



**Draft Environmental Assessment**  
*Meriden Harbor Brook Flood Resilience Project*  
*BRIC project No. EMB-2021-BR-002-0008*  
*Meriden, New Haven County, CT*



**FEMA**

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## **APPENDICES**

### **APPENDIX A: Maps**

Figure 1 – Map of Meriden Harbor Brook Flood Resilience Project Area

Figure 2 – Flood Insurance Rate Map for Meriden Harbor Brook Flood Resilience Project

### **APPENDIX B: Project Documents (select pages from 75% design plans, dated September 27, 2022)**

Figure 1 – Channel Upgrades: Grading and Drainage Layout Plan

Figure 2 – Bridge Replacements: Structures Location Plan

Figure 3 – Areas of Environmental Concern on the Project Site

### **APPENDIX C: Supporting Documents**

Document 1 – 8-Step Analysis for Work in a Floodplain

## **ACRONYMS**

APE – Area of Potential Effects  
BFE – Base Flood Elevation  
BRIC – Building Resilient Infrastructure and Communities  
CEPA – Connecticut Environmental Policy Act  
CEQ – Council on Environmental Quality  
CFR – Code of Federal Regulations  
CT DEEP – Connecticut Department of Energy and Environmental Protection  
CT RSRs – Connecticut Remediation Standard Regulations  
CWA – Clean Water Act  
EA – Environmental Assessment  
EIE – Environmental Impact Evaluation  
EO – Executive Order  
EPA – Environmental Protection Agency  
ESA – Endangered Species Act  
ETPH – Extractable Total Petroleum Hydrocarbons  
FEMA – Federal Emergency Management Agency  
FFRMS – Federal Flood Risk Management Standard  
FIRM – Flood Insurance Rate Map  
FONSI – Finding of No Significant Impact  
HMA – Hazard Mitigation Assistance  
IPaC – Information for Planning and Consultation  
LF – Linear Feet  
MBTA – Migratory Bird Treaty Act  
MSL – Mean Sea Level (elevation)  
NEPA – National Environmental Policy Act  
NHPA – National Historic Preservation Act  
NOx – Nitrogen Oxides  
PAH – Polynuclear Aromatic Hydrocarbons  
PMC – Pollutant Mobility Criteria  
SEHN – Significant Environmental Hazard Notification  
SHPO – State Historic Preservation Officer  
USACE – U.S. Army Corp of Engineers  
U.S.C. – United States Code  
USFWS – U.S. Fish and Wildlife Service  
VOC – Volatile Organic Compound

## **1.0 INTRODUCTION**

The City of Meriden (the City) has applied to Federal Emergency Management Agency's (FEMA) Fiscal Year 2021 Building Resilient Infrastructure and Communities (BRIC) program for financial assistance to fund construction that would reduce flood risk and recurring flood damage along 1,800 linear feet (LF) of Harbor Brook in downtown Meriden, CT (Proposed Action). The BRIC grant program is authorized by Section 203 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended (Pub. L. No. 93-288; 42 U.S.C. § 5133). Under the BRIC program, FEMA may provide financial assistance for hazard mitigation planning and projects to reduce risk of damage before a disaster.

The BRIC program provides grants to states, federally recognized tribal governments, and U.S. territories (Recipient) that, in turn, provide subawards to states, territories, tribes, and local communities (Subrecipient) to undertake hazard mitigation projects to reduce the risks they face from disasters and natural hazards. The Connecticut Division of Emergency Management and Homeland Security is the Recipient partner for the Proposed Action and the City is the Subrecipient.

The National Environmental Policy Act (NEPA) requires FEMA to follow a specific planning process to ensure that it has considered the consequences of a proposed federal action and that the general public is fully informed. This includes funding Hazard Mitigation Assistance (HMA) projects under the BRIC grant program. To meet its NEPA requirements, FEMA has prepared this Environmental Assessment (EA) to analyze potential effects of the Proposed Action and alternatives to that action on the human environment. That analysis will determine whether the project warrants preparation of an Environmental Impact Statement or will result in a Finding of No Significant Impact (FONSI). FEMA has prepared this EA in accordance with NEPA, its implementing regulations, and FEMA and Department of Homeland Security policy.

## **2.0 PURPOSE AND NEED**

The purpose of the Proposed Action is to reduce flood hazards from high-intensity rainfall events along 1,800 LF of Harbor Brook in the downtown area. There is a long history of flooding in Downtown Meriden, CT due to floodplain encroachment, channelization, and constricted flows along Harbor Brook. Meriden is a state-listed "Distressed Community"<sup>1</sup> that experiences recurrent flood damage and risk along this section of Harbor Brook (DECD 2023; City of Meriden 2021). Residential, commercial, and municipal structures, including the city police station, a senior center, a community YMCA, state courthouse, and a church are currently at risk of flood damage. Addressing flood hazards along Harbor Brook would reduce or eliminate risk of loss for transportation and utility systems. Ancillary benefits would include water quality improvement, habitat creation, increased economic opportunity, reduced social vulnerability, and improvement to public health.

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<sup>1</sup> A "Distressed Community" is the designation for the state's most fiscally and economically distressed communities and is used to identify funding needs, such as housing, insurance, open space, brownfield remediation and economic development programs.

### 3.0 PROJECT LOCATION AND BACKGROUND

The City of Meriden is in New Haven County, Connecticut, mid-way between Hartford and New Haven. Located at the “Crossroads of Connecticut,” the city is bisected by two of the state’s major freeways: Interstate Highways 91 and 691 (City of Meriden 2023). Harbor Brook is a waterbody that is part of the Quinnipiac River Watershed that drains via the Quinnipiac River to New Haven Harbor and Long Island Sound.

The Proposed Action location is in Downtown Meriden in and along an 1,800 LF segment of Harbor Brook. The project location is bordered by Cooper Street to the south, the intersection of Hanover Street and Hanover Bridge to the north, Cherry Street to the east, and the 77 Cooper Street property to the west (Appendix A, Figure 1).

The Harbor Brook Flood Resilience Project will reduce risk and enhance quality of life in a state-designated Distressed Community. The goals are to reduce flood risk hazards and recurring flood damage with channel realignment and profile adjustment of Harbor Brook, the replacement of two (2) undersized bridges, floodproofing three (3) buildings, and the creation of floodplain and wildlife habitats.

The Proposed Action is part of the Harbor Brook Flood Control and Linear Trail Project Master Plan (Master Plan). There have been on-going activities along the Harbor Brook corridor, which are part of the Master Plan. Per the Connecticut Environmental Policy Act (CEPA), the City developed an Environmental Impact Evaluation (EIE) in 2011 to analyze the impacts of the Harbor Brook Flood Control and Linear Trail Project Master Plan (GZA 2011). In addition to the Proposed Action, the following projects are ongoing, planned, or have been completed in the city:

**Table 3.1: Additional Ongoing, Planned, & Completed Projects along Harbor Brook, Meriden, CT.**

<i>Project Name</i>	<i>Completion Date</i>
Bradley Avenue/Coe Avenue Bridges (Cumulative)	2006
Cook Avenue Bridge (ConnDOT) (Cumulative)	2013
Falcon Park Flood Storage (Cumulative)	2015
Meriden Green (Cumulative)	2015
Columbus Avenue Bridge Relief Culvert (Cumulative)	2016
Amtrak Bridge Relief Culvert (Cumulative)	2021
Cooper Street Bridge (Cumulative)	2022
Cedar Street Bridge (Cumulative)	Currently under construction; scheduled completion December 2023
Harbor Brook Channel, Coe to Cooper (Cumulative)	Estimated Completion 2024
100 Hanover Street Demolition (Connected)	Building demolished in 2023; foundation and parking deck to be removed in 2025
104 Butler Street (former power plant) (Cumulative)	Building demolished in 2023; foundation to be removed in 2025
Center Street Bridge (Cumulative)	In final design phase; construction to start 2024
Skatepark at 77 Cooper Street Slab (Connected)	Estimated Completion 2026



## **4.0 ALTERNATIVES**

This section describes the No Action Alternative, the Proposed Action Alternative, and alternatives that were considered and dismissed. Guidance provided in NEPA and its 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.”

Several alternatives were evaluated for the Master Plan in the EIE (GZA 2011). The final Master Plan was permitted by U.S. Army Corps of Engineers (USACE) and Connecticut Department of Environmental Protection (CT DEEP) in 2012. Within the framework of the approved permit plan, alternatives for the City’s Proposed Action under the 2021 BRIC application (the 1,800 LF stretch of Harbor Brook subject of this EA) were also assessed based upon survey, wetland, environmental, geotechnical, and civil engineering field investigations conducted by Fuss & O’Neill in 2020 (Fuss & O’Neill 2021). The combination of project elements that make up the Proposed Action was established after local, state, and federal stakeholders had the opportunity to participate in the review process for the EIE and the City reviewed the 2020 Fuss & O’Neill report.

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

Under the No Action Alternative, FEMA would not undertake or fund any action. There could be a range of possible outcomes if FEMA funding is not provided, depending on the amount of alternative funding available and priorities established by the community. However, to provide a consistent basis for comparison to the Proposed Action, it is assumed, for the purposes of this EA, that structures and facilities would remain in their current state: Downtown Meriden would continue to experience recurring flooding and damages; the Harbor Brook channel would remain 25-feet wide and be constrained between stone walls; two (2) undersized bridges would remain and no floodplain or wildlife habitats would be created; leaving existing buildings in place; and fourteen (14) residential and twenty-five (25) commercial and municipal structures would remain at risk of flooding.

### **4.2 Alternative 2: Proposed Action (Channel Improvements, Floodplain Restoration and Habitat Creation, Bridge Replacements, Floodproofing, Utility Modifications)**

Under the Proposed Action, the City would make improvements along an 1,800 LF stretch of Harbor Brook. Specific work includes:

- Site Preparations
  - Removal of concrete walls, concrete foundation northwest of Cherry Street, masonry channel walls, utility bridge (c. 1976), and curbing/sidewalks.
  - Burial of 900 LF of channel walls.
  - Clearing and grubbing; approximately 0.5 acres of trees would be removed.
  - Removal of approximately 6.5 acres of low-quality vegetation.
  - Removal or relocation of 16,000 cubic yards (CY) of contaminated and lightly contaminated soil.
  - Creation of a temporary gravel lot near 76 Butler Street, four (4) waste stockpile areas, and three (3) staging areas.
  - Establishment of a temporary soil vapor extraction system to be used for soil underlying the 77 Cooper Street concrete slab.
  - Use of a cofferdam for water diversion.

- Excavation and backfill for much of the project work.
  - Demolition of 100 Hanover Street (connected action).
- Channel Improvements (Appendix B, Figure 1):
  - Channel realignment to the east and profile adjustment (channel excavation, lowering, widening, and grading) along 1,800 LF, reconnecting the channel to its floodplain along much of the length.
  - Creation of riffle-pool habitats and large glacial boulder placements.
  - Installation of six (6) modular block retaining walls.
  - Creation of approximately 5.6 acres of riparian floodplain and wildlife habitat on both sides of the channel by removing existing walls and grading to create floodplain shelves and benches.
- Bridge Replacements (Appendix B, Figure 2):
  - Replacement of Butler Street Bridge (c. 1976) with a 65-foot single-span concrete box-beam structure and elevated above Base Flood Elevation (BFE).
  - Replacement of Hanover Street Bridge (c. 1976) with a 45-foot single-span concrete box-beam structure and elevated above BFE.
- Utility Modifications and Relocations:
  - Gas: Installation of a gas main and gas valve.
  - Telephone: Re-laying of existing lines across the new Butler Street and Hanover Street Bridges.
  - Electrical: Removal of one (1) utility pole and an electric vault; and installation of electric ductbank (175 LF), one (1) utility pole, and an electric vault.
  - Sanitary sewer: Twenty (20) test pits would be required; and installation of impervious trench dams (8), new manholes (25), and a 15-inch gravity sewer.
  - Drinking water: Ten (10) test pits would be required; and installation of impervious trench dams (4) and an 8-inch water main.
  - Stormwater drainage: shortening/extending existing outfall to accommodate proposed grade; placement of stone armoring at outfalls; minor relocations of catch basins and outfall piping.
  - Relocation of utilities (water, gas, telephone, and electric) outside of the 1% annual chance floodplain (100-year floodplain).
- Floodproofing:
  - Three (3) buildings (111 Hanover, 124 Hanover, and 6/8 South Grove Streets) would be floodproofed to BFE plus 2 feet in accordance with the Federal Flood Risk Management Standard (FEMA Policy FP-206-21-0003).
- Trail Work, Clean Up, Restoration, Redevelopment:
  - Installation of a 1,481 LF waterfront trail system.
  - Planting of native wildlife and riparian seed mixes (establishment of floodplain meadow); and planting of approximately twenty-five (25) native trees.
  - Installation of a concrete parking area at 104 Butler Street.
  - Installation of a skate park at the site of the 77 Cooper Street foundation slab (connected action).
  - Offsite disposal of contamination soils at one of three licensed facilities.

- Reuse/relocation of 6,900 CY sediment from Harbor Brook excavation to upland portion of the site for grading (preapproved by CT DEEP).

The preferred alternative was chosen as it provides the highest level of flood reduction while meeting the hydraulic requirements of the Master Plan, it provides the highest quality habitat within the floodplain areas, and it is the least expensive in terms of site disturbance. Furthermore, shifting the channel to the east would provide additional separation from contaminated material under the 77 Cooper Street concrete slab and maintaining the floodplain area as a meadow would provide habitat for small wildlife and birds.

### 4.3 Alternatives Considered and Dismissed

A number of alternatives were evaluated and dismissed for the Master Plan in the EIE (GZA 2011). The final Master Plan was permitted by USACE and CT DEEP in 2012.

In 2020, alternatives for a segment of Harbor Brook (the Proposed Action area) were also reevaluated based upon survey, wetland, environmental, geotechnical, and civil engineering field investigations and presented to the City for consideration (Fuss & O'Neill 2021). The segment of Harbor Brook corresponds to stations 92+70 to 110+70 depicted in the 2012 USACE and CT DEEP permitted master plan.

**Additional Upstream and/or Underground Detention** - A detention basin provides temporary containment of stream flows or stormwater runoff as a means of potential flood control. The creation of sufficient storage within the watershed to contain flood flows associated with the 1% annual chance flood event (without channel and bridge improvements) would require multiple aboveground and underground detention areas. Due to limited space available for aboveground detention and the magnitude of creating underground detention beneath a densely developed area, this alternative was dismissed.

**Alternative Design Flood Event** - Bridges, culverts, and other measures are potentially cost-effective solutions depending on the watershed and corridor at Harbor Brook. Designing for the 1% annual chance event or greater would be possible; however, environmental impacts and costs would greatly increase. For this reason, this method was dismissed.

#### **Other Flood Protection Measures -**

- **Acquisition and/or Relocation of Selected Properties:** This option would involve the purchasing of properties within the 1% annual chance floodplain by the City and the physical movement of people and personal property to sites not affected by flooding. Due to considerable costs, difficulties associated with finding a relocation area, and the lack of reduction of flood impacts, this method was deemed not feasible. Demolition was only deemed feasible for certain structures within the project reach.
- **Constructing Floodwalls or Earthen Levees:** This alternative involves a physical flood barrier constructed of earthen materials at a height that contains floods. A barrier can restrict views/user access to Harbor Brook, in addition to restricting the expansion of the channel and creation of floodplain benches. This method was deemed not prudent.
- **Dry Floodproofing of Structures:** This option primarily addresses human health and safety concerns and is generally a combination of changes to eliminate or reduce flood damage. This method is generally not considered to be feasible if floodwaters rise above 3 feet. This method was only deemed feasible for certain structures within the project reach.

- **Elevation of Structures:** This alternative would lift structures above the flood elevation using piles, piers, posts, or columns. While elevation protects from flooding, occupants are still subject to impacts related to accessibility during flooding and possible loss of utility services. This was not considered to be a viable alternative.
- **Wet Floodproofing:** This alternative would modify a structure to allow floodwaters to enter the structure without causing damage to living spaces, service equipment, or the structure itself. However, this option does not protect a structure from the hydrodynamic force of flowing water, waves, erosion and scour, the impact of ice or other debris, and damage from contaminants. Sediment, debris, and other environmental contaminants must be cleaned out of the structure after the flood recedes. For these reasons, it was dismissed as a viable alternative for Harbor Brook.
- **Underground Diversion:** This alternative would reroute waterways into underground culverts. This option was not utilized due to utility conflicts, spatial constraints, and potential for conflict with railroad corridor improvements.

**Alternative No Action Option** - The City could secure non-FEMA sources of funding for projects within the Master Plan, including the Proposed Action. Effects would be similar to the Proposed Action, and therefore, are not analyzed separately.

The combination of project elements that ultimately make up the Proposed Action was established after local, state, and federal stakeholders had the opportunity to participate in the review process for the EIE and the City reviewed the 2020 Fuss & O'Neill report. Additional information regarding the alternatives evaluated to develop the Master Plan can be found in the EIE (GZA 2011).

## **5.0 AFFECTED ENVIRONMENT AND POTENTIAL EFFECTS**

Effects (or impacts) are defined in 40 Code of Federal Regulations (CFR) section 1508.1(g) as “changes to the human environment from the proposed action or alternatives that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives, including those effects that occur at the same time and place as the proposed action or alternatives and may include effects that are later in time or farther removed in distance from the proposed action or alternatives.” Effects include ecological (effects on natural resources), aesthetic, historic, cultural, economic, social, or health effects. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if the agency believes that the overall effect would be beneficial.

When possible, this EA uses quantitative information to evaluate potential effects; otherwise, the potential qualitative effects are evaluated based on the criteria listed in Table 5.1:

**Table 5.1: Effect Significance and Context Evaluation Criteria for Potential Effects**

<i>Effect Scale</i>	<i>Criteria</i>
No Effect	The resource area would not be affected and there would be no impact.
Negligible	The resource area would not be affected, OR effects would either be non-detectable or, if detected, would be slight and local. Effects would be well below regulatory standards, as applicable.
Minor	Changes to the resource, both adverse and beneficial, would be measurable, but the effects would be small and localized. Adverse effects would be within or below regulatory standards, as applicable. Mitigation measures would reduce any potential adverse effects.
Moderate	Changes to the resource, both adverse and beneficial, would be measurable and would be localized or of regional scale. Adverse effects would be within or below regulatory standards, but historical conditions would be altered on a short-term basis. Mitigation measures would be necessary to reduce any potential adverse effects.
Major	Changes to the resource, both adverse and beneficial, would be readily measurable and would have substantial consequences on a local or regional level. Adverse effects would exceed regulatory standards and mitigation measures to offset the adverse effects would be required to reduce effects. Long-term changes to the resource would be expected.

Not all effect topics are applicable to either the No Action Alternative or the Proposed Action Alternative. The table below lists the resources that have been eliminated from the EA with reasoning.

**Table 5.2: Topics Eliminated with Reasoning**

<i>Topic</i>	<i>Reason</i>
Climate Change	The release of greenhouse gasses from construction activities would be <i>de minimis</i> and not result in a measurable effect on climate.
Coastal Barrier Resources Act	Project is not located in a Coastal Barrier Resource System Unit or Otherwise Protected Area.
Coastal Zone Management Act	Project is not located in a coastal zone area.
Comprehensive Environmental Response, Compensation and Liability Act	Project is not or near a Superfund site.
Farmland Protection Policy Act	Project does not affect prime or unique farmland.
Magnuson-Stevens Fishery Conservation and Management Act	Project not located in or near Essential Fish Habitat.
Safe Drinking Water Act	Project site is not located above a sole source aquifer nor would it impact one.
Wild and Scenic Rivers Act	There are no designated Wild and Scenic Rivers within or near the project area.

## 5.1 Physical Resources

### 5.1.1 Topography and Soils

#### 5.1.1.1 Existing Conditions

Most of the project site is mapped by the United States Department of Agriculture's Natural Resource Conservation Service as Urban Land with a smaller section in the western portion of the site mapped as Udorthents-Urban Land Complex. Urban Land is land developed by buildings, roads, and other developments. Udorthents is land containing borrow sources and fill. In both areas, the natural soils have been disturbed and/or altered.

While there are five large waterbodies within the Harbor Brook watershed, the Proposed Action area is along Harbor Brook in between Hanover Pond (approximately 1.75 miles downstream of the project site) and Baldwin's Pond (approximately 1.8 miles upstream of the project site). The topography of the project area is flat, with elevations gradually rising from a low of approximately 119 feet mean sea level (MSL) to approximately 130 feet MSL. The project area segment of Harbor Brook is also characterized by a flat channel gradient.

#### 5.1.1.2 Potential Effects and Proposed Mitigation

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

There would be no construction activities, including excavation and fill, associated with the Proposed Action. Flooding could continue contribute to erosion along Harbor Brook, which could result in soil loss and change in topography. Therefore, the No Action Alternative could have a **minor** negative effect on soils and topography in areas where flooding contributes to erosion.

##### **Alternative 2: Proposed Action**

The extent of ground disturbance would be limited to subsurface areas above the bedrock. Under the Proposed Action, most project components involve excavation and fill, including:

- Burial of 900 LF of channel walls
- Removal of approximately 16,000 CY of lightly contaminated soil (See Section 5.5.7 Hazardous Materials and Solid Wastes)
- Channel realignment that involves the use of fill on east side of the brook and excavation on the west side.

Construction activities would adhere to federal, state, and local regulations to control erosion and sedimentation and would need to apply current best management practices. Erosion and sedimentation control regulations have been developed by the City pursuant to the Connecticut Soil Erosion and Sediment Control Act (General Statutes of Connecticut, sections 22a-325 through 22a-329). Haybales, silt fence, silt rock, silt sack erosion control matting, crushed stone check dams, and an anti-tracking apron would be used to limit construction-related short-term erosion. Effects to soils and topography would be **moderate**.

## 5.1.2 Air Quality

The Clean Air Act is a federal law that regulates air emissions from area, stationary, and mobile sources. Air quality standards have been enacted to protect public health and the environment. The standards include lead, nitrogen dioxide, ozone, carbon monoxide, sulfur dioxide, and particulate matter. Areas where the monitored concentration of a pollutant exceeds air quality standards are designated as non-attainment areas. Areas where all pollutants are below the standards are classified as in attainment areas.

At the state level, air pollution is subject to Chapter 446c of the General Statutes of Connecticut (Air Pollution Control), as well as CT DEEP's Abatement of Air Pollution Regulations (sections 22a-174-1 to 22a-174-200).

### 5.1.2.1 Existing Conditions

New Haven County is a non-attainment area for two National Ambient Air Quality Standards criteria pollutants (the 2008 and 2015 8-hr ozone, severe and moderate respectively; EPA 2023). Ozone forms when Nitrogen Oxides (NO<sub>x</sub>) and Volatile Organic Compounds (VOCs) react during warm weather and can trigger a variety of lung-related health problems. Both NO<sub>x</sub> and VOCs can be created by emissions from construction equipment.

### 5.1.2.2 Potential Effects and Proposed Mitigation

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

There would be no construction related emissions, and therefore, no change to current levels of NO<sub>x</sub> and VOC production or to New Haven County's non-attainment status. There would be **no effect** under the No Action alternative.

#### **Alternative 2: Proposed Action**

There would be some road reroutes and closures on Hanover and Butler Streets due to bridge replacements, construction of the linear trail, and utility/retaining wall work under the Proposed Action. There would be **minor** short-term and localized adverse effects on air quality from temporary vehicle construction emissions and any traffic caused by road reroutes and closures.

The City would need to implement standard air pollution control measures during construction, pursuant to Chapter 446c of the General Statutes of Connecticut (Air Pollution Control) and CT DEEP's Abatement of Air Pollution Regulations (sections 22a-174-1 to 22a-174-200). This includes control of fugitive dust using water sprays or calcium chloride on soil surfaces, sweeping paved areas, and temporary windbreaks or non-asphaltic soil tackifiers; control of idling and movement of trucks; and management of other non-road diesel equipment (Fuss & O'Neill 2023). The use of generators is not proposed for this project. By implementing these mitigation measures, any remaining adverse effects from the Proposed Action would not have a meaningful contribution to emissions in the project area or to New Haven County's nonattainment status.

## 5.2 WATER RESOURCES

### 5.2.1 Water Quality

The Clean Water Act (CWA) regulates discharge of pollutants into water with sections falling under the jurisdiction of USACE and the U.S. Environmental Protection Agency (EPA). Section 404 of the CWA establishes the USACE permit requirements for discharge of dredged or fill materials into Waters of the United States and traditional navigable waterways. USACE regulation of activities within navigable waters is also authorized under the 1899 Rivers and Harbors Act. Section 402 of the CWA establishes the National Pollutant Discharge Elimination System (NPDES) authorizing U.S. EPA to regulate both point and non-point pollutant sources, including stormwater and stormwater runoff. Activities that disturb one acre of ground or more are required to apply for an NPDES permit through CT DEEP, as authorized by U.S. EPA, unless the activity is reviewed and approved by a local land-use commission. A CWA Section 401 Water Quality Certification from CT DEEP is required when obtaining a CWA Section 402 or 404 permit.

#### 5.2.1.1 Existing Conditions

Harbor Brook is part of the Quinnipiac River Watershed that drains via the Quinnipiac River to New Haven Harbor and Long Island Sound. The segment of Harbor Brook subject of the Proposed Action is characterized by a flat channel gradient and broad developed floodplain, which has led to extensive flood damage in the downtown area. Flow constrictions caused by bridge obstructions also cause flooding. There are several storm drains discharging to Harbor Brook from Hanover Street, which have reverse flow to the street during flood events. Harbor Brook is on U.S. EPA's list of impaired waters due to abnormal flow, bacteria and other microbes, and generally degraded conditions (EPA 2020).

#### 5.2.1.2 Potential Effects and Proposed Mitigation

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

Under the No Action Alternative, there would be no construction and the project area would remain susceptible to flooding during storm events. Storm drains on Hanover Street would continue to reverse flow to the street during flood events. Flow constrictions along the brook would continue and there would be improvement to conditions that have resulted in U.S. EPA's assessment of Harbor Brook as an impaired water body. The No Action alternative would have **major** adverse effects on surface water quality.

##### **Alternative 2: Proposed Action**

The Proposed Action would occur near or in an 1,800 LF stretch Harbor Brook. Work within the brook includes channel realignment and profile adjustment, which would involve excavation, widening, and grading, as well as removal/burial of channel walls, installation of retaining walls, and creation of in-stream habitats (Appendix B, Figure A). Work near the brook includes bridge replacements and removal, vegetation and tree removal, utility work, and demolition of 100 Hanover Street.

The Proposed Action would improve water quality in the long-term by providing natural channel features, including riffle pools, glacial boulder placements, and approximately 5.6 acres of floodplain and wildlife habitat by removing existing retaining walls and creating floodplain shelves and benches along the stream. This would slow flood flows, reduce bank erosion, and create flood storage. The newly created habitat would assist with soil stabilization, sediment removal, filtering and overall improvement in water quality. Temporary negative effects due to construction would be **negligible**.



Stormwater drainage improvements, including minor relocations of catch basins and outfall piping, would also occur as part of the Proposed Action. These improvements are necessary for the relocation or modification of the existing systems. No modifications to the existing collection system are proposed, and no changes in pipe size are proposed. No temporary interruptions in stormwater management are expected. During installation and modification of the stormwater structures, stormwater would be managed according to the requirements of NPDES and local stormwater regulations. For example, construction stormwater best management practices would be used, including site grading with silt fence and haybales to control and filter stormwater. Additional site erosion and sediment controls further protect water quality during construction, including seeding, erosion control matting, and anti-track pads. There would be **no effect** on water quality due to the stormwater drainage improvements.

Under the ‘National Pollutant Discharge Elimination System’ program, Connecticut maintains a General Permit for the Discharge and Dewatering Wastewaters from Construction Activities (“Construction Stormwater General Permit”). For activities that disturb between 1-5 acres, a General Permit registration is not required if the activity is reviewed and approved by a local land-use commission, such as a planning, zoning, wetlands, or conservation. This project would permanently disturb 1.25 acres and was approved by the Inland Wetland and Watercourse Commission and the Flood Control Board of Meriden on October 11, 2022 (IWWC 2022). Therefore, a separate NPDES permit is not required. Furthermore, the erosion and sedimentation control regulations developed by the City pursuant to Connecticut’s Soil Erosion and Sediment Control Act (sections 22a-325 through 22a-329 of the Connecticut General Statutes) provide the assurance that these construction activities will be in compliance with the state’s Construction Stormwater General Permit.

The City would be required to obtain a 404 Permit from USACE. The City has received its 401 Water Quality permit from CT DEEP (Permit No. WQC-20110) and would be required to meet all conditions of that permit.

### **5.2.2 Floodplains**

Executive Order (EO) 11988 Floodplain Management requires federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative. FEMA provides national leadership on floodplain issues and must take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities. FEMA uses the 8-Step decision-making process to evaluate potential effects on and mitigate effects to floodplains in compliance with EO 11988 and 44 CFR part 9 (Appendix C, Document 1). CT DEEP administers and regulates floodplains in Connecticut in accordance with the National Flood Insurance Act and the National Flood Insurance Program.

The Federal Flood Risk Management Standard (FFRMS) was established by EO 13690 and reinstated by EO 14030. FFRMS requires agencies to prepare for and protect federally funded projects from current and future flood risks. Currently, FEMA Policies 206-21-0003 and 206-21-003-0001 partially implement FFRMS for projects funded under HMA grant programs, including BRIC.

### **5.2.2.1 Existing Conditions**

The Proposed Action area is in the 100-year floodplain (Zone AE; Appendix A, Figure 2). The FEMA Flood Insurance Rate Map (FIRM) 09009C0166H, effective 12/17/2010 indicates flood elevations vary from a low of 123 feet NAVD88 near Cooper Street (cross section P on the FEMA FIRM) to 125 feet NAVD88 near the intersection Harbor Brook and the railroad (cross section R). The City recently completed some floodplain restoration work on the east bank of the brook. A Letter of Map Revision (LOMR), issued September 18, 2012 and effective February 1, 2013, is still valid for the project area (Case No.: 12-01-1133P).

### **5.2.2.2 Potential Effects and Proposed Mitigation**

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

Under the No Action Alternative, no construction would occur and the area would remain susceptible to the current level of flooding, in large part to floodplain encroachment in the downtown area of Meriden. There would be no further adverse effects to the floodplain beyond the current amount of flooding. Effects would be **moderate**.

#### **Alternative 2: Proposed Action**

Under the Proposed Action, there would be no additional occupancy or support for development within the floodplain aside from public access and recreation in the area. The work would support a future phased construction sequence that includes installation of a walking path, skateboard park, insect pollinator corridor, and parking at 77 Cooper Street. The skateboard park would be located at the 77 Cooper Street slab, and area already developed and paved; no additional occupancy in the floodplain is expected.

Short-term adverse impacts include construction equipment working in the floodplain and near Harbor Brook. The Proposed Action would also remove approximately 0.5 acres of trees along the stream banks from Butler Street to Cooper Street; however, this would allow for the creation of riparian floodplain habitat and to realign a portion of the brook. Native wildlife and riparian seed mixes would be used to establish a floodplain meadow and approximately twenty-five (25) native trees would be planted.

Long-term impacts of the Proposed Action include a lower flood risk and increase flood storage capacity. While one parking area would be installed at 104 Butler Street, the flood storage capacity at the project site would be improved and floodplain functions would be restored. The Harbor Brook channel would be reconnected to its floodplain for much of the 1,800 LF. Approximately 5.6 acres of riparian floodplain and wildlife habitat on both sides of the channel would be created by removing existing walls and grading to create floodplain shelves and benches. One building would be permanently removed from the floodplain. By replacing the Butler Street and Hanover Street Bridges with single-span structures and elevating above the BFE (Appendix B, Figure 2), as well as creating flood benches and shelves along Harbor Brook, benefits such as increased conveyance, reduced flood velocities, limited erosion hazards, and improved long-term channel stability would occur and there would be lower risk of flooding downstream and to nearby structures and facilities.

The initial proposed scope of work included floodproofing three (3) structures to one (1) foot above the BFE. After coordinating with the City and its contractors, floodproofing would be completed in accordance with HMA's FFRMS partial implementation policy requirements (FEMA Policy FP-206-21-0003, August 26, 2021). Per the Freeboard Value Approach, the three (3) structures being floodproofed on Hanover Street

and South Grove Street would be protected to a minimum of two (2) feet of freeboard above BFE, or to any higher state or local standard.

Short-term effects to the floodplain would be **moderate** and long-term effects would be beneficial and **major**.

Approval from the state floodplain manager would be required for this project; it is also a condition of the CT DEEP 401 Water Quality Permit (Permit No. WQC-20110). Specifically, the permit conditions require submission of hydraulic consistency documentation demonstrating compliance with the National Flood Insurance Program and the State of Connecticut Flood Mitigation Act. Another condition of the 401 Water Quality Permit is that the City would be required to apply to FEMA for a floodplain “Letter of Map Revision” documenting post-construction floodplain conditions within 30 days of completion of the project.

FEMA completed an 8-Step Analysis for work in a floodplain (Appendix C, Document 1).

### 5.2.3 Wetlands

EO 11990 Protection of Wetlands requires federal agencies to avoid to the extent possible the 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 wherever there is a practicable alternative. Each federal agency shall provide leadership and shall take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities. FEMA uses the 8-step decision-making process to evaluate potential effects on, and mitigate effects to, wetlands in compliance with EO 11990 and 44 CFR part 9. CT DEEP's Inland Wetlands Management Program administers and regulates wetlands in Connecticut under the Inland Wetlands and Watercourses Act.

#### 5.2.3.1 Existing Conditions

There are no state or federally designated wetlands on the project site, according to an investigation carried out by Fuss & O'Neill (2020a). Review of the U.S. Fish and Wildlife Service's (USFWS) National Wetland Inventory by FEMA on June 1, 2023 on identified Harbor Brook as a riverine habitat (Cowardin classification code R3UBH). This classification does not require an 8-Step Analysis under EO 11990, because it is not classified as a wetland per Section 7(c) of EO 11990 and 44 CFR part 9.4.

#### 5.2.3.2 Potential Effects and Proposed Mitigation

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

Under the No Action Alternative, FEMA would not undertake or fund any action. There would be **no effect**.

##### **Alternative 2: Proposed Action**

There are currently no jurisdictional wetlands found on the project site according to an investigation carried out by Fuss & O'Neill (2020a). Therefore, EO 11990 and the CT Inland Wetlands and Watercourses Act would not apply to the Proposed Action. There would be **no effect**. The integrity of Harbor Brook would be maintained per requirements under the CWA (See Section 5.2.1).

## 5.3 BIOLOGICAL RESOURCES

### 5.3.1 Avian and Terrestrial Wildlife and Freshwater Fisheries

The Migratory Bird Treaty Act (MBTA) of 1918 provides a program for the conservation of migratory birds that fly through lands of the United States. The lead Federal agency responsible for implementing the Migratory Bird Treaty Act is USFWS. The law makes it unlawful at any time, by any means or in any manner to take any part, nest, or egg of migratory birds. “Take” is defined in regulation (50 CFR part 10.12) as “to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or any attempt to carry out these activities.”

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 MBTA, the law makes it illegal for anyone to “take,” possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or their parts, feathers, nests, or eggs. “Take” is defined 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

There are eleven (11) species of migratory birds present in the project location according to USFWS’s Information for Planning and Consultation (IPaC) database, including Bald Eagle (*Haliaeetus leucocephalus*), Black-billed Cuckoo (*Coccyzus erythrophthalmus*), Blue-winged Warbler (*Vermivora cyanoptera*), Bobolink (*Dolichonyx oryzivorus*), Canada Warbler (*Cardellina canadensis*), Chimney Swift (*Chaetura pelagica*), Lesser Yellowlegs (*Tringa flavipes*), Prairie Warbler (*Setophaga discolor*), Rusty Blackbird (*Euphagus carolinus*), Short-billed Dowitcher (*Limnodromus griseus*), and Wood Thrush (*Hylocichla mustelina*). The closest Bald Eagle siting is approximately 1.25 miles to the NW and there is a ‘hot spot’ for sightings approximately 1.2 miles to the SW at Hanover Pond according to Cornell Lab of Ornithology’s e-Bird online mapper.

According to the EIE, fisheries sampling was done upstream of the project site and yielded both warm-water and cold-water species native to Connecticut (GZA 2011). Species included brown bullhead (*Ameiurus nebulosus*), American eel (*Anguilla rostrata*), white sucker (*Catostomus commersonii*), tessellated darter (*Etheostoma olmstedi*), pumpkinseed (*Lepomis gibbosus*), largemouth bass (*Micropterus salmoides*), blacknosed dace (*Rhinichthys atratulus*), and longnose dace (*Rhinichthys cataractae*).

According to U.S. EPA’s Waterbody Report for Harbor Brook, habitat for wildlife along the segment of Harbor Brook that is subject of the Proposed Action is currently impaired (EPA 2020).

#### 5.3.1.2 Potential Effects and Proposed Mitigation

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

Current conditions would not change under the No Action alternative and wildlife habitat would remain impaired. Effects would be **moderate**.

##### **Alternative 2: Proposed Action**

Construction activities associated with the Proposed Action could have a short-term and temporary minor adverse effect to wildlife species, including migratory birds and Bald Eagles because of construction

activity and the removal of existing vegetation. It is anticipated that migratory birds, including Bald Eagles, could temporarily leave the area due to noise and disturbance resulting from construction activities. There would be **negligible** long-term effects resulting from the implementation of the Proposed Action since the project would create additional floodplain and wildlife habitat.

Approximately 5.6 acres of riparian floodplain and wildlife habitat area would be created by removing existing walls, grading to create floodplain shelves and benches, planting native wildlife and riparian seed mix, and planting approximately twenty-five (25) native trees. Daylighting sections of Harbor Brook, as well as deepening and widening of the channel would enhance fish habitat. Installing natural structures such as boulder clusters, riffle-pool habitats, and vegetation along the floodplain shelves would also enhance fish habitat in Harbor Brook.

FEMA coordinated with CT DEEP's Wildlife Division on June 1, 2023 and it was confirmed that there are no known eagle nesting territories within 660 feet of the project area (CT DEEP 2023). No further consultation with USFWS is required.

### 5.3.2 Vegetation and Invasive Species

EO 13112 (Invasive Species) requires federal agencies, to the extent practicable, to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health effects that invasive species cause. Invasive species prefer disturbed habitats and generally possess high dispersal abilities, enabling them to out-compete native species.

#### 5.3.2.1 Existing Conditions

The area is a densely developed urban area with several vacant lots within the project site. Mixed size shrubby vegetation (sycamore shrubs, green-stemmed forsythia, wine raspberry), herbaceous species (goldenrod (*Solidago spp.*), poison ivy, grape (*Vitis spp.*)), and trees (e.g., oak, maple, elm, sycamore, dogwood, alder) are present along the banks and in the vicinity of Harbor Brook. Both urban native and invasive species are present, particularly downstream of the utility bridge on the east side of the brook. Invasive species include, but are not limited to, Asiatic bittersweet (*Celastrus orbiculatus*), Japanese honeysuckle (*Lonicera japonica*), Japanese barberry (*Berberis thunbergia*), and multiflora rose (*Rosa multiflora*).

#### 5.3.2.2 Potential Effects and Proposed Mitigation

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

Current conditions would not change under the No Action Alternative. Existing populations of oriental bittersweet, multiflora rose, and other invasive species would continue to spread over time, especially due to seeds traveling via flood events. The effects of the No Action alternative on introduction or spread of invasive species would be **minor**.

##### **Alternative 2: Proposed Action**

Approximately 6.5 acres of low-quality vegetation, including invasive species, would be removed and replanted with native grass and woody herbaceous species such as maples (*Acer spp.*), river birch (*Betula nigra*), thornless honeylocust (*Gleditsia triacanthos inermis*), black tupelo (*Nyssa sylvatica*), and swamp white oak (*Quercus bicolor*). Much of the proposed work would also require excavation and backfill, which could create areas susceptible to invasive species growth. Approximately 5.6 acres of riparian floodplain

and wildlife habitat area would be created by removing existing channel walls and grading to create floodplain shelves and benches. Native riparian vegetation would be planted in these areas.

Invasive Species considerations would be included as a General Condition in the USACE CWA permit. The Proposed Action would have long-term beneficial (**moderate**) effects in areas of invasive species removal and where native vegetation would be planted.

### **5.3.3 Threatened and Endangered Species**

The Endangered Species Act (ESA) provides for the conservation of threatened and endangered plants and animals and the habitats in which they are found. The lead federal agencies for implementing the ESA are USFWS and the National Marine Fisheries Service. The law requires federal agencies to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. The law also prohibits any action that causes a “taking” of any listed species of endangered fish or wildlife. “Take” is defined in regulation (50 CFR part 10.12) as “to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or any attempt to carry out these activities.”

#### **5.3.3.1 Existing Conditions**

In accordance with Section 7 of the ESA, the project area was evaluated for the potential occurrences of federally listed threatened and endangered species. Using the USFWS IPaC database, one (1) federally protected species has the potential to be present in the project area: northern long-eared bat (*Myotis septentrionalis*). There is no critical habitat designated in or adjacent to the project area.

FEMA consulted CT DEEP’s northern long-eared bat "Areas of Concern in Connecticut" map to determine if there are known hibernacula in the municipality. There are no known hibernacula in or near the City of Meriden and no maternity roost trees identified in the state of Connecticut.

Regarding state-listed species, GZA GeoEnvironmental, Inc. completed an EIE (GZA 2011) that evaluated impacts from the entire Master Plan. The EIE found known populations of wide-spreading sedge and eastern box turtles; however, these populations are located further downstream of the project location and will not be disturbed by the Proposed Action’s activities. A state fisheries consultation completed on January 27, 2023 did not indicate that any state-listed species use the habitat within the current project site. Furthermore, a Preliminary Site Assessment was completed using the CT DEEP Natural Diversity Data Base on June 21, 2023. The Preliminary Site Assessment indicated that the only state listed species possibly occurring within the project site is the Wood turtle (*Glyptemys insculpta*).

#### **5.3.3.2 Potential Effects and Proposed Mitigation**

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

There would be **no effect** on federally listed threatened and endangered species, as current conditions would not change.

##### **Alternative 2: Proposed Action**

The removal of approximately 0.5 acres of trees would occur along the stream banks from Butler street to Cooper street to allow for the creation of riparian floodplain habitat and to realign a portion of the brook.

FEMA used the USFWS IPaC Northern Long-eared Bat Range-wide Determination Key on July 2, 2023 to determine if further consultation with USFWS would be required. The Proposed Action received a “**No effect**” determination; therefore, no further consultation with USFWS pursuant to Section 7(a)(2) of the ESA of 1973 (87 Stat. 884, as amended 16 U.S.C. 1531 et seq.) is required for the species.

State-listed species will be given consideration through state permitting processes. Furthermore, a comprehensive wood turtle nesting area mitigation plan will be designed during the design phase to offset the habitat alterations due to the project. Provisions for the installation of exclusionary silt fencing to prevent turtles from entering the construction area and daily turtle sweeps within the construction area will also be included in the final project plans.

## **5.4 CULTURAL RESOURCES**

As a federal agency, FEMA must consider the potential effects of its actions upon cultural resources prior to engaging in any project. There are several laws a federal agency must take into account when working with and identifying cultural resources. For the Meriden Harbor Brook Flood Resiliency Project, FEMA will meet this obligation through its Section 106 of the National Historic Preservation Act of 1966 (NHPA) consultation. Section 106 of the NHPA, as amended and implemented by 36 CFR part 800, outlines the required process for federal agencies to consider a project’s effects to historic properties.

### **5.4.1 Identification of Area of Potential Effects, Historic Context and Consultation Process**

Pursuant to 36 CFR part 800.4(a)(1), the Area of Potential Effects (APE) is defined as the geographic area(s) within which the undertaking may directly or indirectly affect cultural resources. Within the APE, effects to cultural resources are evaluated prior to the undertaking for both Standing Structures (above ground resources) and Archaeology (below ground resources).

The Connecticut State Historic Preservation Officer (SHPO) maintains an online mapping system of historic properties, ConnCRIS. FEMA uses this database and discussions with the SHPO’s office on archaeological sites, along with the National Register of Historic Places database, as part of its efforts to identify significant cultural resources that may be impacted by a project. 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.

The area today known as Meriden was occupied by Native Americans for thousands of years for seasonal hunting and fishing, but no permanent settlements are known to have been in the vicinity. The first Euro-American settlement in the area, occurring in the mid-seventeenth century, was sited along Cold Spring and was agricultural in nature. Throughout the seventeenth and eighteenth centuries, the community remained very small, with only 35 families in 1725, and the first Meeting House was constructed in 1727. The settlement served mostly as a layover point between the Connecticut Colony to the north and New Haven Colony to the south.

It was not until the completion of the railroad from New Haven to Meriden in 1838 that Meriden started to develop on a larger scale. Prior to the construction of the rail line, the center of Meriden was located at Broad Street to the east, while West Meriden remained much less developed. When the line was extended to Hartford, the increased accessibility made Meriden desirable for industrial and commercial purposes.

Industry flourished in the decades following the construction of the railroad, manufacturing primarily consumer goods, personal accessories, and home goods, particularly silver items, leading Meriden to become known as the “Silver City.” The area surrounding the rail line flourished, supporting offices, shops, banks, religious and social institutions, as well as residences. The City of Meriden was officially incorporated in 1867.

The city continued to develop in the first three decades of the twentieth century before suffering a downturn during the Great Depression, following nationwide trends. World War II brought relief in the form of wartime industries. Following the war, downtown Meriden was transformed by the immigration of a new diverse community. The neighborhood largely survived urban renewal of the 1960s and 1970s, though some properties, including shuttered industrial buildings, were demolished.

## **5.4.2 Standing Structures**

### **5.4.2.1 Existing Conditions**

The project area is located in downtown Meriden and consists of former industrial buildings from the nineteenth and early twentieth centuries along Harbor Brook Channel and a mix of low-rise and high-rise residential and commercial buildings from the early to mid-twentieth century. The Harbor Brook Channel itself within the project area includes sections of historic stone channel walls, concrete walls from the 1960s and 1970s, as well as areas where there are no longer any extant walls. The largest extant portion of channel walls within the project area is the factory wall along Factory H. This is a 900 LF wall of mortared rough-cut stone with a small concrete cap, which will be covered with fill as part of this undertaking. According to the City of Meriden, these factory walls were constructed between 1868 and 1875.

The channelization of Harbor Brook appears to be directly associated with either the early relocation of Meriden in 1838 with the initial construction of the rail line and/or the increased industrial development in Meriden in the latter half of the nineteenth century, giving rise to the industrial powerhouse that Meriden became in the late nineteenth and early twentieth centuries. The Harbor Brook channel has been previously evaluated by FEMA and the SHPO and determined to be eligible for listing in the National Register of Historic Places for its association with the development of the City of Meriden.

The Charter Oak Firehouse, located at 105 Hanover Street, is listed in the National Register of Historic Places and is within the viewshed of the project area. The building, constructed in 1876, was the first firehouse built by the City of Meriden and the oldest extant municipal structure in the City. Much of the history of the Meriden Fire Department is evident in the activities that occurred at this station. Additionally, the building is significant as a good example of Romanesque Revival style.

### **5.4.2.2 Potential Effects and Proposed Mitigation**

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

Current conditions would not change under the No Action alternative and there would be no impacts to historic standing structures. Effects would be **negligible**.

#### **Alternative 2: Proposed Action**

Under the Proposed Action, 900 LF of historic channel walls will be buried underneath fill. The channel walls are historic resources eligible for listing on the National Register of Historic Places. Proposed ground disturbing activities also have the potential to impact historic archaeological resources. Therefore, the



Proposed Action would have **moderate** adverse effect on historic and cultural resources. FEMA will continue to consult with the CT SHPO and other interested parties to avoid, minimize, or mitigate the adverse effects associated with this proposed floodplain restoration project.

### **5.4.3 Archaeological Resources**

#### **5.4.3.1 Existing Conditions**

A Phase 1A Archaeological Assessment Survey and Phase 1B Archaeological Reconnaissance Survey were conducted for the entire Meriden Harbor Brook Flood Control Project by Archaeological and Historic Services, Inc. in 2011. Based on this report, the current project area is not considered sensitive for Native American archaeological sites and no Phase 1B testing was completed within this area. Additionally, the area has been heavily developed in the mid-nineteenth and twentieth centuries. Based on aerial photographs, the project area has been further disturbed by building demolitions, bridge construction, and construction of Hanover Towers in the 1970s.

#### **5.4.3.2 Potential Effects and Proposed Mitigation**

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

Current conditions would not change under the No Action alternative and there would be no impacts to archaeological resources. Effects would be **negligible**.

##### **Alternative 2: Proposed Action**

Significant ground disturbance will occur as part of the proposed action; however, the project area has been previously disturbed and it is unlikely there are intact soil horizons within the project area. Therefore, effects would be **negligible**. FEMA will include conditions on the project for inadvertent archaeological discoveries in the event that resources are discovered during construction.

## **5.5 SOCIOECONOMIC RESOURCES**

### **5.5.1 Land Use and Planning**

#### **5.5.1.1 Existing Conditions**

Land use at the project site and the surrounding area consists of commercial and high-density residential areas, several abandoned buildings and concrete building slabs, and unimproved, inaccessible waterfront. Harbor Brook is a watercourse in a highly urbanized area. The Hanover Tower Apartments, located in the center of the project site, has passive open space. There are also numerous businesses, municipal structures, and residential buildings in and near the proposed construction work, including a senior center, a community YMCA, state courthouse, and a church.

#### **5.5.1.2 Potential Effects and Proposed Mitigation**

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

Under the No Action, no construction would occur and downtown Meriden would remain subject to flood risk and damages. Downtown residents would continue to have unimproved and inaccessible waterfront and limited access to recreational areas. There would be **no effect** to land use.

## **Alternative 2: Proposed Action**

As outlined in the EIE, the Harbor Brook Flood Control and Linear Trail Project Master Plan is consistent with the goals, objectives, and strategies of all municipal and regional conservation, economic, and development plans by protecting downtown areas from flooding and improving recreational access to Harbor Brook (GZA 2011).

Under the Proposed Action, new infrastructure would be constructed (e.g., sidewalks, linear trail) and abandoned lots and would be converted to open space. Residents at the Hanover Tower Apartments would have a connection to the city-wide linear trail via Butler Street from a newly constructed bridge. Hanover Tower Apartments' recreational areas would be subject to minor temporary impacts related to construction activities. However, the Proposed Action offers new, equal, and better recreational alternatives for the residents of Hanover Tower Apartments and for residents in the surrounding neighborhoods. In the long-term, there would be beneficial **moderate** effects.

### **5.5.2 Noise**

U.S. EPA developed federal noise-emission standards in accordance with the Noise Control Act of 1972 identifying major sources of noise and determining appropriate noise levels for activities that would infringe on public health and welfare in accordance with the law. U.S. EPA identifies a 24-hour exposure level of 70 decibels as the level of environmental noise which will prevent any measurable hearing loss over a lifetime. Likewise, levels of 55 decibels outdoors and 45 decibels indoors are identified as preventing activity interference and annoyance. The levels are not single event, or "peak" levels. Instead, they represent averages of acoustic energy over periods of time such as 8 hours or 24 hours, and over long periods of time such as years (EPA 1974). Additionally, the Federal Highway Administration established acceptable noise levels and ranges for construction equipment (FHWA 2006) and the Occupational Safety and Health Administration established thresholds for occupational noise exposure to protect the health and safety of workers (29 CFR part 1926.52). Land uses that are considered sensitive to noise impacts are referred to as "sensitive receptors." Noise sensitive receptors consist of, but are not limited to, schools, residences, libraries, hospitals, and other care facilities.

#### **5.5.2.1 Existing Conditions**

The project area is high-density commercial and residential. Typical sources of noise in the area include major roadways, including Route 71 (Cook Ave.) and Hanover Street, and the Amtrak rail line is located just east of the project site. There are numerous noise sensitive receptors in and near the project site, including a senior center, a community YMCA, state courthouse, and a church.

Levels of traffic noise depend on many factors, including volume, speed, number of trucks, distance to the traffic, terrain, vegetation, and natural and man-made obstacles (Muralikrishna and Manickam 2017), but can typically range from 70 to 80 dBA at a distance of 50 feet (meters (15 meters; Corbisier 2003).

Railway traffic is one of the main sources of noise pollution in urban areas (Miskinyte et al. 2016). The mean level of noise from electric passenger, diesel passenger, and diesel freight trains at a distance of 131 feet (40 meters) from the railway have been found to be 65 dBA, 68 dBA and 75 dBA, respectively (Miskinyte et al. 2016).

The City of Meriden has municipal noise ordinances (Chapters 141-Noise and 213-Zoning of the City Code). Chapter 442, section 22a-73, of the General Statutes of Connecticut requires that a municipal noise control ordinance be at least as stringent as state noise control requirements.

### 5.5.2.2 Potential Effects and Proposed Mitigation

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

Under the No Action Alternative, noise incidental to traffic, railway, and other activities in the downtown area would remain consistent with existing conditions. There would be **no effect** on current noise levels from the No Action Alternative.

#### **Alternative 2: Proposed Action**

Under the Proposed Action, construction activities would result in a temporary increase in noise levels in the project area. Heavy construction equipment produces sound levels from 80 to 120 decibels and power tools typically used in construction produce sound levels up to 115 decibels (Spencer and Kovalchik 2007). To minimize noise effects, construction activities would be restricted to normal business hours to the maximum extent possible. Heavy equipment, machinery, and vehicles utilized at the project area would meet all federal, state, and local noise ordinances.

Any adverse effects to current noise levels associated with construction activities would be short-term and minimized by the measures described above; therefore, effects would be **negligible**. Following construction, noise would be anticipated to return to pre-construction levels.

## 5.5.3 Transportation

### 5.5.3.1 Existing Conditions

The project location is bordered by Cooper Street to the south, the intersection of Harbor Brook and the railroad to the north, Cherry Street to the east, and Cook Avenue to the west (Appendix A, Figure 1). The Amtrak rail is located just east of the project site. There are two working bridges on the project site: Butler Street Bridge and Hanover Street Bridge. The Amtrak railroad bridge is at the northern boundary of the project site. There is also a pedestrian footbridge near 100 Hanover Street. The area is high-density commercial and residential.

### 5.5.3.2 Potential Effects and Proposed Mitigation

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

Under the No Action Alternative, no construction would occur and flooding during heavy rainfall events would continue to cause periodic road and bridge closures in downtown Meriden. Transportation effects of the No Action Alternative would be **moderate** because of the high likelihood of continued flooding.

#### **Alternative 2: Proposed Action**

Under the Proposed Action, the frequency that motorists and pedestrians are exposed to dangerous flooded roadway conditions and the closure of roads and bridges due to flooding would be reduced in the long-term.

In the short-term, there would be temporary impacts to local traffic patterns due to road reroutes and closures. The linear trail construction would require temporary closure of the eastbound lane on Hanover Street. Regrading work would extend along Butler Street to the intersection of Hanover Street, which would

close Butler Street to traffic during this time. A Maintenance and Protection of Traffic plan would be developed for these two components of the project. Temporary traffic management may be required at the intersections during final grading and paving.

Additionally, a detour would be in place during replacement of Butler Street and Hanover Street Bridges. One bridge will be open to traffic at all times. Road closures would be limited to the bridge replacements, except during grading activities on Butler Street discussed above. Temporary access will be maintained from Cherry Street during bridge construction to allow for construction traffic and emergency vehicle access.

Butler Street would also be temporarily closed to allow for utility, bridge, and retaining wall work. Access to Banana Brazil, a local restaurant, would be maintained from Hanover Street during this time.

There would be short-term **moderate** effects due to reroutes, closures, and increased construction traffic and long-term **moderate** beneficial effects to transportation (roadway and pedestrian) due to reduction in flooding.

#### 5.5.4 Public Services and Utilities

##### 5.5.4.1 Existing Conditions

Gas, telephone, electrical, sanitary sewer, drinking water, and stormwater utilities are located in the project area.

##### 5.5.4.2 Potential Effects and Proposed Mitigation

###### Alternative 1: No Action

Under the No Action Alternative, interruption or alteration of service could occur due to flooding. Effects would be **minor**.

###### Alternative 2: Proposed Action

Under the Proposed Action, modifications and relocations of utilities, gas, telephone, electrical, sanitary sewer, stormwater, and drinking water would occur. The project would mitigate against future utility damages from flooding.

Temporary outages of an hour to several hours for most utilities can be expected during cut-over of these services from the old to the new service connections, with the exception of stormwater facilities and drinking water. The drinking water site main will be connected to the main on Cherry Street, creating a redundant service loop in the event of a service disruption on Hanover Street. Stormwater will be managed during construction according to the requirements of NPDES and local stormwater regulations, until such time that the stormwater modifications are complete. Traditional site stormwater controls will be used during installation and modification of the stormwater structures. This consists of the use of construction stormwater best management practices, including the use of site grading with silt fence and haybales to control and filter stormwater. Additional site erosion and sediment controls further protect water quality during construction, including seeding, erosion control matting, and anti-track pads.

There would be short-term **moderate** effects due to construction and potential temporary outages and long-term beneficial effects (**minor**) to public services and utilities.

## 5.5.5 Public Health and Safety

### 5.5.5.1 Existing Conditions

The City's Department of Fire and Emergency Services and the Meriden Police Department provide public safety services in the project area. The City's fire department is first to respond to flooding situations. The fire department has 103 members, 100 of whom are sworn fire personnel; it is headquartered at 561 Broad Street. The Meriden Police Department has 123 sworn officers and numerous civilian support staff. It is located at 50 West Main Street, in the downtown area subject to flood risk.

### 5.5.5.2 Potential Effects and Proposed Mitigation

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

No FEMA-funded construction would occur and the public would continue to be at risk of encountering dangerous conditions during and after flood events in the downtown area. Biological and chemical contaminants could occur after floodwaters recede. The police department building and parking lot would remain at risk of flooding. Inundated roadways and low-lying bridges could result in rerouting of emergency vehicles, adding response time to public health and safety emergencies. There would be **major** effects from the implementation of the No Action Alternative.

#### **Alternative 2: Proposed Action**

The linear trail construction would require temporary closure of the eastbound lane on Hanover Street. Regrading work would extend along Butler Street to the intersection of Hanover Street. Butler Street would be closed to traffic. A Maintenance and Protection of Traffic plan would be developed for these two components of the project. Temporary traffic management may be required at the intersections during final grading and paving.

Additionally, a detour would be in place during replacement of Butler Street and Hanover Street Bridges. One bridge will be open to traffic at all times. Road closures would be limited to the bridge replacements, except during grading activities on Butler Street discussed above. Temporary access will be maintained from Cherry Street during bridge construction to allow for construction traffic and emergency vehicle access. Butler Street would also be temporarily closed to allow for utility, bridge, and retaining wall work. Access to Banana Brazil, a local restaurant, would be maintained from Hanover Street during this time.

The Proposed Action would result in short-term **negligible** effects to public health and safety due to temporary impacts to increased construction traffic and road reroutes/closures. In the long-term, there would be beneficial **major** effects since there would be less burden on emergency services due to flood-related emergency calls. The roads and bridges within the study site would not become inundated and result in rerouting of emergency vehicles. Risk of loss would be greatly reduced or eliminated at fourteen (14) residential and twenty-five (25) commercial and municipal structures, including the city police station located on West Main Street. Floodproofing three buildings would prevent mold and other contamination to occur after flooding.

## 5.5.6 Environmental Justice

EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires each federal agency to identify and address, as appropriate, "disproportionately high and adverse human health or environmental effects" its activities may have on minority or low-income

populations. Guidance released by the Council on Environmental Quality (CEQ) following publication of the EO makes clear that environmental effects include economic and social effects when considering Environmental Justice during the NEPA process (CEQ 1997).

The CEQ guidance also provides criteria for identifying minority and low-income populations. Specifically, low-income populations are identified based on the annual statistical poverty income thresholds of the U.S. Census Bureau, and minority populations are defined as persons in the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. Any area where the minority population exceeds 50 percent is considered to have an environmental justice population, based on the CEQ guidance.

#### **5.5.6.1 Existing Conditions**

Meriden is a state-listed “Distressed Community,” which means it is one of the most fiscally and economically stressed communities in the state (DECD 2023). According to U.S. EPA’s Environmental Justice Screening and Mapping Tool (Version 2.1), there is a low-income population in and near the project area (95th percentile as compared to the state) and a people of color population in and near the project area (74th percentile as compared to the state). The median household income for the City is \$59,792<sup>2</sup> according to the U.S. Census Bureau and persons in poverty is 13.6% (U.S. Census Bureau 2022).

The area immediately surrounding the project is primarily made up of community members that speak English and Spanish. There are also immigrants who are native speakers of Korean, Mandarin, Portuguese, Russian/Kazakh, Polish, and Ukrainian.

Efforts to inform and collect feedback from the community to-date on both the Master Plan and the Proposed Action are outlined in Table 5.1.

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<sup>2</sup> 2017-2021 (in 2021 dollars)

**Table 5.1: Outreach Completed to Date**

<i>Outreach</i>	<i>Date</i>	<i>Location</i>	<i>Purpose</i>
Public Scoping Notice	05/07/2011	CEQ's Environmental Monitor website	Initiate scoping process, introduce topics of interest to the public
Public Scoping Meeting	08/08/2011	City Council Chamber Meriden City Hall 142 East Main St, Meriden	Present the project to the public and hear comments, issues, and concerns that will be considered during the CEPA process.
Public Outreach Meeting (in-person)	05/25/2022	Engineering Conference Room Meriden City Hall 142 East Main St, Meriden	Present detailed restoration plans for Harbor Brook from Cooper Street to the Amtrak crossing to the public to collect feedback and address community concerns.
Public Outreach Meeting (virtual)	06/23/2022	Virtual	Virtual presentation of the 5/25/2022 Public Outreach Presentation. Recording was made available on City website.
Initial Public Notice	06/03/2023	Record-Journal	Inform the community of FEMA's intent to provide BRIC funding for the Proposed Action and a draft EA is forthcoming.

### 5.5.6.2 Potential Effects and Proposed Mitigation

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

Under the No Action Alternative, no construction would occur and environmental justice populations would continue to experience major adverse effects due to the flood events in downtown Meriden, including to transportation and utility systems. Risk of loss would remain for fourteen (14) residential and twenty-five (25) commercial and municipal structures, including the city police station, a senior center, a community YMCA, state courthouse, and a church. Effects would be **major**.

#### **Alternative 2: Proposed Action**

Under the Proposed Action, environmental justice populations would experience temporary short-term **moderate** effects due to construction work (e.g., noise, traffic, road reroutes/closures, local access, and utility disruptions). These effects would fall equally on both environmental justice populations and the general population in the area and therefore would not disproportionately affect an environmental justice population.

In the long-term, risk of flood loss would be greatly reduced or eliminated at residential, commercial, and municipal structures. Transportation and utility systems would also be directly improved. Ancillary benefits would include water quality improvement, more access to open space, increased economic opportunity, reduced social vulnerability, and improvement to public health. In the long-term, environmental justice populations would experience **major** beneficial effects.

To reach community members living in and near the project area, the draft EA would be available in hardcopy format at the public library. The notice of availability, as well as the EA itself, would also be distributed by traditional methods of distribution (hard copy at City Hall, posting on City website, and publication in local newspaper). The City, in conjunction with the Board of Education, has services in place to communicate with community members that speak the languages discussed in Section 5.5.6.1 (Existing Conditions). These services would help community members understand the proposed action and its impacts if needed. Lastly, the City's Department of Public Works will also be available to address questions and provide technical assistance to community members as needed.

## **5.5.7 Hazardous Materials and Solid Wastes**

### **5.5.7.1 Existing Conditions**

Numerous 'Areas of Environmental Concern' were identified throughout the project area but are most heavily concentrated in the southern portion of the site (i.e., south of Butler Street Bridge to Cooper Street; Appendix B, Figure 3).

Polluted materials, including coal, ash, slag, metals, brick, and glass were identified in soil borings and test pits advanced throughout the site. Furthermore, results from previous site investigations and investigations performed by others on adjacent parcels have identified that fill contains varying concentrations of polynuclear aromatic hydrocarbons (PAHs), extractable total petroleum hydrocarbons (ETPH), arsenic, and lead. VOCs have also been identified (Fuss & O'Neill 2022).

While the project area consists of multiple parcels located along Harbor Brook, 77 Cooper is engaged in the EPA Voluntary Remediation program (General Statutes of Connecticut, Chapter 445 - Hazardous Waste, Section 22a-133x) as a requirement of state and federal grant funding and will need to fully comply with the Connecticut Remediation Standard Regulations (CT RSRs). The parcel at 77 Cooper Street, a site historically used for silverware and gun manufacturing, is vacant except for an existing slab foundation. The parcel at 104 Butler Street, historically used for similar industrial purposes at 77 Cooper Street, contains a three-story former power plant building in the northern portion of the site and the subsurface foundation of and footings of a former manufacturing building.

### **5.5.7.2 Potential Effects and Proposed Mitigation**

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

Under the No Action Alternative, no construction would occur and contaminated soils would remain on-site undisturbed. Construction and demolition waste would not be created if the No Action Alternative was implemented. There would be **no effect** under the No Action Alternative.

#### **Alternative 2: Proposed Action**

The Proposed Action would result in the disturbance of contaminated soils in select areas, including during regrading, excavation, and relocation of soils. Overall, the project would remove approximately 16,000 CY of contaminated and lightly contaminated material. Polluted soil may be relocated and reused, but only if state approval is received in writing prior to the reuse. For offsite disposal, the City would use one of three facilities permitted to accept polluted fill (1 currently permitted in CT and 2 in nearby states). For onsite handling of contaminated soils, material excavated from the site would be properly managed and excavated using erosion and sediment controls, stockpile management, fugitive dust and vapor controls, construction dewatering, waste transport and disposal, chemical testing as required, engineered control inaccessible



layers, and decontamination. Soils would be managed in accordance with U.S. EPA and CT DEEP regulatory standards.

As part of their remedial approach, the City has prepared a Remedial Action Plan and Engineered Control Variance Request for two parcels in the project area (77 Copper Street and 104 Butler Street; Fuss & O'Neill 2022).

The site would be cleaned up in accordance with CT RSRs (General Statutes of Connecticut, sections 22a-133k-1 through k-3). A Soil Vapor Extraction system would be installed under the concrete slab at 77 Cooper Street to address VOC impacts that exceed CT's pollutant mobility criteria (PMC). The system is intended to remove the VOCs in soil, eventually reaching compliance with the CT's PMC. For other contaminants of concern detected above their respective PMC, CT DEEP will be approving a Widespread Polluted Fill Variance. The variance has many conditions that the City must meet before receiving approval from CT DEEP. Once the variance is approved, the PMC will no longer apply to PAHs, metals, and ETPH contamination in the site soils.

Most of the earthwork, including widening Harbor Brook, includes excavation. Approximately 6,900 CY of sediment would be relocated to the upland portion of the site for grading purposes. Since this fill is impacted, it will be covered by an engineered control consisting of landscaped areas and paving (minimum of 12 inches of clean fill over the impacted material). The construction of the engineered control will prevent direct contact with the contaminated soil/sediment and will require regular monitoring and maintenance.

A Significant Environmental Hazard Notification (SEHN) has been submitted by the City to CT DEEP. The SEHN condition was that PAHs and metals in site soils exceed their respective hazard threshold concentrations (30x applicable criteria). Any "new" hazards not included in the SEHN would have to be reported to CT DEEP. The City would be required to remain in coordination with CT DEEP's Remediation Division throughout construction. If new hazards are encountered, construction activities would be suspended in the area of the impacted soil and no further work would be done in the contaminated soil location without written authorization from CT DEEP.

The Proposed Action would also result in construction and demolition wastes. Four (4) waste stockpile areas would be created, two (2) east of Harbor Brook and two (2) west of Harbor Brook. The City would be required to manage these wastes in accordance with CT DEEP regulations. Reuse and recycling are encouraged to the extent possible. Waste must be disposed of at a facility permitted for construction and demolition debris (aka bulky waste). Much of the material that is to be demolished would be reused or recycled by the contractor, including concrete, brownstone, and bridge steel.

In the short-term, there would be **moderate** effects related to Hazardous and Solid Waste due to construction activities. In the long-term, there would be **negligible** effect due to proper remediation and removal requirements.

## 6.0 CUMULATIVE EFFECTS

This EA considers the overall cumulative effect of the Proposed Action and other actions that are related in terms of time or proximity. Statutes require federal agencies to consider cumulative effects, including the CWA Section 404(b)(1) guidelines, regulations implementing the conformity provisions of the Clean Air Act, regulations implementing Section 106 of the NHPA, and regulations for implementing Section 7 of the ESA.

The Proposed Action is part of the Harbor Brook Flood Control and Linear Trail Project Master Plan (Master Plan). There have been on-going activities along the Harbor Brook corridor, which are part of the Master Plan. For a project to be included in this cumulative effect analysis, it had to be planned, ongoing, and funded. In addition to the Proposed Action, two projects are planned or ongoing in the City and analyzed below (Table 6.1).

**Table 6.1: Cumulative actions that are planned or are ongoing in the City of Meriden.**

Project Name	Completion Date
Harbor Brook Channel, Cooper Street to Coe Avenue	Estimated Completion 2024
104 Butler Street Demolition (former power plant)	Bid documents being prepared

Three resource topics – Air Quality, Land Use and Planning, and Noise – would have an increased effect determination (positive or negative) with additional impacts from two cumulative actions. Those resource topics are discussed below. The effects determination for all other resource topics was found to be same as the Proposed Action, and therefore, have been omitted from further discussion. Thus, a cumulative effects analysis was conducted for Air Quality, Land Use and Planning, and Noise.

The geographic area for the analyses is the Harbor Brook vicinity in downtown Meriden, from the northern extent of the Proposed Action site to the intersection of Coe Avenue/Bradley Avenue/Harbor Brook. The Cooper/Coe channel improvement project is an approximately 1 mile stretch of Harbor Brook from the southern boundary of the Proposed Action site (Cooper Street), downstream to Coe Avenue. According to the State EIS, major activities would include channel regrading, creation of wetland habitats and flood benches, floodproofing structures, utility upgrades, slope stabilization, culvert installation, structure demolitions, bridge replacements, and installation of a walking trail (GZA 2011). Work is currently underway and the project is due to be completed in 2024; some overlap with the Proposed Action is expected to occur.

The demolition of 104 Butler Street structure is located within the Proposed Action site, on the east side of Harbor Brook and south of the Hanover Towers apartments. There could be some overlap with the Proposed Action depending on how quickly the bid process progresses, or the demolition could occur soon after the Proposed Action is completed.

## 6.1 PHYSICAL RESOURCES

### 6.1.1 Air Quality

Both cumulative action sites fall within the same non-attainment area as the Proposed Action for two National Ambient Air Quality Standards criteria pollutants (the 2008 and 2015 8-hr ozone). See Section 5.1.2 (Air Quality) for more information.

For the Proposed Action, FEMA determined there would be minor short-term and localized adverse effects on air quality associated with temporary construction emissions. The Cooper/Coe project and the 104 Butler Street Demolition would produce additional temporary construction emissions (and therefore, NOx and VOCs that can form ozone) to the geographic area of interest. There would be moderate short-term and

localized adverse effects on air quality from temporary construction emissions and additional construction vehicles in the downtown area.

As with the Proposed Action, the City would need to implement standard air pollution control measures during construction, pursuant to Chapter 446c of the General Statutes of Connecticut Chapter (Air Pollution Control) and CT DEEP's Abatement of Air Pollution Regulations (sections 22a-174-1 to 22a-174-200). See Section 5.1.2 (Air Quality) for more information. Through implementing mitigation measures, any remaining adverse effects from the Proposed Action and the cumulative actions would be minimized in the project area and no long-term impacts or to New Haven County's nonattainment status is expected.

## 6.2 SOCIOECONOMIC RESOURCES

### 6.2.1 Land Use and Planning

Channel improvements from Cooper Street to Coe Avenue would occur downstream of the Proposed Action site. The demolition of 104 Butler Street structure is located within the Proposed Action site. The Cooper/Coe work area is similar to the Proposed Action site in terms of land use: highly urbanized with commercial and high-density residential areas and an inaccessible waterfront. See Section 5.5.1 (Land Use and Planning) for more information.

Similar to the Proposed Action, the Coe/Cooper project is included in the Harbor Brook Flood Control and Linear Trail Project Master Plan (stream reaches 2-5 in the EIE; GZA 2011). It is also consistent with the goals, objectives, and strategies of all municipal and regional conservation, economic, and development plans by protecting downtown areas from flooding and improving recreational access to Harbor Brook (GZA 2011).

FEMA determined beneficial moderate effects to Land Use from the Proposed Action. With the cumulative actions, beneficial effects would expand an additional mile downstream, and therefore effects would be **major** and beneficial in the long term. New infrastructure, such as the linear walking trail and new bridges, would be constructed and structures would be demolished and provide access to open space and recreational activities. Channel improvements and other work associated with the Proposed Action and the cumulative actions would ultimately reduce flood risk to businesses, roads, and homes in the vicinity of Harbor Brook. While some areas would be subject to minor temporary impacts related to construction activities, a greater number of residents in downtown Meriden would have access to new, equal, and better recreational activities.

### 6.2.2 Noise

The Cooper/Coe project and demolition of 104 Butler Street overlap with the Proposed Action in time and space. The Proposed Action would result in a temporary increase in noise levels in the project area due to construction activities; however, effects would be minimized by minimization measures and result in negligible effects (See Section 5.5.2). The cumulative actions would add to the noise levels produced by the Proposed Action. The demolition work at 104 Butler Street would create some additional construction activities within the Proposed Action site. The Cooper/Coe project would also create additional construction noise, but it would be in a larger area and for a longer timeframe. Like the Proposed Action, noise would

be minimized by restricting work to normal business hours to the extent possible and equipment and vehicles would be meet all federal, state, and local noise ordinances. While adverse effects would still be short-term (limited to the duration of the projects' lifespans) and similar mitigation measures would be used, the effects determination is increased to **minor** given the longer timeframe and additional construction activities. Following construction for all three projects, noise is anticipated to return to pre-construction levels.

## 7.0 PERMITS AND PROJECT CONDITIONS

The City of Meriden is responsible for obtaining all required federal, state, and local permits and clearances. While a good faith effort was made to identify all necessary permits for the preparation of this EA, the following list may not include every approval or permit required for this project. Before, and no later than, submission of the FEMA grant closeout package, the City must provide FEMA with a copy of the required permit(s) and documentation from pertinent regulatory agencies.

1. U.S. Army Corps of Engineers (Section 404)
2. Local or State Floodplain Permit
3. Letter of [Flood] Map Revision
4. Approved Soil Management Plan from CT DEEP

Additionally, FEMA would require the City to adhere to the following conditions during project implementation. Failure to comply with grant conditions may jeopardize federal funds.

1. Inadvertent discovery of archeological resources and human remains conditions.
2. Condition to implement standard air pollution control measures during construction.
3. Compliance with conditions of CT's General Permit for the Discharge and Dewatering Wastewaters from Construction Activities ("Construction Stormwater General Permit")
4. Compliance with municipal and state erosion and sedimentation control regulations.
5. Compliance with conditions of 401 Water Quality permit (CT DEEP; Permit No. WQC-20110)
6. Compliance with the Federal Flood Risk Management Standard (Policy No. 206-21-0003)
7. Compliance with conditions of USACE CWA 404 permit regarding invasive species management.
8. Condition to minimize noise effects and meet federal, state, and local noise ordinances.
9. Condition to follow a soil management plan and coordinate with CT DEEP prior to physical construction.
  - Inadvertent discovery condition regarding hazardous conditions not already reported to CT DEEP via the SEHN.
  - Hazardous Wastes: Before construction begins, the project proponent must meet conditions necessary to obtain a CT DEEP variance for widespread polluted fill and adhere to conditions of the variance. A copy of the CT DEEP Variance for Widespread Polluted Fill must be shared with FEMA and CT DEMHS when issued.
10. Condition for construction and demolition wastes must be managed in accordance with CT DEEP regulations.

## 8.0 AGENCY COORDINATION AND PUBLIC INVOLVEMENT

The following is a good faith effort to capture all coordination and consultation with state and federal partners as well as public outreach and involvement:

- A site visit was held prior to drafting the EA on February 6, 2023. Representatives included FEMA, City of Meriden, CT Division of Emergency Management and Homeland Security, and Fuss & O'Neill, Inc.
- An EA “Scoping Document” was distributed by FEMA to municipal, state, federal partner agencies on April 18, 2023. Comments were received from CT DEEP’s Remediation Division regarding handling of contaminated soil that could be encountered during construction; CT DEEP’s Land & Water Resources Division regarding the project’s extensive prior permitting; U.S. EPA regarding alternatives, permitting considerations, solid waste, air quality, and outreach to Environmental Justice populations; and Fuss & O’Neill, Inc. on behalf of the City of Meriden regarding additional documentation and clarification to various sections in the Scoping Document.
- Early Public Notice notifying the public of FEMA’s decision to prepare an EA and work affecting the floodplain and wetlands was published in the Record-Journal (print) on June 3, 2023. No comments were received.
- Consultation with State Historic Preservation Office, the Advisory Council on Historic Preservation (ACHP), and interested Tribes started May 30, 2023 and is ongoing.
  - SHPO Concurrence on Adverse Effect received June 29, 2023
  - Meeting with City of Meriden set for August 9, 2023 to discuss resolution of the Adverse Effect through Treatment Measures
- Use of the USFWS IPaC Northern Long-eared Bat Range-wide Determination Key on July 2, 2023 to determine if further consultation with USFWS would be required. The Proposed Action received a “No effect” determination and no further consultation was required.
- Notification issued to USACE regarding the Proposed Action on November 17, 2022.
- Coordination with CT DEEP’s Remediation Division regarding the process for inadvertent discovery of contamination not previously reported during site investigations beginning May 24, 2023 and ongoing.
- Coordination with CT DEEP’s Wildlife Division on June 1, 2023 regarding state species occurrence data for Bald Eagles near the Proposed Action location. It was confirmed that there are no known eagle nesting territories within 660 feet of the project area and no further consultation with USFWS was required.

The following documents the opportunities for the public to comment on the decision-making process. These are placeholders in Draft EA and will be populated in the Final EA.

- Public Notice for availability of the Draft EA was posted on the following websites and newspapers.
  - Placeholder on mm/dd/yyyy
  - Placeholder on mm/dd/yyyy
  - Placeholder on mm/dd/yyyy
- The Draft EA was made available electronically for public comment and can be viewed and downloaded at <https://www.fema.gov/emergency-managers/practitioners/environmental-historic/nepa-repository> and on the City of Meriden’s website.

- The Draft EA will be made available in hard-copy format at the public library and at City Hall (Department of Public Works).
- Numerous public meetings were held during development and adoption of the 2012 Master Plan and for the Proposed Action, both as part of the regulatory process as well as for community involvement.
  - Public Scoping Notice, 5/7/2011, Council on Environmental Quality's (CEQ) Environmental Monitor website.
  - Public Scoping Meeting, 8/8/2011, City Council Chamber, Meriden City Hall, 142 East Main St, Meriden.
  - Public Outreach Meeting, 5/25/2022, Engineering Conference Room, Meriden City Hall, 142 East Main St, Meriden.
  - Public Outreach Meeting, 6/23/2022, Virtual (Recording made available on City website).
- Technical Assistance: The City, in conjunction with the Board of Education, has services in place to communicate with community members that speak the languages discussed in Section 5.5.6.1 (Existing Conditions). The City's Department of Public Works will also be available to address questions and provide technical assistance to community members as needed.

The comment period for this Draft EA will end 15 days from the date of the legal notice publication, or distribution of print copies, whichever is later. Written comments can be emailed to [david.robbins@fema.dhs.gov](mailto:david.robbins@fema.dhs.gov) or sent to the FEMA Regional Environmental Officer, 63 Old Marlboro Road, Maynard, MA 01754. If no substantive comments are received, the EA will become final and a Finding of No Significant Impact will be signed. Substantive comments will be addressed as appropriate in Section 9 of the final EA and in the FONSI.

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## **10.0 COMMENTS/RESPONSE**

*<This section will be completed in the Final EA after the comment period on the Draft EA closes. This will be in a table format with 3 columns: 1) Who made the comment; 2) What the comment was; 3) FEMA's response to that comment. This would also be included at the end of the FONSI if comments received are deemed not significant. The Final EA will be made available for a second comment period if FEMA receives any comments deemed significant.>*

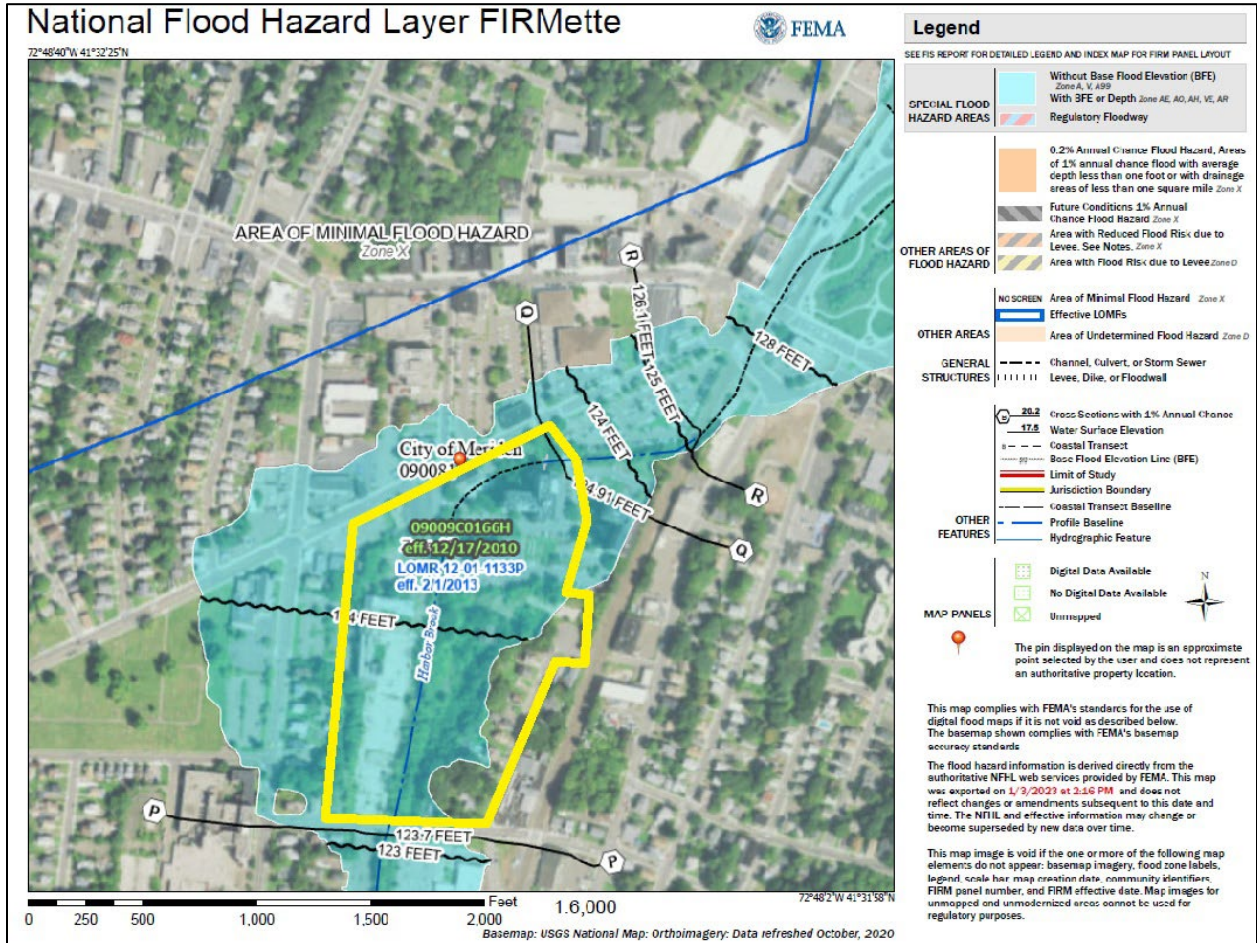
## Appendix A

**Figure 1: Map of Meriden Harbor Brook Flood Resilience Project Area**



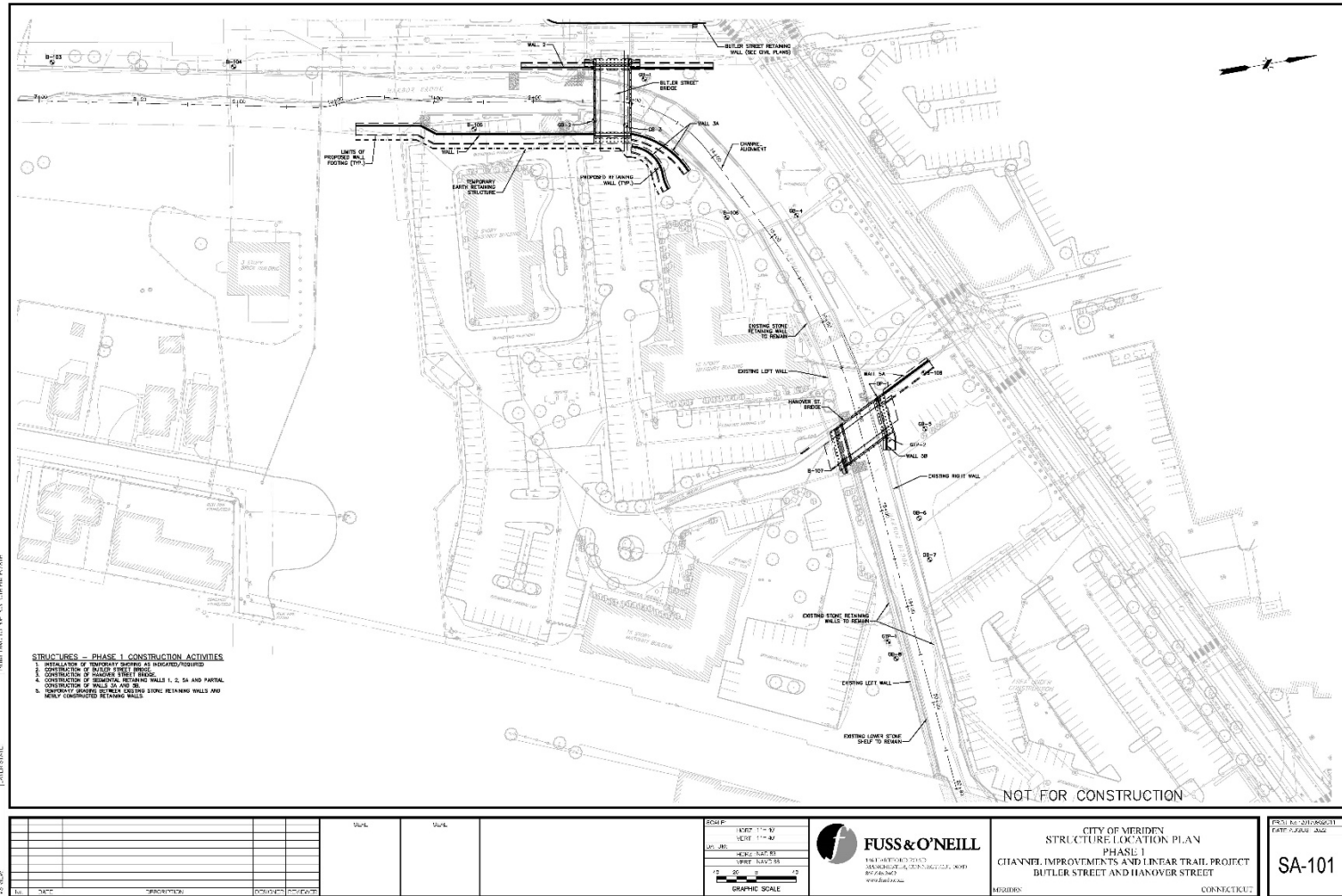
# Appendix A

## Figure 2: Flood Insurance Rate Map (FIRMette) for Meriden Harbor Brook Flood Resilience Project



# Appendix B

## Figure 1: Bridge Replacements: Structures Location Plan









**Appendix C**  
**Document 1: 8-Step Analysis**

**REGION 1**  
**EXECUTIVE ORDER 11988 Floodplain Management**  
**EXECUTIVE ORDER 11990 Protection of Wetlands**  
**8-Step Analysis (44 CFR Part 9)**

**TITLE:** Meriden Harbor Brook Flood Resilience Project

**LOCATION:** Downtown Meriden, CT; along Harbor Brook from Cooper Street to the Amtrak railroad near Colony Street. Approx. center point: 41.534971, -72.805677

**BACKGROUND:** The proposed project location is in Downtown Meriden in and along an 1,800 LF segment of Harbor Brook. The project location is bordered by Cooper Street to the south, the intersection of Hanover Street and Hanover Bridge to the north, Cherry Street to the east, and the 77 Cooper Street property to the west.

The purpose of the Proposed Action is to reduce flood hazards from high-intensity rainfall events along 1,800 LF of Harbor Brook in the downtown area. There is a long history of flooding in Downtown Meriden, CT due to floodplain encroachment, channelization, and constricted flows along Harbor Brook. Meriden is a state-listed “Distressed Community” that experiences recurrent flood damage and risk along this section of Harbor Brook. Residential, commercial, and municipal structures, including the city police station, a senior center, a community YMCA, state courthouse, and a church are currently at risk of flood damage. Addressing flood hazards along Harbor Brook would reduce or eliminate risk of loss for transportation and utility systems. Ancillary benefits would include water quality improvement, habitat creation, increased economic opportunity, reduced social vulnerability, and improvement to public health.

**DESCRIPTION OF PROJECT:** Improvements would be made along 1,800 LF of Harbor Brook, including channel realignment and profile adjustment, removing two undersized bridges to remove flow constrictions, floodproofing three buildings, creating riparian floodplain and wildlife habitat, modifications and relocations of impacted utilities, and installation of a waterfront trail system. The Proposed Action is part of the Harbor Brook Flood Control and Linear Trail Project Master Plan.

**STEP 1: Determine whether the proposed action is in the 100-year floodplain, which includes the Coastal High Hazard Area (500-year floodplain for critical actions) and/or within a designated wetland.**

The Proposed Action area is in the 100-year floodplain (Zone AE). The FEMA Flood Insurance Rate Map (FIRM) 09009C0166H, effective 12/17/2010 indicates flood elevations vary from a low of 123 feet NAVD88 near Cooper Street (cross section P on the FEMA FIRM) to 125 feet NAVD88 near the intersection Harbor Brook and the railroad (cross section R). A Letter of Map Revision (LOMR), issued September 18, 2022 and effective February 1, 2013, is still valid for the project area (Case No.: 12-01-1133P).

**Is the action a functional dependent use (cannot perform its intended purpose unless it is located or carried out in proximity to water) or a facility or structure that facilitates open space use?**

Yes, the proposed work is to reduce the risk of future flood damage along a segment of Harbor Brook by creating increased flood storage capacity and restoring the floodplain.

**Determine whether the proposed action is within a designated wetland.**

There are no state or federally designated wetlands on the project site, according to an investigation carried out by Fuss & O'Neill in 2020. Review of the U.S. Fish and Wildlife Service's National Wetland Inventory by FEMA on June 1, 2023 identified Harbor Brook as a riverine habitat (Cowardin classification code R3UBH). This classification does not require an 8-Step Analysis under EO 11990, because it is not classified as a wetland per Section 7(c) of Executive Order 11990 and 44 C.F.R. Part 9.4.

**STEP 2 Notify the public at the earliest possible time of the intent to carry out an action in a floodplain and wetland. Involve the affected and interested public in the decision-making process.**

Early Public Notice notifying the public of FEMA's decision to prepare an Environmental Assessment and work affecting the floodplain was published in the Record-Journal (print) on June 3, 2023. No comments were received.

Additionally, FEMA's NEPA Scoping Document was distributed by FEMA to municipal, state, federal partner agencies on April 18, 2023. No comments were received regarding work in the floodplain, but comments were received from the CT Department of Energy & Environmental Protection's Remediation Division, U.S. Environmental Protection Agency, and Fuss & O'Neill, Inc. on behalf of the City of Meriden.

**STEP 3 Identify and evaluate practicable alternatives to locating the proposed action in a floodplain and wetland (including alternatives sites, actions and the "no action" option).**

A number of alternatives were evaluated and dismissed for the Master Plan. The final Master Plan was permitted by USACE and CT DEEP in 2012. Alternative actions included:

- **Additional Upstream and/or Underground Detention** - A detention basin provides temporary containment of stream flows or stormwater runoff as a means of potential flood control. The creation of sufficient storage within the watershed to contain flood flows associated with the 1% annual chance flood event (without channel and bridge improvements) would require multiple aboveground and underground detention areas. Due to limited space available for aboveground detention and the magnitude of creating underground detention beneath a densely developed area, this alternative was dismissed.
- **Alternative Design Flood Event** - Bridges, culverts, and other measures are potentially cost-effective solutions depending on the watershed and corridor at Harbor Brook. Designing for the 1% annual chance event or greater would be possible; however, environmental impacts and costs would greatly increase. For this reason, this method was dismissed.
- **Other Flood Protection Measures** -
  - **Acquisition and/or Relocation of Selected Properties:** This option would involve the purchasing of properties within the 1% annual chance floodplain by the City and the physical movement of people and personal property to sites not affected by flooding. Due to considerable costs, difficulties associated with finding a relocation area, and the lack of reduction of flood impacts, this method was deemed not feasible. Demolition was only deemed feasible for certain structures within the project reach.



- **Constructing Floodwalls or Earthen Levees:** A physical flood barrier constructed of earthen materials at a height that contains floods could occur. A barrier can restrict views/user access to Harbor Brook, in addition to restricting the expansion of the channel and creation of floodplain benches. This method was deemed not prudent.
- **Dry Floodproofing of Structures:** This option primarily addresses human health and safety concerns and is generally a combination of changes to eliminate or reduce flood damage. This method is generally not considered to be feasible if floodwaters rise above 3 feet. This method was only deemed feasible for certain structures within the project reach.
- **Elevation of Structures:** This option would lift a structure above the flood elevation using piles, piers, posts, or columns. While elevation protects from flooding, occupants are still subject to impacts related to accessibility during flooding and possible loss of utility services. This was not considered to be a viable alternative.
- **Wet Floodproofing:** This option would involve the modification of a structure to allow floodwaters to enter the structure without causing damage to living spaces, service equipment, or the structure itself. However, this option does not protect a structure from the hydrodynamic force of flowing water, waves, erosion and scour, the impact of ice or other debris, and damage from contaminants. Sediment, debris, and other environmental contaminants must be cleaned out of the structure after the flood recedes. For these reasons, it was dismissed as a viable alternative for Harbor Brook.
- **Underground Diversion:** This alternative would reroute waterways into underground culverts. This option was not utilized due to utility conflicts, spatial constraints, and potential for conflict with railroad corridor improvements.

**No Action Alternatives** – Under the No Action Alternative, FEMA would not undertake or fund any action. Structures and facilities would remain in their current state. The No Action Alternative does not satisfy the purpose of mediating the impacts of flooding along Harbor Bank to the maximum extent practicable and was deemed unacceptable.

The combination of project elements that ultimately make up the Proposed Action was established after local, state, and federal stakeholders had the opportunity to participate in the review process for the Master Plan and the City reviewed the 2020 Fuss & O’Neill report.

**STEP 4 Identify the potential direct and indirect impacts associated with the occupancy or modification of floodplains and wetlands and the potential direct and indirect support of floodplain and wetland development that could result from the proposed action.**

Under the Proposed Action, there would be no additional occupancy or support for development within the floodplain aside from public access and recreation in the area. The work would support a future phased construction sequence that includes installation of a walking path, skateboard park, insect pollinator corridor, and parking at 77 Cooper Street. The skateboard park would be located at the 77 Cooper Street slab, and area already developed and paved; no additional occupancy in the floodplain is expected.

Short-term adverse impacts include construction equipment working in the floodplain and near Harbor Brook. The Proposed Action would also remove approximately 0.5 acres of trees along the stream banks from Butler Street to Cooper Street; however, this would allow for the creation of riparian floodplain habitat

and to realign a portion of the brook. Native wildlife and riparian seed mixes would be used to establish a floodplain meadow and approximately twenty-five (25) native trees would be planted.

Long-term impacts of the Proposed Action include a lower flood risk and increase flood storage capacity. While one parking area would be installed at 104 Butler Street, the flood storage capacity at the project site would be improved and floodplain functions would be restored. The Harbor Brook channel would be reconnected to its floodplain for much of the 1,800 LF. Approximately 5.6 acres of riparian floodplain and wildlife habitat on both sides of the channel would be created by removing existing walls and grading to create floodplain shelves and benches. One building would be permanently removed from the floodplain. By replacing the Butler Street and Hanover Street Bridges with single-span structures and elevating above the BFE, as well as creating flood benches and shelves along Harbor Brook, benefits such as increased conveyance, reduced flood velocities, limited erosion hazards, and improved long-term channel stability would occur and there would be lower risk of flooding downstream and to nearby structures and facilities.

**STEP 5 Minimize the potential adverse impacts and support to or within floodplains and wetlands identified under Step 4, restore and preserve the natural and beneficial values served by the floodplain and wetlands.**

Potential adverse impacts would be avoided and minimized through design measures and permitting conditions. Potential adverse effects would be minimized as long as all permit and grant conditions are adhered to (44 C.F.R. 9.11(d)(5)).

Approval from the state floodplain manager would be required for this project; it is also a condition of the CT DEEP 401 Water Quality Permit (Permit No. WQC-20110). Specifically, the permit conditions require submission of hydraulic consistency documentation demonstrating compliance with the National Flood Insurance Program and the State of Connecticut Flood Mitigation Act. Another condition of the 401 Water Quality Permit is that the City would be required to apply to FEMA for a floodplain “Letter of Map Revision” documenting post-construction floodplain conditions within 30 days of completion of the project.

Construction activities would adhere to Federal, State, and local regulations to control erosion and sedimentation and would need to apply current best management practices. Erosion and sedimentation control regulations have been developed by the City pursuant to the Connecticut Soil Erosion and Sediment Control Act (General Statutes of Connecticut sections 22a-325 through 22a-329). Haybales, silt fence, silt rock, silt sack erosion control matting, crushed stone check dams, and an anti-tracking apron would be used to limit construction-related short-term erosion.

The initial proposed scope of work included floodproofing three (3) buildings to one foot above the base flood elevation. After coordinating with the City, floodproofing would be completed in accordance with FFRMS requirements (FEMA Policy FP-206-21-0003): the buildings would be floodproofed to the Base Flood Elevation plus 2 feet or to any higher standard.

Minimization measures include:

- The proposed project is a functionally dependent use (9.11(d)(1)(i)),
- the proposed project as designed meets the criteria as being the only practicable alternative and would restore the floodplain (9.11(d)(5)),
- and the proposed project will be conditioned for a floodplain permit demonstrating consistency with the NFIP (9.11(d)(6)),

- Approximately 5.6 acres of riparian floodplain and wildlife habitat on both sides of the channel would be created and twenty-five (25) native trees would be planted.
- The Proposed Action site would be cleaned up in accordance with Connecticut's Remediation Standard Regulations.

**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.**

The purpose of the project is to restore floodplain function and capacity and reduce flood risk within the community. The proposed project design provides flood mitigation and ecological restoration along Harbor Brook; flood hazards would be reduced and there would be a net improvement to the floodplain. The preferred alternative was chosen as it provides the highest level of flood reduction while meeting the hydraulic requirements of the City's Master Plan, it provides the highest quality habitat within the floodplain, and it is the least expensive in terms of site disturbance. Furthermore, shifting the channel to the east would provide additional separation from contaminated material under the 77 Cooper Street concrete slab and maintaining the floodplain area as a meadow would provide habitat for small wildlife and birds.

**STEP 7 Prepare and provide the public with a finding and public explanation of any final decision that the floodplain and wetland is the only practicable alternative.**

Public notice will be provided by FEMA and the City as part of the Environmental Assessment process.

**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.**

The FEMA project grant will be conditioned for the project proponent to secure federal, state, and local permitting for work in the floodplain: including a permit from the State Floodplain Administrator, a USACE 404 Permit, a CT DEEP 401 Water Quality permit, and an approved Soil Management Plan from CT DEEP. Compliance with all federal, state, and local permits will be determined as part of the grant close-out process.

**Prepared by:**

This 8-Step Analysis Document was prepared by Karen Vale, Environmental Protection Specialist, FEMA Region I.