Auburn Planning Division
104 Central Street
Auburn, Massachusetts 01501
(508) 832-7704
www.auburnguide.com

March 16, 2021

Case Study

Municipality/Nonprofit Organization: Town of Auburn
Project Title: Develop Protection Measures for Vulnerable Drinking Water Supply Areas and Evaluate Green Bridge Design
Grant Award: $145,452
Match: $50,133

Community Overview:

The Town of Auburn is a vibrant suburban community, located at a pivotal junction in Southern Worcester County. In the 1950's and 1960's parts of the interstate highways were built very close to town well fields, and the roadways bisect several waterbodies. Preventing contamination of the drinking water supply is of paramount importance.

From a 17th-century agricultural settlement to a 19th-century industrial town and 20th-century regional commercial hub, Auburn has always strived to meet the changing demographic, social, and economic needs of its residents. In the 21st century the Town of Auburn continues to meet the challenges of the day. Climate change and the community's resilience to its numerable impacts are of high priority to the town.

Description of Climate Impact:

The Auburn Water District provides about 80% of Auburn's water supply. Roadway mitigation measures to limit salt and decrease the risk of vehicle spills is an ongoing challenge, which is exacerbated by the changing climate:

- The changing nature of winter storms, particularly the predicted increase in extreme winter storms and ice storms, directly affect water quality because of the current salt loading along the roadways that are applied during winter storms. Salt loading is a high risk; the wells in Auburn have a high level of salt content due to the many roadways and impervious surfaces across town

- In addition, with an increase in the intensity and type of winter storm the risk of motor vehicle accidents rises, which can lead to oil, gasoline, and other contaminants spilling into the water supply.

With climate change projecting increased storms and precipitation, flooding is the primary concern for the Kettle Brook Crossing area. The Sword Street culverts are in poor condition and partially

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blocked, putting the roadway at risk. The banks of the brook are eroding, and vegetation in the area is dominated by invasive species. Kettle Brook is an EPA-identified impaired waterbody under the Federal Clean Water Act. In the past, annual testing efforts along the brook by the Blackstone River Coalition have identified e.coli contamination, and increased temperatures projected for the coming years could increase impairments of the waterbody.

Project Goals:

The Auburn Water District has twelve drinking water wells located throughout Town, each with a respective Zone I wellhead protection area approximately 11.5 acres in size and Zone II protection areas that are shared amongst the wells. A number of these wells are located in close proximity to major highways including I-90 and I-290. Addressing the vulnerability of the Town's drinking water wells and aquifer areas to contamination from stormwater pollutants associated with major highways such as I-90 and I-290 was identified as one of the top three priorities for the community during the Town's Community Resilience Building Workshop planning process.

This project allowed the Town to develop protection measures for Auburn's water supply by documenting areas along town and state roadways that are at high risk of stormwater contamination and prioritizing improvements. The resulting Best Management Practices Plan lays out actions aimed to reduce and eliminate potential contamination to the Town's drinking water supply.

Developing conceptual designs for a "green" bridge to replace failing culverts that convey the Kettle Brook under Sword Street advances the town's goal to replace the existing infrastructure and maintain the roadway as a local evacuation route.

Approach and Result:

Task 1 of this project developed a risk assessment under the Best Management Practices (BMP) Plan, with consideration of four pollutants of concern: hydrocarbons, chloride, sodium, and PFAS. GIS maps were created with a focus on representing stormwater infrastructure and catchment areas. The data was overlaid with available data regarding probable threats, including: large vehicle crashes, reportable spills, stationary pollutants, and lane miles of roadway. The project team (see "Partners" section below) met on a regular basis to discuss the status of the project, review consultant-developed materials, and provide feedback at the various stages of the project. The process identified the top five high-hazard catchment areas along both town and state roadways. A range of BMPs were identified to assist the Town and Water Department with addressing the vulnerabilities to drinking water supply areas, including: installing stormwater retrofits, updating municipal operation procedures and increasing emergency response training,

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conducting public outreach to help individuals understand how behavior change can improve and protect water quality, and continuing to coordinate with MassDOT regarding an ongoing salt study.

Best Management Practices to Protect Drinking Water Supply Areas:
https://www.auburnguide.com/166/Planning-Division

Project video filmed by Auburn Cable TV:
https://www.youtube.com/watch?v=aLH14tXTVoU

Task 2 discussed potential "green" infrastructure concepts and strategies to consider in future design phases of a Sword Street culvert replacement. Frameworks from both the Greenroads® and Envision™ programs were used as a basis for evaluating sustainable infrastructure design components for consideration. A "green bridge" is intended to incorporate items such as locally sources materials and recycled materials, LED lighting, possibility of incorporating hydropower, and utilizing native species for site restoration. This task resulted in four conceptual design options and a preferred concept recommendation from the Department of Public works.

Lessons Learned:

The project began as the Covid-19 pandemic began rampaging across the world. Due to the shutdown and changing work environment, town officials and consultant had to alter how they met and interacted. Also, public outreach, normally so much of it done in person, could not be completed in the traditional manner. All project meetings and the CMRPC workshop took place virtually. Flexibility and a willingness to handle unforeseen circumstances were key.

The Town of Auburn has developed a close relationship with the Auburn Water District over the years. Open dialogue and cooperation are key features in the relationship. The town and the district both respond to emergencies, such as spills on the roadways. The Water District is given the opportunity to comment on all development in the district, any applications the Planning Board receives is sent to the water district. Municipalities should engage with their water district for the betterment of the community, without reliable, clean water the municipality likely will face many challenges.

Partners and Other Support:

- Town Administration: William Coyle, DPW Director; Joanna Paquin, DPW Assistant Director; Eilish Corey Senior Civil Engineer; and Adam Menard, Town Planner.
- Auburn Water District, represented by Ken Smith District Superintendent and Water District consultant Kristen Berger of Resilient Engineering collaborated with the town to develop the Best Management Practices to Protect Drinking Water Supply Areas.

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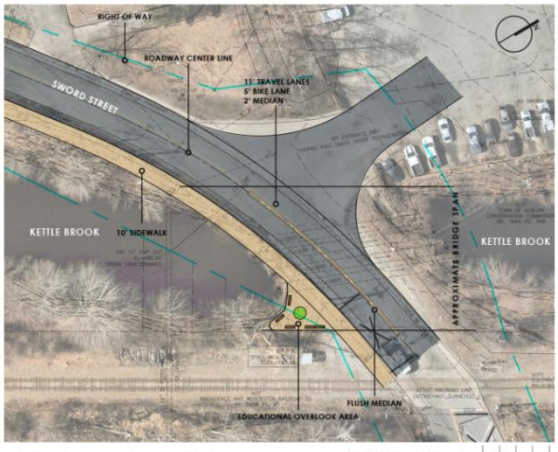
- Victoria Houle, Project Manager for Fuss & O'Neill was the towns consultant
- MassDOT representatives attended several meetings to provide input on state managed roadways. The information attained was valuable as the Best Management Practices to Protect Drinking Water Supply Areas report was developed.
- Central Massachusetts Regional Planning Commission (CMRPC) hosted a public regional workshop.

Project Photos:



DESIGN CONSIDERATIONS

1. SAFETY CONCERNS RELATED TO RAILROAD
2. REVIEW SIGHT LINE DISTANCES
3. WETLAND IMPACTS
4. POTENTIAL LAND ACQUISITIONS
5. UTILITY RELOCATIONS

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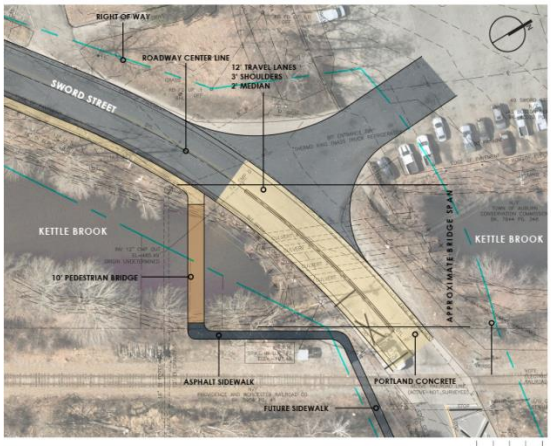

PLAN VIEW - 20SC

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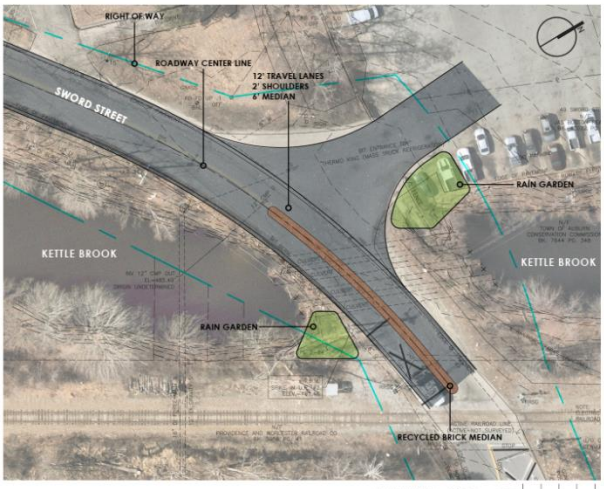
INSPIRATIONAL EXAMPLES

TYPICAL STREET SECTION



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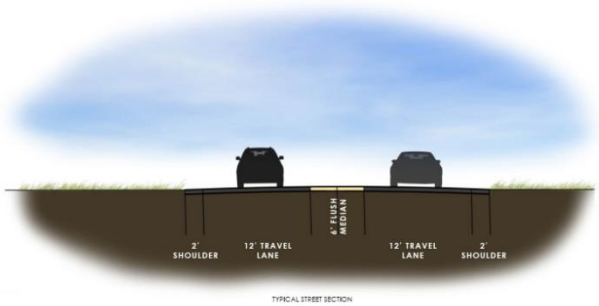

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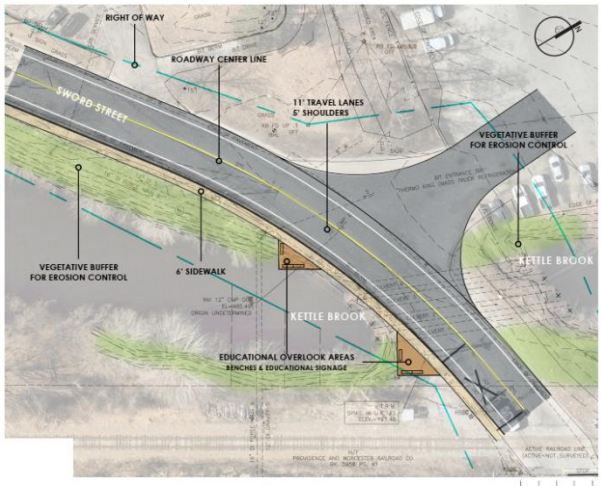

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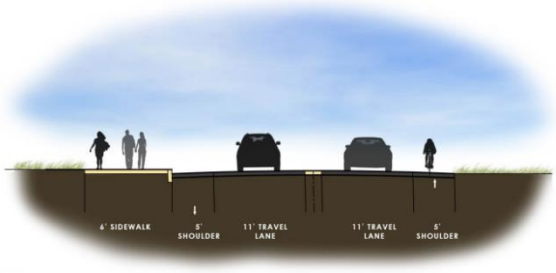
INSPIRATIONAL EXAMPLES


EDUCATIONAL OVERLOOK AND SEATING AREA


EDUCATIONAL SIGNAGE


RECYCLED PLASTIC BENCH


WIDE PEDESTRIAN PATH & RAIL CROSSING



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