activities.”

#### ***5.3.1.1 Existing Conditions***

The U.S. Fish and Wildlife Service’s on-line Information, Planning and Consultation system produces a report that lists federally endangered and threatened species and information about their critical habitat within a user-provided geographic area. Based on the report generated for this project site, one (1) federally endangered species may occur within the project area, the northern long-eared bat (*Myotis septentrionalis*).

The northern long-eared bat is a small to medium sized bat measuring 3 to 4 inches long, with a wingspan up to 10 inches. The bat feeds at night and it roosts in a variety of habitats including trees, caves, mines, and buildings. It hibernates through the winter in caves or mines where temperatures are stable and above freezing with relatively high humidity. Major threats to the species include disease (e.g., white nose syndrome), loss of forest habitat, and disturbance of cave habitat by recreational spelunking. (U.S. Fish and Wildlife Services, 2017)

The Proposed Action requires consultation with the U.S. Fish and Wildlife Service under the Endangered Species Act for the northern long-eared bat due to proposed removal of fifty (50) trees and eleven (11) buildings in the project area (U.S. Fish and Wildlife Service, 2018a).

Consultation guidance allows the action agency (in this case, FEMA) to assume concurrence from the U.S. Fish and Wildlife Service if no response is received within thirty (30) days of the initiation of consultation.

**5.3.1.2 Potential Impacts and Proposed Mitigation**

**Alternative 1 – No Action Alternative**

The No Action alternative would have a **negligible** impact on threatened and endangered species; future conditions would reflect current conditions.

**Alternative 2 – Proposed Action**

Given the proposed removal of trees and buildings, FEMA submitted a finding of “Not Likely to Adversely Affect” the northern long-eared bat in consultation correspondence to the U.S. Fish and Wildlife Service on February 11, 2018. As allowed by consultation guidance, FEMA assumed concurrence with no reply from the U.S. Fish and Wildlife Service after thirty (30) days. (FEMA, 2018a) Based on this determination, the Proposed Action would have a **minor** impact to threatened and endangered species due to tree removal.

**5.3.2 Migratory Birds**

The Migratory Bird Treaty Act of 1918 requires federal agencies to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any migratory birds or result in the destruction or adverse modification of identified ecosystems of special importance to such species.

**5.3.2.1 Existing Conditions**

Nine (9) species have been identified within the vicinity of the project area to have probability of presence during their breeding season. However, nests of these species have not been documented in the project area. (Audubon Society, 2018a; Cornell Lab of Ornithology, 2018; U.S. Fish and Wildlife Services, 2018b)

**Table 5-4: Migratory Birds Potentially in the Project Area**

Species Name	Months of Probable Presence	Months of Breeding Season
Black-billed Cuckoo	May and June	May through October
Bobolink	April, May, and Sept.	May through July
Canada Warbler	August and Sept.	May through August
Cape May Warbler	September	June and July
Evening Grosbeak	April and October	May through August

Species Name	Months of Probable Presence	Months of Breeding Season
Olive-sided Flycatcher	May	May through August
Prairie Warbler	April and May	May through July
Rusty Blackbird	March, April, Sept. and Oct.	May through July
Wood Thrush	April through July and Sept.	May through August

### ***5.3.2.2 Potential Impacts and Proposed Mitigation***

#### **Alternative 1 – No Action Alternative**

Under the No Action Alternative, there would be no federal action. Flooding does not generally impact migratory bird habitat. Therefore, impacts to migratory birds due would be **negligible**.

#### **Alternative 2 – Proposed Action**

While migratory birds may pass through the project area, they would not likely roost or nest given noise from construction vehicles and the presence of residents and pets. Any disturbance in the project area would be offset by ample suitable habitat in the immediate vicinity. Based on these factors, the Proposed Action would have a **negligible** impact on migratory birds.

### **5.3.3 Bald and Golden Eagles**

The Bald and Golden Eagle Protection Act, enacted in 1940, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald and golden eagles, including their parts, nests, or eggs. Like the Migratory Bird Treaty Act, the law makes it illegal for anyone to “possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any eagle, or their parts, feathers, nests, or eggs.”

#### ***5.3.5.1 Existing Conditions***

After choosing a nesting location, a bald eagle pair will return to the same nesting area each year. The breeding season for bald eagles in Vermont begins December 1 and lasts through August 31. According to the Audubon Society, bald eagle numbers have increased substantially during the past two decades and Vermont is now host to twenty-one (21) territorial pairs. Most of the bald eagles have been observed in the northern part of the state. There are no known bald eagle nest observed within or near the project area. (Audubon Society, 2018b)

Golden eagles pass through Vermont during their migration from Canadian nesting grounds to mid-Atlantic wintering grounds. The breeding season for golden eagles in Vermont begins

January 1 and lasts through August 31. Golden eagles are an uncommon winter migrant in Vermont and have not been identified within or near the project area. (Audubon Society, 2017)

### ***5.3.3.2 Potential Impacts and Proposed Mitigation***

#### **Alternative 1 – No Action Alternative**

Under the No Action Alternative, the impact to bald and golden eagles would be **negligible**.

#### **Alternative 2 – Proposed Action**

Bald and golden eagles are not considered birds of conservation consideration in the project area due to their absence. Therefore, the Proposed Action would have a **negligible** impact to bald and golden eagles.

### **5.3.4 Invasive Species (Executive Order 13112)**

Executive Order 13112, *Invasive Species*, requires federal agencies, to the extent practicable, to prevent the introduction of invasive species and provide for their control. An invasive species is an organism that is not native to an ecosystem. Its presence may lead to loss of habitat, harm to the environment, harm to the economy, or may threaten human health. When species are present in an area, a quarantine may be issued to regulate articles or materials that may harbor the species. Transportation or disposal of articles is limited to these quarantined areas

#### ***5.3.4.1 Existing Conditions***

Hemlock and ash trees can serve as habitat for invasive species and may be present in the project area. The project proponent will be obligated to observe any quarantine regulations that may be in effect for the disposal of hemlock and ash tree debris.

#### ***5.3.4.2 Potential Impacts and Proposed Mitigation***

#### **Alternative 1 – No Action Alternative**

The No Action Alternative would not alter the terrain or create new environment for the spread of invasive species or impact the existing invasive species at the project location. Therefore, the No Action alternative would have a **negligible** impact to the spread of invasive species.

#### **Alternative 2 – Proposed Action**

If hemlock and ash trees are among the tree species to be removed and disposed off-site, there may be a potential to spread invasive species (e.g. emerald ash borer) outside the project area. Adherence to quarantine guidelines, as applicable, is warranted. If prescribed practices are followed, the Proposed Action would result in **minor** impact regarding the potential to spread invasive species.

## **5.4 Cultural Resources**

As a Federal agency, FEMA must consider the potential effects of its funded actions upon cultural resources prior to engaging in any undertaking. There are several laws a federal agency must consider when working with and identifying cultural resources. FEMA is required to meet

this obligation through the National Historic Preservation Act of 1966, as amended (NHPA). Section 106 of the NHPA, as implemented by 36 CFR Part 800, outlines the required process for federal agencies to consider a projects effects to historic properties. The NHPA defines a historic property as “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register.”

Requirements for review include the identification of significant cultural resources that may be impacted by the undertaking. Cultural resources are defined as prehistoric and historic sites, structures, districts, buildings, objects, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons.

To be considered significant under Section 106, a cultural resource must meet one or more of the criteria established by the National Park Service that would make that resource eligible for inclusion in the National Register of Historic Places (NRHP). These criteria are specified in the Department of Interior Regulations Title 36, Part 60.4 and NRHP Bulletin 15.

The Vermont Agency of Commerce and Community Development (ACCD), through the Division for Historic Preservation (DHP) and the State Historic Preservation Office (SHPO), maintains a database of recorded cultural resources called the Online Resource Center (ORC). This database includes documents such as archaeological reports, bridge surveys, building plans, building reports, survey forms identifying standing structures and objects, and archaeological sites.

To identify cultural resources that may be affected by the undertaking, FEMA researched NRHP and ORC databases, reviewed historic topographic maps, and consulted with the SHPO.

#### **5.4.1 Historic Properties**

Architectural resources, also referred to as aboveground resources, are a type of historic property defined by the National Park Service (NPS) in National Register Bulletin 15 (National Park Service, 1991) categorized as buildings, structures, objects, and districts. These property types may be affected by direct activities (physical alteration), as well as indirect activities (visual or vibrational) from construction and/or operational activities.

##### ***5.4.1.1 Existing Conditions***

The project area is situated adjacent to the West Brattleboro Green Historic District. West Brattleboro was established as a small village on the major road between Marlboro and Bennington centered on a common. The historic district is eligible under Criteria A and C, with natural features like Whetstone Brook and Bonnyvale Brook contributing to the distinct character of the historic district. (Papazian, 2001)

Stephen W. Kimball’s tannery was located on Whetstone Brook, and the tannery pond, formed by a dam, was directly north and northeast of 875 Western Avenue, 891 Western Avenue, and 901 Western Avenue, and directly adjacent to or within the project area. Kimball purchased the tannery in 1860 from Jerimiah and Benjamin Beals, and operated it until October 5, 1869,

when it was destroyed by a freshet (a flooding of a watercourse from rapid thaw of snow and/or heavy rains) that also destroyed bridges and other developments along Whetstone Brook after the tannery's dam failed (Cabot, 1922). Whetstone Brook's water power was used throughout the 19<sup>th</sup> century for various mills along its banks; the 1895 D.L. Miller map of West Brattleboro shows a small dam and the Knight Grist Mill on the southwest bank of Whetstone Brook near the current location of the George F. Miller Bridge. None of these properties are likely located within the project area. However, some remnants of the tannery/grist mill or the dam structures, now demolished, may be present in the vicinity.

A historic context and significance statement for Melrose Terrace was developed in 2013 by Suzanne Jamele, National Register Specialist for the Vermont Department of Housing and Community Affairs, in support of the BHA's initial consultation efforts with the Vermont Division of Historic Preservation regarding the proposed partial demolition of Melrose Terrace. Melrose Terrace was built in 1966 and represents the first public housing complex constructed by the BHA. Melrose Terrace is significant at a local level as an example of early 1960s public housing complexes in Vermont constructed with Federal funds. The complex was determined eligible for listing on the NRHP under Criterion A (i.e., The development is associated with events that have made a significant contribution to the broad patterns of American history). In addition, the vernacular Colonial Revival style (ca. 1880-1960) architectural details of the structures make them eligible under Criterion C (i.e., The structures embody the distinctive characteristics of a type, period, or method of construction, represent the work of a master, possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction).

In 2013, the Vermont Advisory Council for Historic Preservation made a preliminary determination that Melrose Terrace was eligible for NRHP listing (Vermont Division for Historic Preservation, 2013). In 2014, the SHPO indicated that, despite Melrose Terrace's NRHP eligibility, it would not be the best use of time to list it on National, State or Local Registers given that it would be partially demolished. Instead, the SHPO suggested that, as mitigation, the BHA place a historic roadside marker to acknowledge the property's history and architecture. (Vermont Division for Historic Preservation, 2014).

#### ***5.4.1.2 Potential Impacts and Proposed Mitigation***

##### **Alternative 1 – No Action Alternative**

Under the No Action Alternative, the historic structures at Melrose Terrace would remain vulnerable to flooding. While this vulnerability may result in flooding damage interior or minor exterior features, these damages would not likely harm the historic integrity or significance of these structures. Based on these factors, the No Action Alternative would result in **negligible** impacts to historic properties.

##### **Alternative 2 – Proposed Action**

The demolition of the eleven (11) structures at Melrose Terrace will have an adverse effect on historically significant, NRHP eligible properties. Through the Section 106 consultation process with the SHPO, mitigation measures were developed to resolve this adverse effect. A

roadside marker will be developed with approval from the SHPO and FEMA. Implementation of the mitigation measures will become conditions of the FEMA grant. Demolition of eleven (11) structures at Melrose Terrace and returning the land to a more natural state would arguably benefit the adjacent West Brattleboro Green Historic District given that the natural setting of Whetstone Brook and the surrounding land would more closely resemble the original setting. Based on these factors, the Proposed Action will have **moderate** impacts to historic properties. (FEMA, 2018b)

## **5.4.2 Archaeological Resources**

### ***5.4.2.1 Existing Conditions***

Consideration of the potential to affect archaeological resources was required due to the extensive ground disturbance related to the Proposed Action. On April 1, 2018, FEMA received the results of the Archaeological Resource Assessment (ARA), performed by Hartgen Archaeological Associates, Inc. The ARA concluded with recommendation that no further archaeological survey was required based on the extensive ground disturbance that has already occurred within the project area. After further consultation with the SHPO, it was determined that FEMA and SHPO staff concurred with the ARA's recommendation that a Phase 1 Archaeological Survey was not necessary.

### ***5.4.2.2 Potential Impacts and Proposed Mitigation***

#### **Alternative 1 – No Action Alternative**

Under the No Action Alternative, any cultural material present in the soils around Melrose Terrace would remain susceptible to erosion and resulting damages. However, there is no evidence that any cultural materials are present from the ARA. Based on these factors, the No Action alternative would result in **negligible** impacts to archaeological resources.

#### **Alternative 2 – Proposed Action**

Through consultation with SHPO and the results of the ARA, it was determined that the project area was extensively disturbed and unlikely to contain archaeological resources due to extensive previous disturbance at the project location. Based on these factors, the Proposed Action will have **negligible** impacts to archaeological resources.

## **5.5 Socioeconomic Resources**

### **5.5.1 Environmental Justice (Executive Order 12898)**

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires each federal agency to identify and address “disproportionately high and adverse human health or environmental effects” its activities may have on minority or low-income populations.

### **5.5.1.1 Existing Conditions**

The mission of the B.H.A. includes service to a low-income population, "...to ensure the provision of quality affordable housing opportunities in viable communities for lower income households." The B.H.A. currently manages over three-hundred apartments in five developments for seniors, persons with disabilities and families. The Melrose Terrace property serves persons over fifty years old and persons with disabilities.

Since the impact of flooding on the Melrose Terrace property from Tropical Storm Irene in August 2011, the BHA has engaged in considerable outreach, planning, and action to reduce the risk of flooding for residents. In 2016, fifty-five residents were re-located to Red Clover Commons, a new property located outside any special flood hazard area. In the same year, twenty-five residents were relocated within Melrose Terrace to buildings with a lower risk of exposure to flood and equipped with flood gates in the doorways.

### **5.5.1.2 Potential Impacts and Proposed Mitigation**

#### **Alternative 1 – No Action Alternative**

Under the No Action Alternative, vacant residential buildings at Melrose Terrace would remain shuttered. The buildings would receive minimal maintenance due to restrictions on the expenditure of public housing funds on buildings in a floodway. No fill would be removed from the floodplain at Melrose Terrace and no changes would be made to the George F. Miller Bridge; conditions that would continue to exacerbate flood damage at Melrose Terrace and properties upstream.

The threat of flooding from the No Action Alternative would represent a "disproportionately high and adverse human health or environmental effect" on a low-income population. Therefore, the No Action Alternative would have **major** impacts regarding environmental justice.

#### **Alternative 2 – Proposed Action**

B.H.A. outreach to Melrose Terrace residents and other community members has satisfied requirements under the Executive Order and subsequent federal guidance for "effective public participation" and "meaningful community representation in the process." The project would reduce the threat of flooding for a low-income population from the 100-year to the 500-year floodplain. Based on these factors, the Proposed Action will result in **minor** impacts associated with environmental justice.

### **5.5.2 Transportation**

Transportation infrastructure in the project area includes a state road, two local streets and two bridges. B.H.A. staff and residents of Melrose Terrace would rely on transportation infrastructure in the area for evacuation, if needed.

### ***5.5.2.1 Existing Conditions***

Melrose Street and George F. Miller Drive are local streets that provide access to the Melrose Terrace public housing development from Vermont State Route 9. Access to State Route 9 (also known as Western Avenue) would be critical if an evacuation from Melrose Terrace were necessary.

George F. Miller Drive and State Route 9 both feature a bridge over Whetstone Brook. If either bridge were closed due to flooding, evacuation routes would be limited for residents and B.H.A. staff at Melrose Terrace.

### ***5.5.2.2 Potential Impacts and Proposed Mitigation***

#### **Alternative 1 – No Action Alternative**

Under the No Action Alternative, temporary road closures due to flooding at the State Route 9 bridge or the George F. Miller bridge could limit evacuation route options. The No Action Alternative would have **minor** impacts to transportation.

#### **Alternative 2 – Proposed Action**

Under the Proposed Action, Melrose Street would be discontinued in the area where eleven (11) structures are proposed for demolition. However, it would provide access to buildings that remain after demolition and a connection to George F. Miller Drive. Construction activities would cause a temporary increase in traffic volume. The overflow culvert adjacent to the George F. Miller bridge would reduce the potential for flooding of the bridge, but the need for an evacuation plan would remain. The Proposed Action would have a **minor** impact to transportation, mainly by reducing the amount of regular vehicular traffic within this area.

## **5.5.3 Land Use and Planning**

### ***5.5.3.1 Existing Conditions***

Brattleboro is a member of the National Flood Insurance Program (N.F.I.P.) which requires limitations on development in flood prone areas. As required, Brattleboro has a floodplain management ordinance.

Vermont's Land Use and Development Law, Act 250, requires that certain types of projects obtain a land use permit prior to construction. However, an Act 250 permit would not be required for this project because it would restore the floodplain and reduce risk to people from flooding hazard. (Vermont Natural Resources Board, 2017)

### ***5.5.3.2 Potential Impacts and Proposed Mitigation***

#### **Alternative 1 – No Action Alternative**

Under the No Action Alternative, the Melrose Terrace property would continue to be used as residential property, owned and operated by B.H.A. No change would occur to the current land use or plans, and B.H.A. would still plan to relocate residents out of the floodplain in the future. The No Action Alternative would have a **negligible** impact on land use and planning.

## **Alternative 2 – Proposed Action**

Under the Proposed Action, land at Melrose Terrace where demolition and floodplain restoration would be completed would be deed-restricted open space in perpetuity. A restored floodplain preserved as open space would contribute to reduction in the risk of flooding to Melrose Terrace residents and surrounding areas. To comply with the requirements of the N.F.I.P., a permit would be required from the town for the proposed action. The Proposed Action would have **minor** impact to land use and planning.

### **5.6 Cumulative Impacts**

In accordance with the National Environmental Policy Act, an environmental assessment must include consideration of the cumulative impact of the Proposed Action and other actions related in time or proximity to the project area. Cumulative impacts represent the “impact on the environment which results from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” (40 C.F.R. section 1508.7)

Accordingly, we note that the B.H.A. completed the “Red Clover Commons” public housing complex May 2017 approximately one mile south of downtown Brattleboro; a milestone in the effort to relocate residents out of the floodplain at Melrose Terrace. From late 2016 through 2017, the B.H.A. relocated fifty-five (55) Melrose Terrace residents into new residences, including Red Clover Commons, other existing B.H.A. housing, and other existing rental housing. The potential contribution to a “cumulative impact” from the 2016-2017 relocation effort was offset by the equivalent number of resulting vacancies at Melrose Terrace.

The B.H.A. is developing plans for a Red Clover Commons II project that would allow the remaining twenty-five (25) Melrose Terrace residents to be re-located outside the floodplain. Here again, the potential contribution to cumulative impact from construction of a new housing development would be off-set by the resulting vacancies at Melrose Terrace.

In summary, there would be no future significant cumulative impact on Brattleboro from the impact of the Proposed Action (demolition of eleven buildings and floodplain restoration at Melrose Terrace) when added to other past, present, and reasonably foreseeable future actions in the project area, or town.

### **6.0 PERMITS AND PROJECT CONDITIONS**

The project proponent must obtain all permits and any other authorizations required for project implementation prior to construction. Adherence to all permit conditions is required.

Permit documentation, including any post-project compliance evaluation, or determination that permitting is not required must be retained and shared with FEMA prior to project close-out.

Any substantive change to the approved scope of work will require re-evaluation by FEMA for compliance with environmental and historic preservation law and regulation.

The following list may not include all required permits and authorizations:

1. An Evacuation Plan for the Melrose Terrace public housing complex must be documented prior to the start of demolition, tested at least annually, and revised to incorporate lessons learned from each test or actual evacuation.
2. Asbestos and Lead Abatement and Demolition Waste Disposal Permitting and Notification; State of Vermont and Local permitting authorities.
3. Local floodplain ordinance permit; Town of Brattleboro.
4. Stormwater Construction Discharge Permit [Construction General Permit 3-9020]; Vermont A.N.R. Department of Environmental Conservation.
5. Stream Alteration Permit; Vermont A.N.R. Department of Environmental Conservation.
6. Water Quality Certification (Clean Water Act section 401); Vermont A.N.R., Department of Environmental Conservation.
7. Clean Water Act section 404 Permit; U.S. Army Corps of Engineers, Vermont Field Office.
8. Conditional Letter of Map Revision (before project implementation); FEMA.
9. Letter of Map Revision (after project completion); FEMA.
10. Requirements for transporting vegetative debris that may harbor invasive species; Vermont A.N.R. Fish and Wildlife Department.
11. Deed Restriction; land being acquired through this grant enters a deed restriction where land must be used as open space in perpetuity, unless otherwise approved by FEMA.
12. In the event of the discovery of archaeological deposits (e.g. Indian pottery, stone tools, shell, old house foundations, old bottles) the B.H.A. and their contractor shall immediately stop work in the vicinity of the discovery and take reasonable measures to avoid or minimize harm to the finds. The B.H.A. and their contractor shall secure all archaeological discoveries and restrict access to discovery sites. The B.H.A. shall immediately report the archaeological discovery to the Vermont Emergency Management (Lauren Oates, 802-241-5363) and the FEMA Regional Environmental Officer (David E. Robbins, 978-914-0378); FEMA will determine the next steps.
13. In the event of the discovery of human remains, the B.H.A. and their contractor shall immediately stop all work in the vicinity of the discovery and take reasonable measures to avoid or minimize harm to the finds. The B.H.A. and their contractor shall secure all human remains discoveries and restrict access to discovery sites. The B.H.A. and their contractor shall follow the provisions of applicable state laws, including 13 V.S.A. 3761 (Unauthorized Removal of Human Remains), 13 V.S.A. 3764 (Cemeteries and

Monuments – Grave markers and historic tablets) and 18 V.S.A. 5212 (Permit to Remove Dead Bodies), or any amendments or supplanting laws and regulations. Violation of state law will jeopardize FEMA funding for this project. The B.H.A. will inform the Office of the Chief Medical Examiner (802-863-7320), the State Archaeologist (Dr. Jess Robinson, 802 -272-2509), Vermont Emergency Management (Lauren Oates, 802-241-5363) and the FEMA Regional Environmental Officer (David E. Robbins, 978-914-0378). FEMA will consult with the S.H.P.O. and Tribes, if remains are of tribal origin. Work in sensitive areas may not resume until consultation is completed and appropriate measures have been taken to ensure that the project is in compliance with the National Historic Preservation Act.

14. Standard Treatment Measure C: Public Interpretation. Prior to project implementation, FEMA, Vermont Emergency Management, and the Project Proponent(s) shall work with the S.H.P.O. and participating Tribe(s) to design an educational interpretive plan. The plan may include signs, displays, educational pamphlets, websites, workshops and other similar mechanisms to educate the public on historic properties within the local community, state, or region. Once an interpretive plan has been agreed to by the parties, S.H.P.O. and/or participating Tribes, and the designated responsible party shall continue to consult throughout implementation of the plan until all agreed upon actions have been completed by the designated responsible party.
15. Properties contaminated with hazardous materials are not eligible for acquisition per 44 C.F.R. Section 80.1(e). B.H.A. and their contractor must take steps to ensure that the property with past or present commercial or industrial use and adjacent properties suspected of having hazardous materials at the site are not contaminated at the time of acquisition. A contaminated property must be certified clean prior to participation in an acquisition. B.H.A. and their contractor shall meet the requirements of EPA's "all appropriate inquiries" rule, 40 C.F.R. part 312.
16. Dispose of unusable equipment, debris and material in an approved manner and location. In the event significant items (or evidence thereof) are discovered during project implementation B.H.A. and their contractor shall handle, manage, and dispose of petroleum products, and/or hazardous materials in accordance to the requirements and to the satisfaction of the governing local, state and federal regulations. These materials may include, but are not limited to propane cylinders, paints and solvents, coolants containing chlorofluorocarbons (CFCs), used oil, other petroleum products, used oil filters, fuel filters, cleaning chemicals, laboratory reagents, pesticides, batteries, and unlabeled tanks and containers. Equipment that may include these materials are ice machines, refrigerators, generators, computers, televisions, mercury switches, fluorescent lights, fluorescent light ballasts, sandblast units, paint sprayers, etc.

## 7.0 AGENCY COORDINATION AND PUBLIC INVOLVEMENT

The National Environmental Policy Act, implementing regulations, and FEMA procedures stress the importance of engagement with partner agencies, applicants, and the public to the extent practicable while preparing an environmental assessment. A scoping meeting was held at the B.H.A. office at 224 Melrose Street in Brattleboro, Vermont on April 12, 2017 to initiate the environmental assessment process.

The scoping meeting was hosted to solicit initial input; identify FEMA as the lead agency; explore a range of project alternatives, the types of permits needed; determine the level of public interest; and to identify relevant data sources. Partners included at the scoping meeting, and at various points since then, included:

- **Federal:** FEMA, the U.S. Department of Housing and Urban Development
- **State:** Department of Environmental Conservation (D.E.C.) Stormwater Program, the D.E.C. Rivers Program, and Vermont Emergency Management
- **Local:** B.H.A., Town of Brattleboro
- **Other:** Milone & MacBroom (Project Engineers)

A list of subsequent calls, emails and meetings to further development of the environmental assessment:

- April 10, 2017: U.S. Army Corps of Engineers (U.S.A.C.E.) regarding permitting
- April 26, 2017: Discussion about environmental assessment requirements
- May 2, 2017: Coordination with U.S. Department of Housing and Urban Development
- May 22, 2017: Discussion about alternatives analysis
- October 25, 2017: Discussion about compliance requirements
- November 29, 2017: Discussion regarding change in project scope
- January 12, 2018: Discussion regarding compliance requirements
- May 1, 2018: Discussion regarding compliance requirements
- May 2, 2018: Discussions regarding floodplain management requirements
- May 3, 2018: Discussions with U.S.A.C.E. about permit requirements

This environmental assessment will be available for agency and public review and comment for a period of 15 days. Public notice will be posted in the *Brattleboro Reformer*, *hard copy will be available at the B.H.A. office, and an electronic copy will be available for review at a town or B.H.A. website.*

FEMA will send notification regarding availability of the draft environmental assessment for review and comment to the following agencies:

Vermont Emergency Management

Vermont Agency of Natural Resources

U.S. Army Corp of Engineers – Vermont Field Office

United States Environmental Protection Agency, Boston  
United States Department of Housing and Urban Development

Substantive comment received during the public review period will be considered and may be reflected in the final version. The public is invited to submit written comments by emailing [david.robbins@fema.dhs.gov](mailto:david.robbins@fema.dhs.gov) or via mail to:

FEMA Region 1  
99 High Street  
Boston, MA 02110  
Attn: Regional Environmental Officer

If no substantive comments are received from the public or agency reviewers, the draft environmental assessment and Finding of No Significant Impact will be adopted as final.

## **8.0 LIST OF PREPARERS**

### ***Booz Allen Hamilton***

John Casana – Water Resources Specialist – Wetlands; Floodplains

David Cohen – Cultural Resources Specialist – Cultural Resources

Elizabeth Ducey – GIS Specialist

Kathryn Hite – Water Resources Specialist – Water Quality; Wetlands; Floodplains

Anna Marburg – Water Resources Specialist – Wetlands; Floodplains

Pamela Middleton – Biological Resources Specialist – Vegetation and Wildlife; Threatened and Endangered Species; Migratory Birds; Bald and Golden Eagles; Invasive Species

Richard Pinkham – Socioeconomics Specialist – Environmental Justice

Marshall Popkin – EA Manager – Geology, Topography, and Soils; Public Infrastructure, Health, and Safety; Climate Change

Jennifer Salerno – NEPA Program Manager

Miles Spenrath – Environmental Specialist – Hazardous Waste and Materials

### ***FEMA***

Marcus Tate-Environmental and Historic Preservation Manager

Brandon Webb-Environmental Specialist

Mary Shanks-Deputy Regional Environmental Officer

Kathryn Emmitt-Historic Preservation Specialist

David E. Robbins-Regional Environmental Officer

## 9.0 References

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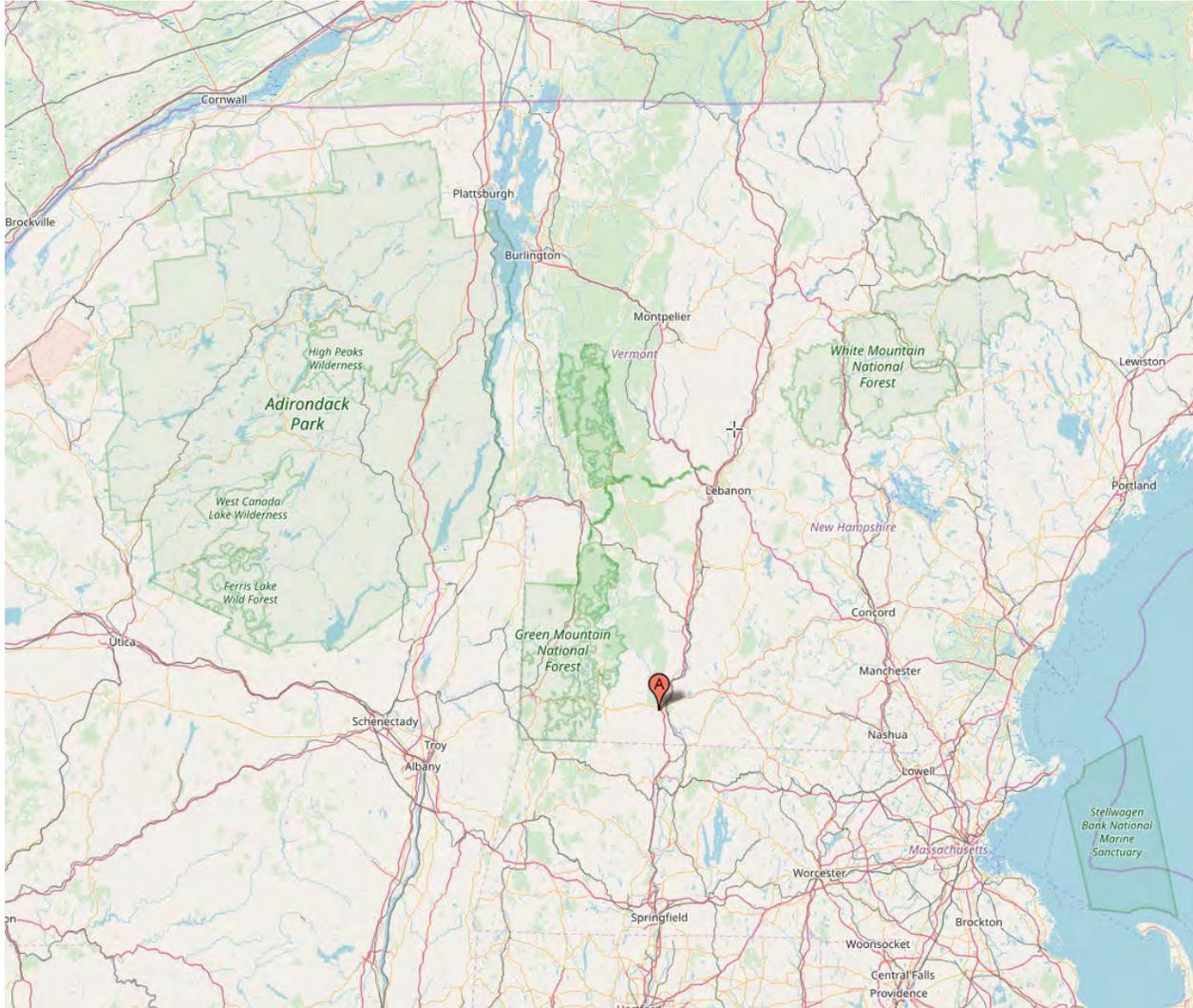
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DRAFT

# **Environmental Assessment Attachments Melrose Terrace Demolition and Floodplain Restoration, Brattleboro, VT**

## **Appendix A: Supporting Documentation**

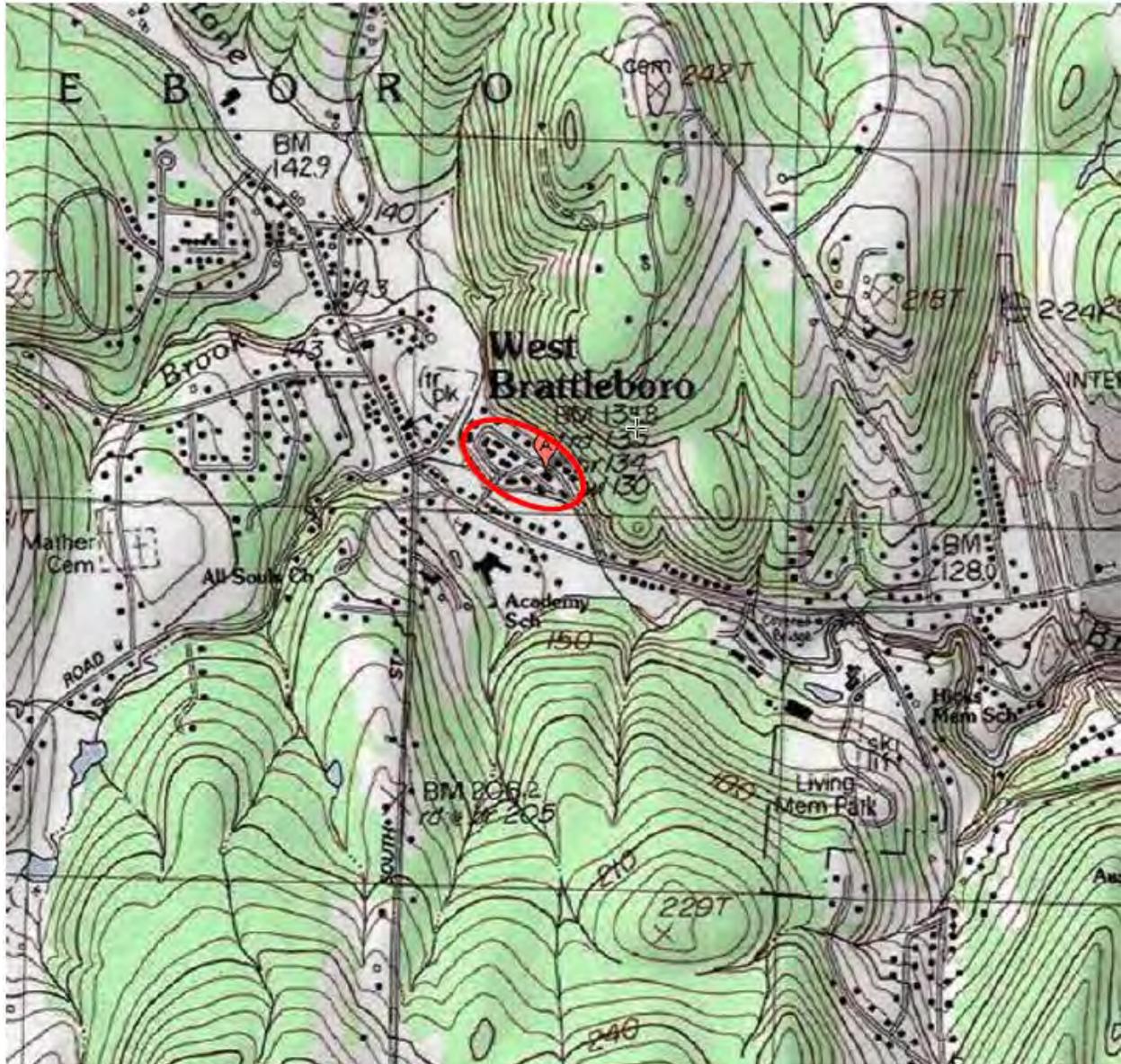
Appendix A-1: Project Location Map



Marker A Represents the Project Location at Melrose Terrace in Brattleboro, VT



Marker A Represents the Project Location at Melrose Terrace in Brattleboro, VT



Marker A Project Location at Melrose Terrace in Brattleboro, VT. The red outline represents the entire complex at Melrose Terrace.

Appendix A-2: Photographs and Key

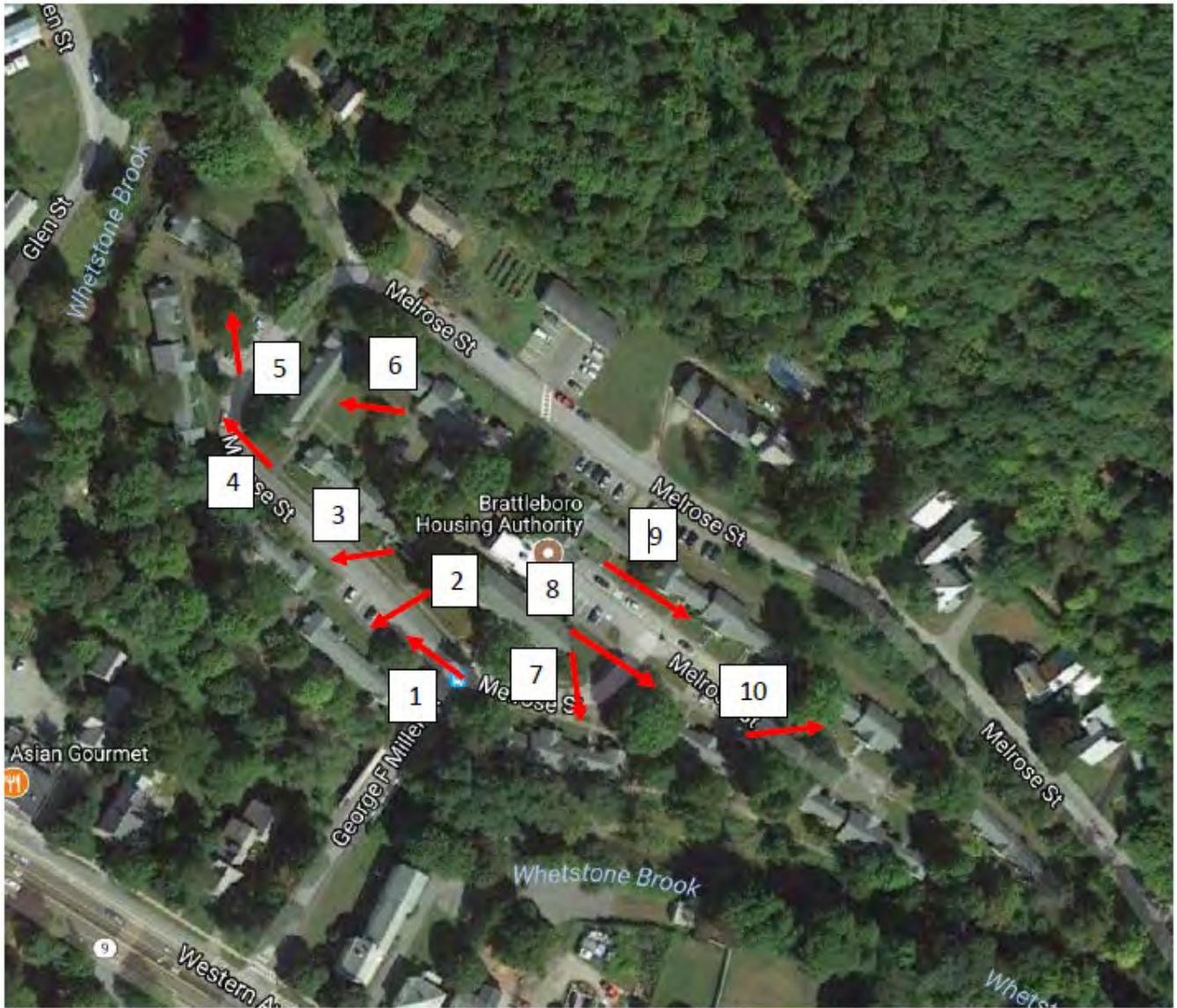




Photo 1: Looking northwest down Melrose St. where George F. Miller Rd. enters Melrose St.



Photo 2: Building 197 looking southwest



Photo 3: Building 183 looking west



Photo 4: Building 165 looking northwest



Photo 5: Building 159 looking north from Melrose St.



Photo 6: Building 162 looking west



Photo 7: Building 215 looking south



Photo 8: Buildings 215, 235, and 247 looking southeast



Photo 9: Buildings 246 and 248 looking southeast



Photo 10: Building 248 looking east

# **Environmental Assessment Attachments Melrose Terrace Demolition and Floodplain Restoration, Brattleboro, VT**

Appendix A-3: EIGHT- STEP DECISION-MAKING PROCESS for the Melrose Terrace Demolition and Floodplain Restoration Project; Brattleboro, Vermont

**EXECUTIVE ORDER 11988 FLOODPLAIN MANAGEMENT AND 11990 WETLANDS  
PROTECTION; EIGHT- STEP DECISION-MAKING PROCESS; 44 CFR PART 9**

**TITLE: Melrose Terrace Demolition and Floodplain Restoration Project; Brattleboro, Vermont**

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**Project Description:**

The Proposed Action includes demolition of eleven (11) structures at greatest risk of flooding within the Melrose Terrace public housing development in Brattleboro, Vermont; on-site floodplain restoration of approximately 4.4 acres; and the installation of an overflow culvert at the George F. Miller bridge which provides access to the development. The Melrose Terrace public housing development lies within a floodway, the 100-year floodplain and the 500-year floodplain.

Following demolition of the buildings, floodplain restoration would continue with excavation and removal of 28,000 cubic yards of fill to create a larger area for flood flow moderation and storage. Approximately fifty trees would be selectively removed, and 7,700 cubic yards of rip-rap would be added to the banks of Whetstone Brook to decrease erosion during flooding events. The site would be revegetated with a mix of native shrubbery and grasses.

The proposed overflow culvert at the George F. Miller bridge would be a precast concrete box 35-feet long, 15-foot wide, and 5-feet tall with precast headwalls and wingwalls. The culvert would increase the capacity to pass flood water beneath the bridge and reduce the potential for debris to block flood flow. Sections of George F. Miller Drive north of Whetstone Brook and south of the intersection with Melrose Street would be lowered and reinforced to allow for controlled overtopping during floods.

The Proposed Action would modify boundaries of the floodplain in the immediate project area, upstream 130 feet, and downstream 720 feet and it would lower the base flood (100-year) elevation by 2.8 to 4.8 feet in that area. To formally document changes to the existing Flood Insurance Rate Map, the project proponent will seek a "Letter of Map Revision" from FEMA following the project. Comments from FEMA on a "Conditional Letter of Map Revision" were received by the project proponent December 2018 including a determination that the project design meets minimum floodplain management criteria of the National Flood Insurance Program.

**Step 1. Determine whether the proposed action is in the 100-year floodplain and/or the 500-year floodplain (44C.F.R. section 9.7):**

The Proposed Action is in a floodway, a 100-year floodplain (1% chance of annual flood), and portions of the site lie within a 500-year floodplain (0.2% chance of annual flood) as shown in the FEMA Flood Insurance Rate Map panel 50025C 0501E which became effective September 28, 2007.

After building demolition and floodplain restoration is complete, none of the remaining buildings would be in the 100-year floodplain, but six (6) buildings would lie within the boundaries of a recontoured 500-year floodplain. These buildings would include #120, #136, #145 (a maintenance garage), #196, #206, and #224. Building #230 would be outside/above the 500-year floodplain boundary.

The Proposed Action is a "Critical Action" - an action for which even a slight chance of flooding is too great - because it will extend the useful life of housing for the elderly. For a Critical Action, the minimum

floodplain of concern is the 500-year flood plain. This project will not achieve that standard because five (5) residential buildings (#120, #136, #196# and #206) would be in the 500-year floodplain.

**Step 2. Notify the public at the earliest possible time of the intent to carry out an action in a floodplain and involve the affected and interested public in the decision-making process (44 C.F.R. section 9.8):**

A Notice of Funding Opportunity for the FY 2016 PDM Grant Program Announcement was posted on the GovDelivery website February 2, 2016. The announcement was also distributed by FEMA staff to state emergency management agencies who shared it with prospective applicants, e.g. the Town of Brattleboro.

In April 2017, public meetings were held to discuss the requirements of this proposed project, including the potential need to revise the flood maps. Meeting dates and venues are included in the grant application.

In April 2018 public meetings were held to give the Town residents an opportunity to comment on the proposed project; dates and meeting details are included in the grant application.

**Step 3. Identify and evaluate practicable alternatives to locating the proposed action in a floodplain. If a practicable alternative exists outside the floodplain FEMA must locate the action at the alternative site (44 C.F.R. section 9.9):**

*No Action:*

Melrose Terrace public housing buildings and residents would remain at risk of flooding in the floodway and floodplain.

*Relocation of Melrose Terrace public housing outside the floodplain:*

The Proposed Action (building demolition and floodplain restoration) is in a floodplain, but the action is one component of a longer-term effort to relocate all Melrose Terrace residents outside the floodplain.

In November 2016, fifty-five (55) residents were re-located from Melrose Terrace to Red Clover Commons public housing complex at 30 Fairground Road, Brattleboro, VT; a site outside of any flood hazard area.

As part of the Proposed Action, all twenty-five (25) current Melrose Terrace public housing residents would be relocated to the six (6) residential buildings that will remain after the proposed demolition and floodplain restoration is complete.

The Proposed Action is a “critical action” (see Step 1 text), that would not meet the performance criteria for a critical action because five (5) buildings that would remain on-site after proposed demolition would lie within the 500-year floodplain.

Relocation of the remaining twenty-five (25) Melrose Terrace public housing residents outside the floodplain is currently not practicable because of a housing shortage in the town.

**Step 4. Identify the potential direct and indirect impacts associated with the occupancy or modification of floodplains and the potential direct and indirect support of floodplain development that could result from the proposed action (44 C.F.R. section 9.10(b):**

*No Action:*

The floodway, 100-year, and 500-year floodplain at Melrose Terrace would remain developed with seventeen (17) buildings, twenty-five (25) residents, parking areas and roadways.

Residents and infrastructure would continue to be at risk of flooding and there would be no action to restore the natural and beneficial functions of the floodplain.

Non-point source pollution of Whetstone Brook from all current sources would remain; non-point source pollution includes salt and automobile oil run-off from parking areas, lawn fertilizer, herbicides and insecticides. Brook bank soil erosion from periodic flooding events would continue at the current rate.

*Proposed Action:*

The 500-year floodplain at Melrose Terrace would remain developed with six (6) buildings, twenty-five (25) residents, parking and roadways; development in the floodplain would be significantly reduced.

The restored floodplain would have an increased capacity to moderate and store floodwater, and there would be an increase in ground water (aquifer) recharge.

Non-point source pollution of Whetstone Brook would be reduced by a reduction in parking areas, roadways, and actively maintained (fertilizer, etc.) lawn areas. Rip-rap and moderated flood flow in the lowered (restored) floodplain would reduce soil erosion along the banks of the brook; there would be a reduction in sediment loading of Whetstone Brook. An increased natural landscape buffer area between the remaining buildings on-site and the brook would provide a general increase in absorption and filtration of storm water runoff.

The restored floodplain would also represent an increased opportunity for open space recreation that would be protected through a deed restriction on the site.

**Step 5. Minimize the potential adverse impacts and support to or within floodplains identified under Step 4, restore and preserve the natural and beneficial values served by floodplains (44 C.F.R. section 9.11):**

*Proposed Action:*

Demolition of eleven (11) buildings, associated parking areas and roadways would minimize on-site sheet flow flooding associated with impermeable surfaces and reduce non-point source pollution associated with existing development in the 4.4-acre area slated for floodplain restoration.

Floodplain restoration in a 4.4-acre area would minimize the velocity of floodwater by making a larger area of the floodplain more readily accessible (lower) to Whetstone Brook overflow and it would lower the base flood elevation of the floodplain thereby reducing flood risk for properties in the immediate upstream or downstream vicinity.

Installation of an overflow culvert at the George F. Miller bridge would minimize the probability of flooding at Melrose Terrace by providing a greater capacity to allow floodwater to pass under the bridge and downstream.

Natural and beneficial values served by the flood plain at Melrose Terrace would be restored at 4.4-acres of the site and preserved through a deed restriction.

Development, testing and maintenance of an Evacuation Plan for Melrose Terrace would minimize the threat to residents flooding and will be a condition of the grant.

**Step 6. Reevaluate the proposed action to determine first, if it is still practicable in light of its exposure to flood hazards or impacts on wetlands, the extent to which it will aggravate the hazards to others, and its potential to disrupt floodplain and wetland resources and second, if alternatives preliminarily rejected at Step 3 are practicable in light of the information gained in Steps 4 and 5. FEMA shall not act in a floodplain unless it is the only practicable location (44 C.F.R. section 9.9):**

The Proposed Action in a floodplain remains the only practicable alternative; immediate re-location of all residents of Melrose Terrace out of the floodplain is not practicable (see reasons provided at Step 3).

The Proposed Action remains practicable because it will reduce the risk of flooding at Melrose Terrace by demolishing public housing in the floodway and 100-year floodplain.

While public housing and residents will remain in the 500-year floodplain, the risk of flooding will be reduced by the increased storage capacity of a restored (lowered) 100-year floodplain; an increased capacity to pass floodwater under the George F. Miller bridge (overflow culvert); a tested evacuation plan for remaining residents; and on-going efforts to remove all residents from the Melrose Terrace property as soon as practicable.

**Step 7. Prepare and provide the public with a finding and public explanation of any final decision that the floodplain is the only practicable alternative (44 C.F.R. section 9.12):**

A public notice will be printed the Brattleboro Reformer during April 2019. An Environmental Assessment which included this floodplain decision making process and additional analysis was made available to the public for fifteen (15) days at [www.brattleborohousing.org](http://www.brattleborohousing.org) and Town offices located at 224 Melrose Street Brattleboro, Vermont, 05301.

**Step 8. Review the implementation and post-implementation phases of the proposed action to ensure that the requirements stated in Section 9.11 are fully implemented.**

See the FEMA Finding of No Significant Impact for standard and special conditions that apply to this project.

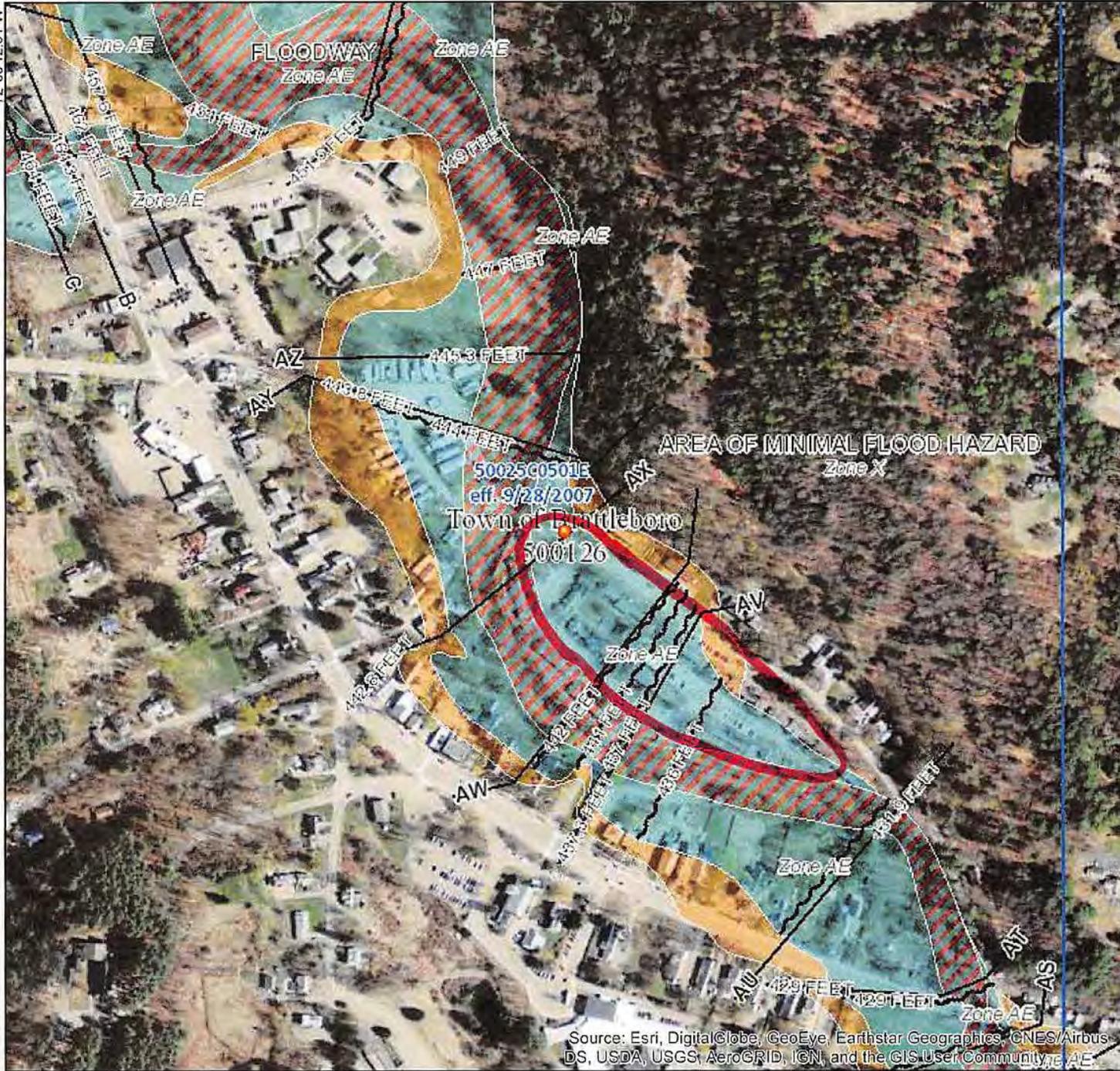
Documentation of compliance with all conditions will be required before the project is closed-out.

**Environmental Assessment Attachments**  
**Melrose Terrace Demolition and Floodplain Restoration,**  
**Brattleboro, VT**

Appendix A-4: National Flood Hazard Map - FIRMETTE

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

42°51'29.87"N



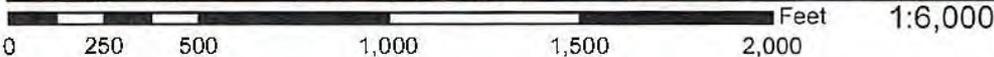
SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, AB9
		With BFE or Depth
		Regulatory Floodway Zone AE, AO, AH, VE, AF
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Area of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		Area of Minimal Flood Hazard Zone X
		Effective LDMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
OTHER FEATURES		Levee, Dike, or Floodwall
		Cross Sections with 1% Annual Chance Water Surface Elevation
OTHER FEATURES		Coastal Transect
		Base Flood Elevation Line (BFE)
OTHER FEATURES		Limit of Study
		Jurisdiction Boundary
OTHER FEATURES		Coastal Transect Baseline
		Profile Baseline
MAP PANELS		Hydrographic Feature
		Digital Data Available
MAP PANELS		No Digital Data Available
		Unmapped

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The base map shown complies with FEMA's base map accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/24/2018 at 11:25:18 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: base map imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



42°51'3.50"N

72°35'35.35"W

**Environmental Assessment Attachments  
Melrose Terrace Demolition and Floodplain  
Restoration, Brattleboro, VT**

**Appendix B: Correspondences and Consultations**

**Environmental Assessment  
Attachments  
Melrose Terrace Demolition and  
Floodplain Restoration,  
Brattleboro, VT**

Appendix B-1: CLOMR RFI from FEMA HQ  
on July 30, 2018



# NATIONAL FLOOD INSURANCE PROGRAM

FEMA PRODUCTION AND TECHNICAL SERVICES CONTRACTOR

July 30, 2018

Mr. Brian M. Cote, P.E.  
Project Engineer  
Milone & MacBroom, Inc.  
1 South Main Street  
Waterbury, VT 05676

IN REPLY REFER TO:  
Case No.: 18-01-1484R  
Community: Town of Brattleboro, VT  
Community No.: 500126  
  
316-AD

Dear Mr. Cote:

This responds to your request dated May 17, 2018, that the Department of Homeland Security's Federal Emergency Management Agency (FEMA) issue a conditional revision to the Flood Insurance Rate Map (FIRM) for Windham County, Vermont (All Jurisdictions). Pertinent information about the request is listed below.

Identifier:	Melrose Terrace Floodplain Restoration Project
Flooding Source:	Whetstone Brook
FIRM Panel Affected:	50025C0501E

The data required to complete our review, which must be submitted within 90 days of the date of this letter, are listed on the attached summary.

If we do not receive the required data within 90 days, we will suspend our processing of your request. Any data submitted after 90 days will be treated as an original submittal.

FEMA receives a very large volume of requests and cannot maintain inactive requests for an indefinite period of time. Therefore, we are unable to grant extensions for the submission of required data for revision requests. If a requester is informed by letter that additional data are required to complete our review of a request, the data **must** be submitted within 90 days of the date of the letter.

*LOMC Clearinghouse, 3601 Eisenhower Avenue, Suite 500, Alexandria, VA 22304 / PH: 1-877-FEMA MAP*

**Compass, under contract with the Federal Emergency Management Agency, is a Production and Technical Services provider for the National Flood Insurance Program**

If you have general questions about your request, FEMA policy, or the National Flood Insurance Program, please contact the FEMA Map Information eXchange (FMIX), toll free, at 1-877-FEMA MAP (1-877-336-2627). If you have specific questions concerning your request, please contact your case reviewer, Ms. Caroline Ike, by e-mail at [ikec@cdmsmith.com](mailto:ikec@cdmsmith.com) or by telephone at (303) 383-2329, or the Revisions Coordinator for your state, Ms. Ellie Pitney, by e-mail at [pitneyej@cdmsmith.com](mailto:pitneyej@cdmsmith.com) or by telephone at (303) 383-2318.

Sincerely,

A handwritten signature in black ink, appearing to read "Benjamin Kaiser", enclosed within a hand-drawn oval.

Benjamin Kaiser, P.E., CFM  
Revisions Manager  
Compass PTS JV

Attachment:

Summary of Additional Data  
Combined CLOMR Letter Template

cc: Ms. Christine H. Hart  
Executive Director  
Brattleboro Housing Partnerships

Mr. Peter Elwell  
Manager, Town of Brattleboro



# NATIONAL FLOOD INSURANCE PROGRAM

## FEMA PRODUCTION AND TECHNICAL SERVICES CONTRACTOR

### Summary of Additional Data Required to Support a Conditional Letter of Map Revision (CLOMR)

Case No.: 18-01-1484R

Requester: Mr. Brian M. Cote, P.E.

Community: Town of Brattleboro, VT

Community No.: 500126

The issues listed below must be addressed before we can continue the review of your request.

1. The CLOMR request will be processed by FEMA only after FEMA receives documentation from the requester that demonstrates compliance with the Endangered Species Act (ESA). For projects with federal construction, funding, or permitting, a “not likely to adversely affect” determination from the National Marine Fisheries Service or the U.S. Fish and Wildlife Service (collectively known as “the Services”), a “No Effect” determination from the federal action agency, or other approval from the Services is acceptable documentation of ESA compliance.
2. Our review revealed that the submitted as-built plans entitled, “Concept Design,” prepared by Milone & MacBroom, Inc., dated March 23, 2018, were not certified by a Professional Engineer (P.E.). Please have the submitted plans certified (sealed, signed, and dated) by a P.E.
3. Our review of the submitted proposed conditions Hydrologic Engineering Center’s River Analysis System HEC-RAS 4.1.0 hydraulic analysis revealed the following issues. Please submit a revised hydraulic analysis that corrects these issues and provide digital copies of the input and output files for this model.
  - a. Our review revealed that the model parameters for both the George F. Miller bridge and culvert differ from the as-built plans entitled, “Concept Design,” prepared by Milone & MacBroom, Inc., dated March 23, 2018. Please revise the submitted HEC-RAS modelsto reflect the correct as-built parameters shown on the above-mentioned plans.
  - b. Typically, a contraction coefficient of 0.1 and an expansion coefficient of 0.3 should be used at cross sections that are not at structures. Please revise the submitted hydraulic models so that the contraction and expansion loss coefficients are equal to 0.1 and 0.3, respectively, at Cross Section 2869.
  - c. Culvert and bridge modeling at the revised structures located at Cross Sections 3035 and 2954 do not follow the culvert/bridge modeling as described in the *HEC-RAS Hydraulic Reference Manual*. For example, the manual recommends use of ineffective flow areas upstream and downstream of a culvert or bridge. Please revise the model to incorporate modeling recommendations in the manual. Ineffective flow areas should be added to Cross Section 3035 and the elevation of the ineffective flow area at Cross Section 2954 should be placed at the top of the structure.
  - d. Review of the submitted hydraulic analyses revealed a location of excessive reach length between modeled cross sections. Additional cross sections in the hydraulic models may be

*LOMC Clearinghouse, 3601 Eisenhower Avenue, Suite 500, Alexandria, VA 22304 / PH: 1-877-FEMA MAP*

**Compass, under contract with the Federal Emergency Management Agency, is a Production and Technical Services provider for the National Flood Insurance Program**

- appropriate to more accurately analyze the water-surface elevations at this location. Please add additional cross sections between Cross Sections 6241 and 5060, or explain why this is not necessary.
4. Our review of the submitted topographic work map entitled, "Topographic Work Map," prepared by Milone & MacBroom, Inc., dated May 15, 2018, revealed some issues. Please submit a revised work map that corrects the following issues:
    - a. Please remove all pre-project conditions floodplain delineations from the work map.
    - b. Our review revealed that the proposed topographic contour information was not included on the work map. Please show and label the proposed contour information that reflects the proposed fill and grading along Whetstone Brook to the work map so that floodplain delineations can be verified to be at the correct elevation.
    - c. It appears that Cross Section 2654 was mislabeled as effective lettered Cross Section AU. It appears this is effective lettered Cross Section AV. Please revise the labeling to prevent any future confusion.
    - d. Our review revealed that graphical tie-in between the proposed and effective base floodplain and regulatory floodway delineations occur before the most upstream and downstream cross sections in the revised reach. These floodplain boundary delineations must tie-in to the floodplain boundary delineations shown on the effective Flood Insurance Rate Map (FIRM) at the upstream and downstream limits of the revised reach, beyond the cross sections where the vertical tie-in is achieved. Please revise the tie-in so that it occurs just upstream of the most upstream cross section and just downstream of the most downstream cross section in your revised reach.
  5. Floodplain topwidths shown in the submitted proposed conditions model should correspond to the floodplain topwidths shown on the above-referenced topographic work map within a 5-percent tolerance. Topwidth discrepancies for the 1-percent-annual-chance (base) floodplain exist at Cross Sections 6241, 4768, 3873, 2333, 2236, 2124, and 1757. Topwidth discrepancies for the regulatory floodway exist at Cross Sections 4089 and 3873. Please provide an explanation for these discrepancies, or submit a revised hydraulic analysis and/or work maps as appropriate.
  6. Please submit an updated annotated FIRM that shows the floodplain and floodway delineations revised by the comments above. Please only include the proposed conditions delineations and please ensure a logical tie-in is made between the proposed and effective delineations.
  7. Our review indicates that the proposed project encroaches upon a regulatory floodway and will cause increases in Base Flood Elevations (BFEs), the elevation of the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood). Please provide evidence that the proposed project satisfies the requirements of Section 65.12 of the National Flood Insurance Program (NFIP) regulations, including the items stated below. A copy of Part 65 of the regulations can be accessed at [http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&tpl=/ecfrbrowse/Title44/44cfr65\\_main\\_02.tpl](http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&tpl=/ecfrbrowse/Title44/44cfr65_main_02.tpl).
    - a. Evaluation of alternatives which would not result in any increase in BFEs and an explanation

why these alternatives are not feasible.

- b. Documentation that individual legal notices have been sent to all property owners affected by the increases in BFEs due to the proposed project. Documentation of legal notice may take the form of a copy of the letter sent and either a mailing list or certified mailing receipts. The attached template may be used to prepare the legal notice. **Prior to distribution, please submit a draft copy of the notice for verification of content.**
  - c. Certification by a P.E. that no structures are located in areas which would be impacted by the increased BFEs due to the project.
8. Our review indicates that the Letter of Map Revision (LOMR) that follows this CLOMR will revise the flood hazard information along Whetstone Brook. Please submit documentation that individual legal notices were sent to all the property owners affected by any changes in the flood hazard information. Documentation of legal notice may take the form of a copy of the letter sent and either a mailing list or certified mailing receipts. The individual notices that are not sent on community letterhead must also include certification from the community that all affected property owners have been notified of the proposed floodway revision. The individual legal notices must include the extent of revision and contact information for any interested parties and must also mention the community's intent to revise the regulatory floodway. **Please submit a copy of the notification for verification of content, prior to publication or distribution.** The Combined CLOMR Notice template should be used to prepare the draft notification. Alternatively, if all flood hazard revisions occur on the requester's property and if the requester of this CLOMR signs the top block of MT-2 Form 1 and the affected community signs the second block, then you may provide a statement that all proposed flood hazard revisions occur on the requester's property. This statement may be used to fulfill this notification requirement if all other requirements are met.
  9. Our review revealed that this CLOMR is considered federally funded. To verify that a fee is not required, please submit any relevant documentation, i.e., grants or permits, that prove federal involvement and funding.

Please upload the required data using the Online LOMC web site at <https://hazards.fema.gov/femaportal/onlinelomc/signin>.

For identification purposes, please include the case number referenced above on all correspondence.



# Federal Emergency Management Agency

Washington, D.C. 20472

December 3, 2018

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

IN REPLY REFER TO:

Case No.: 18-01-1484R

Mr. Peter Elwell  
Manager, Town of Brattleboro  
230 Main Street, Suite 208  
Brattleboro, VT 05301

Community Name: Town of Brattleboro, VT  
Community No.: 500126

Dear Mr. Elwell:

We are providing our comments with the enclosed Conditional Letter of Map Revision (CLOMR) on a proposed project within your community that, if constructed as proposed, could revise the effective Flood Insurance Study report and Flood Insurance Rate Map for your community.

If you have any questions regarding the floodplain management regulations for your community, the National Flood Insurance Program (NFIP) in general, or technical questions regarding this CLOMR, please contact the Director, Mitigation Division of the Federal Emergency Management Agency (FEMA) Regional Office in Boston, Massachusetts, at (617) 956-7564, or the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP). Additional information about the NFIP is available on our website at <https://www.fema.gov/national-flood-insurance-program>.

Sincerely

Patrick "Rick" F. Sacbibit, P.E., Branch Chief  
Engineering Services Branch  
Federal Insurance and Mitigation Administration

Enclosure:

Conditional Letter of Map Revision Comment Document

cc: Mr. Brian Bannon, CFM  
Zoning Administrator  
Planning Services Department  
Town of Brattleboro

Ms. Christine H. Hart  
Executive Director  
Brattleboro Housing Partnerships

Mr. Brian M. Cote, P.E.  
Project Engineer  
Milone & MacBroom, Inc.





# Federal Emergency Management Agency

Washington, D.C. 20472

## CONDITIONAL LETTER OF MAP REVISION COMMENT DOCUMENT

COMMUNITY INFORMATION		PROPOSED PROJECT DESCRIPTION	BASIS OF CONDITIONAL REQUEST
COMMUNITY	Town of Brattleboro Windham County Vermont	CULVERT GRADING	BASE MAP CHANGES FLOODWAY HYDRAULIC ANALYSIS UPDATED TOPOGRAPHIC DATA
	COMMUNITY NO.: 500126		
IDENTIFIER	Melrose Terrace Floodplain Restoration Project	APPROXIMATE LATITUDE AND LONGITUDE: 42.853, -72.599 SOURCE: USGS QUADRANGLE DATUM: NAD 83	
AFFECTED MAP PANELS			
TYPE: FIRM*	NO.: 50025C0501E	DATE: September 28, 2007	* FIRM - Flood Insurance Rate Map

### FLOODING SOURCE AND REACH DESCRIPTION

See Page 2 for Additional Flooding Sources

Whetstone Brook – from approximately 50 feet upstream of Western Avenue/State Route 9 to just downstream of Meadowbrook Road

### PROPOSED PROJECT DESCRIPTION

Flooding Source	Proposed Project	Location of Proposed Project
Whetstone Brook	New 15'x5' Box Culvert	At George F. Miller Drive
	Grading	from approximately 740 feet downstream of George F. Miller Drive to approximately 770 feet upstream of George F. Miller Drive

### SUMMARY OF IMPACTS TO FLOOD HAZARD DATA

Flooding Source	Effective Flooding	Proposed Flooding	Increases	Decreases
Whetstone Brook	BFEs*	BFEs	None	Yes
	Floodway	Floodway	Yes	Yes
	Zone AE	Zone AE	Yes	Yes
	Zone X (shaded)	Zone X (shaded)	Yes	Yes

\* BFEs - Base (1-percent-annual-chance) Flood Elevations

### COMMENT

This document provides the Federal Emergency Management Agency's (FEMA's) comment regarding a request for a CLOMR for the project described above. This document is not a final determination; it only provides our comment on the proposed project in relation to the flood hazard information shown on the effective National Flood Insurance Program (NFIP) map. We reviewed the submitted data and the data used to prepare the effective flood hazard information for your community and determined that the proposed project meets the minimum floodplain management criteria of the NFIP. Your community is responsible for approving all floodplain development and for ensuring that all permits required by Federal or State/Commonwealth law have been received. State/Commonwealth, county, and community officials, based on their knowledge of local conditions and in the interest of safety, may set higher standards for construction in the Special Flood Hazard Area (SFHA), the area subject to inundation by the base flood. If the State/Commonwealth, county, or community has adopted more restrictive or comprehensive floodplain management criteria, these criteria take precedence over the minimum NFIP criteria.

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 3601 Eisenhower Avenue, Suite 500, Alexandria, VA 22304-6426. Additional information about the NFIP is available on the FEMA website at <https://www.fema.gov/national-flood-insurance-program>.

Patrick "Rick" F. Sacbibt, P.E., Branch Chief  
Engineering Services Branch  
Federal Insurance and Mitigation Administration



**Federal Emergency Management Agency**  
Washington, D.C. 20472

**CONDITIONAL LETTER OF MAP REVISION  
COMMENT DOCUMENT (CONTINUED)**

**COMMUNITY INFORMATION (CONTINUED)**

**ADDITIONAL FLOODING SOURCES AFFECTED BY THIS CONDITIONAL REQUEST**

**FLOODING SOURCE AND REACH DESCRIPTION**

Ames Hill Brook – from the confluence with Whetstone Brook to approximately 330 feet upstream of the confluence with Whetstone Brook

**PROPOSED PROJECT DESCRIPTION**

Flooding Source	Proposed Project	Location of Proposed Project
Ames Hill Brook	No Project	Not applicable

**SUMMARY OF IMPACTS TO FLOOD HAZARD DATA**

Flooding Source	Effective Flooding	Proposed Flooding	Increases	Decreases
Ames Hill Brook	BFEs	BFEs	None	Yes

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Engineering Services Branch  
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**Federal Emergency Management Agency**  
Washington, D.C. 20472

**CONDITIONAL LETTER OF MAP REVISION  
COMMENT DOCUMENT (CONTINUED)**

**COMMUNITY INFORMATION**

To determine the changes in flood hazards that will be caused by the proposed project, we compared the hydraulic modeling reflecting the proposed project (referred to as the proposed conditions model) to the hydraulic modeling used to prepare the Flood Insurance Study (FIS) (referred to as the effective model). If the effective model does not provide enough detail to evaluate the effects of the proposed project, an existing conditions model must be developed to provide this detail. This existing conditions model is then compared to the effective model and the proposed conditions model to differentiate the increases or decreases in flood hazards caused by more detailed modeling from the increases or decreases in flood hazards that will be caused by the proposed project.

The table below shows the changes in the BFEs:

**BFE Comparison Table**

Flooding Source: Whetstone Brook		BFE Change (feet)	Location of maximum change
Existing vs. Effective	Maximum increase	NONE	Not Applicable
	Maximum decrease	3.3	Approximately 720 feet downstream of the confluence of Ames Hill Brook
Proposed vs. Existing	Maximum increase	NONE	Not Applicable
	Maximum decrease	2.8	Approximately 130 feet upstream of George F. Miller Drive
Proposed vs. Effective	Maximum increase	NONE	Not Applicable
	Maximum decrease	4.8	Approximately 130 feet upstream of George F. Miller Drive

Flooding Source: Ames Hill Brook		BFE Change (feet)	Location of maximum change
Existing vs. Effective	Maximum increase	NONE	Not Applicable
	Maximum decrease	NONE	Not Applicable
Proposed vs. Existing	Maximum increase	NONE	Not Applicable
	Maximum decrease	NONE	Not Applicable
Proposed vs. Effective	Maximum increase	NONE	Not Applicable
	Maximum decrease	1.2	At the confluence with Whetstone Brook

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 3601 Eisenhower Avenue, Suite 500, Alexandria, VA 22304-6426. Additional information about the NFIP is available on the FEMA website at <https://www.fema.gov/national-flood-insurance-program>.

Patrick "Rick" F. Sacibit, P.E., Branch Chief  
Engineering Services Branch  
Federal Insurance and Mitigation Administration



## Federal Emergency Management Agency

Washington, D.C. 20472

### CONDITIONAL LETTER OF MAP REVISION COMMENT DOCUMENT (CONTINUED)

#### COMMUNITY INFORMATION (CONTINUED)

NFIP regulations Subparagraph 60.3(b)(7) requires communities to ensure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained. This provision is incorporated into your community's existing floodplain management ordinances; therefore, responsibility for maintenance of the altered or relocated watercourse, including any related appurtenances such as bridges, culverts, and other drainage structures, rests with your community. We may request that your community submit a description and schedule of maintenance activities necessary to ensure this requirement.

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 3601 Eisenhower Avenue, Suite 500, Alexandria, VA 22304-6426. Additional information about the NFIP is available on the FEMA website at <https://www.fema.gov/national-flood-insurance-program>.

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Patrick "Rick" F. Sacbibit, P.E., Branch Chief  
Engineering Services Branch  
Federal Insurance and Mitigation Administration



## Federal Emergency Management Agency

Washington, D.C. 20472

### CONDITIONAL LETTER OF MAP REVISION COMMENT DOCUMENT (CONTINUED)

#### COMMUNITY INFORMATION (CONTINUED)

#### DATA REQUIRED FOR FOLLOW-UP LOMR

Upon completion of the project, your community must submit the data listed below and request that we make a final determination on revising the effective FIRM and FIS report. If the project is built as proposed and the data below are received, a revision to the FIRM and FIS report would be warranted.

- Detailed application and certification forms must be used for requesting final revisions to the maps. Therefore, when the map revision request for the area covered by this letter is submitted, Form 1, entitled "Overview and Concurrence Form," must be included. A copy of this form may be accessed at <https://www.fema.gov/media-library/assets/documents/1343>.
- The detailed application and certification forms listed below may be required if as-built conditions differ from the proposed plans. If required, please submit new forms, which may be accessed at <https://www.fema.gov/media-library/assets/documents/1343>, or annotated copies of the previously submitted forms showing the revised information.

Form 2, entitled "Riverine Hydrology and Hydraulics Form." Hydraulic analyses for as-built conditions of the base flood, the 10-percent, 2-percent, and 0.2-percent-annual-chance floods, and the regulatory floodway, must be submitted with Form 2.

Form 3, entitled "Riverine Structures Form."

- A certified topographic work map showing the revised and effective base and 0.2-percent-annual-chance floodplain and floodway boundaries. Please ensure that the revised information ties-in with the current effective information at the downstream and upstream ends of the revised reach.
- An annotated copy of the FIRM, at the scale of the effective FIRM, that shows the revised base and 0.2-percent-annual-chance floodplain and floodway boundary delineations shown on the submitted work map and how they tie-in to the base and 0.2-percent-annual-chance floodplain and floodway boundary delineations shown on the current effective FIRM at the downstream and upstream ends of the revised reach.
- As-built plans, certified by a registered Professional Engineer, of all proposed project elements.
- A copy of the public notice distributed by your community stating its intent to revise the regulatory floodway, or a signed statement by your community that it has notified all affected property owners and affected adjacent jurisdictions.
- Documentation of the individual legal notices sent to property owners who will be affected by any widening or shifting of the base floodplain or any BFE increases along Whetstone Brook and Ames Hill Brook.

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 3801 Eisenhower Avenue, Suite 500, Alexandria, VA 22304-6426. Additional information about the NFIP is available on the FEMA website at <https://www.fema.gov/national-flood-insurance-program>.

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Engineering Services Branch  
Federal Insurance and Mitigation Administration



## Federal Emergency Management Agency

Washington, D.C. 20472

### CONDITIONAL LETTER OF MAP REVISION COMMENT DOCUMENT (CONTINUED)

#### COMMUNITY INFORMATION (CONTINUED)

##### DATA REQUIRED FOR FOLLOW-UP LOMR (continued)

• FEMA's fee schedule for reviewing and processing requests for conditional and final modifications to published flood information and maps may be accessed at <https://www.fema.gov/forms-documents-and-software/flood-map-related-fees>. The fee at the time of the map revision submittal must be received before we can begin processing the request. Payment of this fee can be made through a check or money order, made payable in U.S. funds to the National Flood Insurance Program, or by credit card (Visa or MasterCard only). Please either forward the payment, along with the revision application, to the following address:

LOMC Clearinghouse  
Attention: LOMR Manager  
3601 Eisenhower Avenue, Suite 500  
Alexandria, Virginia 22304-6426

or submit the LOMR using the LOMC portal at: <https://hazards.fema.gov/femaportal/onlinelomc/signin>.

After receiving appropriate documentation to show that the project has been completed, FEMA will initiate a revision to the FIRM and FIS report. Because the flood hazard information (i.e., base flood elevations, base flood depths, SFHAs, zone designations, and/or regulatory floodways) will change as a result of the project, a 90-day appeal period will be initiated for the revision, during which community officials and interested persons may appeal the revised flood hazard information based on scientific or technical data.

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 3601 Eisenhower Avenue, Suite 500, Alexandria, VA 22304-6426. Additional information about the NFIP is available on the FEMA website at <https://www.fema.gov/national-flood-insurance-program>.

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Engineering Services Branch  
Federal Insurance and Mitigation Administration



## Federal Emergency Management Agency

Washington, D.C. 20472

### CONDITIONAL LETTER OF MAP REVISION COMMENT DOCUMENT (CONTINUED)

#### COMMUNITY INFORMATION (CONTINUED)

#### COMMUNITY REMINDERS

We have designated a Consultation Coordination Officer (CCO) to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Mr. Dean Savramis  
Director, Mitigation Division  
Federal Emergency Management Agency, Region I  
99 High Street, Sixth Floor  
Boston, MA 02110  
(617) 956-7564

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 3601 Eisenhower Avenue, Suite 500, Alexandria, VA 22304-6426. Additional information about the NFIP is available on the FEMA website at <https://www.fema.gov/national-flood-insurance-program>.

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Engineering Services Branch  
Federal Insurance and Mitigation Administration