

Tighe & Bond (T&B) has been actively developing solutions for Central Street Bridge improvements and Sawmill Brook/ Central Pond restoration and the integral tide gate over the past six years. The approach considers maximizing flood mitigation benefits while simultaneously improving water quality, habitat, fish passage and addressing public safety by implementing a combination of projects identified through a series of grant funded projects. These projects include removal of the tide gate, culvert widening, fish passage enhancement, roadway and public safety improvements, and restoration of the Sawmill Brook Stream channel and stream banks at the Central Street Bridge and upstream.

GRANTS:

A combination of grants and Town funding supported the necessary engineering studies to develop data, document feasibility, and explore alternative designs of the restoration project. Following is a bulleted summary of these efforts, highlighting the content to support the Central Street Bridge and Sawmill Brook/ Central Pond restoration, and the project amount (grant award plus Town match).

- 2014- Federal Emergency Management Agency (FEMA) Pre-hazard Mitigation Grant- T&B assisted the Town and the Coastal Resiliency Advisory Group (CRAG) in evaluation of models and projections for sea level rise, storm surge and extreme precipitation to use in baseline planning, and in identifying the locations of current and future flooding. (\$54,850)
- 2014 Coastal Zone Management (CZM) Coastal Resiliency Grant- T&B assisted the Town and the CRAG in evaluating the capacity of culverts within the Sawmill Brook under existing and future climate change conditions, and the potential for developing green infrastructure to help mitigate flooding. T&B developed a Hydrocad and HEC-RAS hydrologic models as part of the study enabling the Town to evaluate potential projects within the watershed including flow velocities associated with replacement of the Central Street Bridge needed to assess fish passage, flooding and scour potential. The planning team vetted the alternatives and a preferred alternative was chosen that simultaneously meets public safety and environmental needs. A multi-year phased implementation schedule, permitting approach and preliminary costs were developed for the preferred alternatives. (\$188,900)
- 2015- FEMA Pre-Hazard Mitigation Grant - T&B assisted the Town and the CRAG in updating the Town's Hazard Mitigation Plan and developing Adaptation Strategies for the highest priority mitigation projects, including conceptual plans for the Central Street Bridge including tide gate removal and culvert expansion and Sawmill Brook/ Central Pond restoration. (\$19,964)
- 2017 Massachusetts Environmental Trust (MET) Grant- T&B assisted the Town to complete the needed physical studies to demonstrate the feasibility of implementing the preferred alternatives for Sawmill Brook and Central Street improvements. Critical information including six months of water level monitoring, refinements to the model, evaluation of impacts to low lying and abutting properties, wetlands delineation and sediment characterization. (\$49,490)
- 2017 Massachusetts Division of Ecological Restoration (DER). The Sawmill Brook project was designated as a Priority Project by the DER in 2017. Priority Project status, improves options for future funding and on-going technical assistance by the DER. (technical assistance provided by DER staff)

- 2018 MVP Action Grant – The MVP action grant includes studies to advance the project to the permitting level. Tasks included evaluation of property access for construction and maintenance, geotechnical evaluation for the wall repairs, analysis of alternatives, public outreach to abutters along Central Pond, and the permit level designs. (\$88,180)
- 2018 Massachusetts Department of Transportation (MassDOT) small bridge grant was awarded for the design, permitting, and replacement of the Central Street crossing (\$500,000).
- 2019 MVP Action Grant – The MVP action grant includes Town Property Line survey and monumentation, living shoreline design and permitting submittal (\$65,7755).
- 2020 MVP Action Grant – The MVP action grant includes permitting review and final design and preparation of bid documents (\$31,350).

PUBLIC OUTREACH

Public Presentations (not including over a dozen Coastal Resilience Advisory Group meetings):

- April 22, 2015 (CZM/ FEMA Grant) Sawmill Brook Culvert and Green Infrastructure Analysis- Public Workshop American Legion Hall
- February 11, 2016 (CZM/ FEMA Grant) Coastal Resilience Forum, Manchester Community Center
- May 2, 2016 (CZM Grant) Coastal Resiliency Planning, Board of Selectmen Meeting, Town Hall
- September 27, 2016, (FEMA) Public Presentation of HMP Vulnerability Risk Assessment- Public and Neighboring Communities invited, Town Hall
- August 21, 2017 (FEMA) Presentation of final HMP draft and Mitigation Strategy, Board of Selectmen, Town Hall
- June 21, 2018- (MET Grant) Sawmill Brook/ Central Pond Restoration Feasibility Study, Abutters Presentation Town Hall
- October 18, 2018- (MVP Grant) Sawmill Brook/ Central Pond Restoration Planning, Goals and Alternatives, Abutters Presentation (included Bridge Project update) Town Hall
- February 4, 2019- (MVP Grant) Sawmill Brook/ Central Pond Restoration Board of Selectmen – Progress update, Town Hall
- June 12, 2019 (MVP Grant) Technical Agency Presentation, Town Hall

Articles/ Conference Presentations:

Manchester Cricket: Three Part Series on Coastal and Inland Flooding in Manchester-By-the Sea January 2016. Part 1. Historical Flooding in Manchester-by-the-Sea; Part 2. Flooding Sources and Climate Change; Part 3. How Wet Will it Get.

Press releases were issued for all of the public workshops listed above.

Coastal Resiliency Seminar, November 10, 2015, Manchester-by-the-Sea, Planning for Climate Change, Peabody MA

Coastal Resiliency Seminar, November 10, 2015, Modeling for Design of Resilient Coastal Structures in Coastal Areas, MBTS Example

Coastal Resiliency Seminar, May 3, 2016, Manchester-by-the-Sea, Planning for Climate Change, Plymouth, MA

South Shore Symposium, November 29, 2016 Sawmill Brook Culvert and Green Infrastructure Analysis: Looking at Impacts of Climate Change in both a Coastal and Riverine Environment

Environmental Business Council, NH Climate Change Program 3/4/16, Multi-Source Flood Risk and Mitigation Planning for Climate Change, Green Bay Discovery Center, Greenland, NH

New England Water and Environment Association (NEWEA) Annual Conference 1/24/2017 - Comprehensive Watershed Planning for Climate Change in Manchester-by-the-Sea, MA, Boston MA

Sustainability by Land & Sea- 7th Massachusetts Sustainable Communities & Campuses Conference, March 17, 2017, Comprehensive Watershed-based Planning for Climate Change in Manchester-by-the-Sea, MA- Endicott College