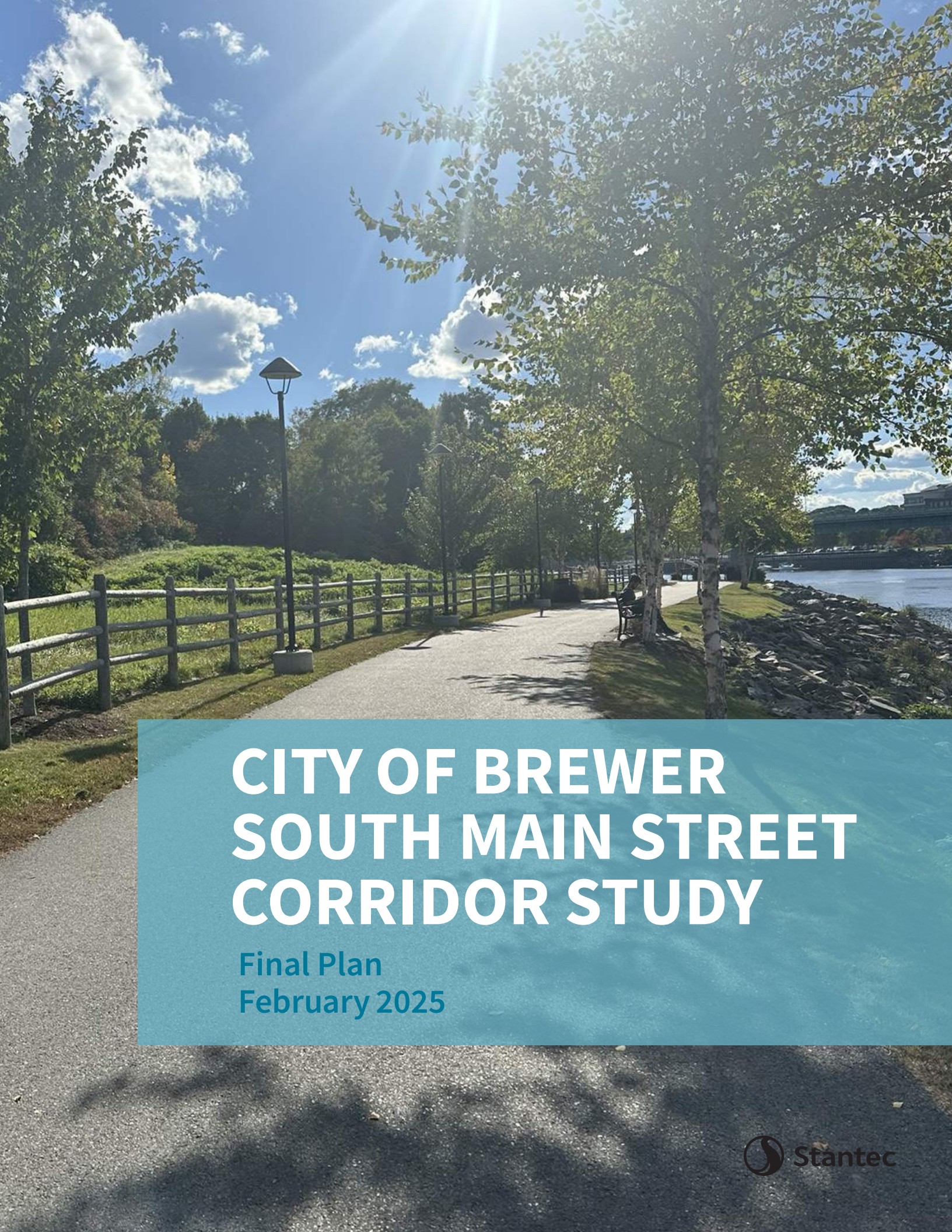

# CITY OF BREWER SOUTH MAIN STREET CORRIDOR STUDY

## Final Plan
## February 2025

Stantec


S Main St
Main St

# Contents


Explore
BREWER WATERFRONT
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# 1. Executive Summary

This report summarizes the Brewer South Main Street Corridor Study performed for the Bangor Area Comprehensive Transportation System (BACTS). Stantec was retained by BACTS in March 2024 to identify solutions to enhance South Main Street in Brewer by looking at the corridor holistically and addressing land use, transit, safety, and mobility for all users by any mode.

This study occurred over approximately a year and included an extensive public engagement component, an analysis of existing and future conditions, and proposed context-sensitive land use and transportation recommendations for each of three Character Areas identified through the course of the study.

## Study Area

The Study Area for this project is approximately one mile long and extends along South Main Street from the intersection with Abbott Street to the intersection with Wilson Street. Based on the characteristics of the Study Area, it was further divided into three Character Areas:

- Neighborhood - Wilson St. to Burr St.
- Gateway - Burr St. to Baker Boulevard
- Highway Interchange - Baker Boulevard to Abbott St.

## Purpose and Need

The following Purpose and Need statement was endorsed by the Study Team:

- Improve safety and accessibility for all users (walkers, bikers, drivers, and transit riders).
- Expand active transportation connections and facilities.
- Support future growth and economic development by enhancing the look, feel, and character of the streetscape.

## Public Engagement

This study included an extensive public engagement component. There were two recorded public meetings, a map-based community survey using the Social Pinpoint platform, and roundtable discussions for members of the public to share their comments and concerns with the Study Team.

The Social pinpoint survey was conducted in May 2024 and allowed users to provide location-specific feedback by placing a pin on the map and entering a comment about that area. Users could also "like" a comment entered by another user, which gave the Study Team additional insights to help prioritize focus areas and improvements.

The first public meeting was held in September, 2024. At these meetings, the Stantec Team gave a brief presentation and then answered questions and solicited feedback from the public regarding desired street improvements, intersection concerns and ideas, preferred cross-sections of key corridors, and future zoning/land uses. Key takeaways from the Public meeting included:

- Bicycle lanes and bus shelters were the most requested improvements.
- Additional on-street parking was not a high priority.
- Pedestrian crossings are challenging across the board.
- Existing RRFB's (push button flashing lights at a crosswalk) are very popular.
- On-street bike facilities are desirable, even near the Riverwalk.
- Separated bicycle facilities were preferred.
- Street alternatives that added street trees were generally more popular.

- » Mixed Use Development was desired most frequently.
- » Housing in this area is desirable.
- » Active recreation, community space, and commercial development to compliment the Riverwalk was frequently requested.

The second public meeting was held on December 18th, 2024. At this meeting, the Stantec Team reviewed the study process to date and shared the draft alternatives with the public for feedback. The presentation and posters of the draft recommendations were also posted on the City's website for additional feedback.

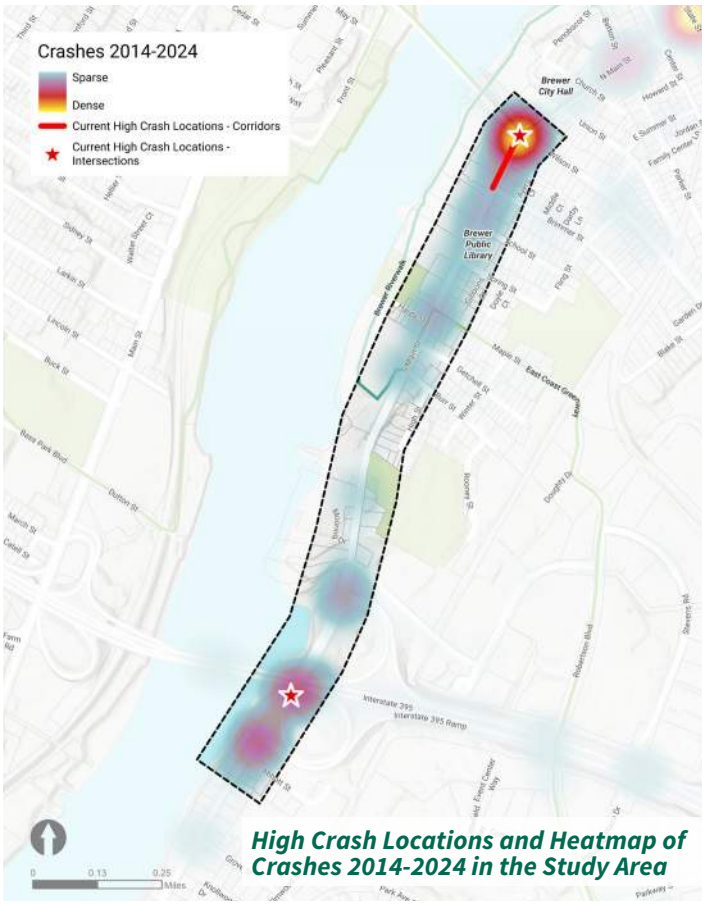
## Existing Conditions

In order to fully understand the Study Area, Stantec completed an Available Data Summary report, including an in depth review of available plans, reports, and data. The full report can be found in Appendix A. Stantec also completed an Assessment of Current Conditions, which includes an analysis of multimodal traffic, road safety and land uses, which is available in Appendix B.

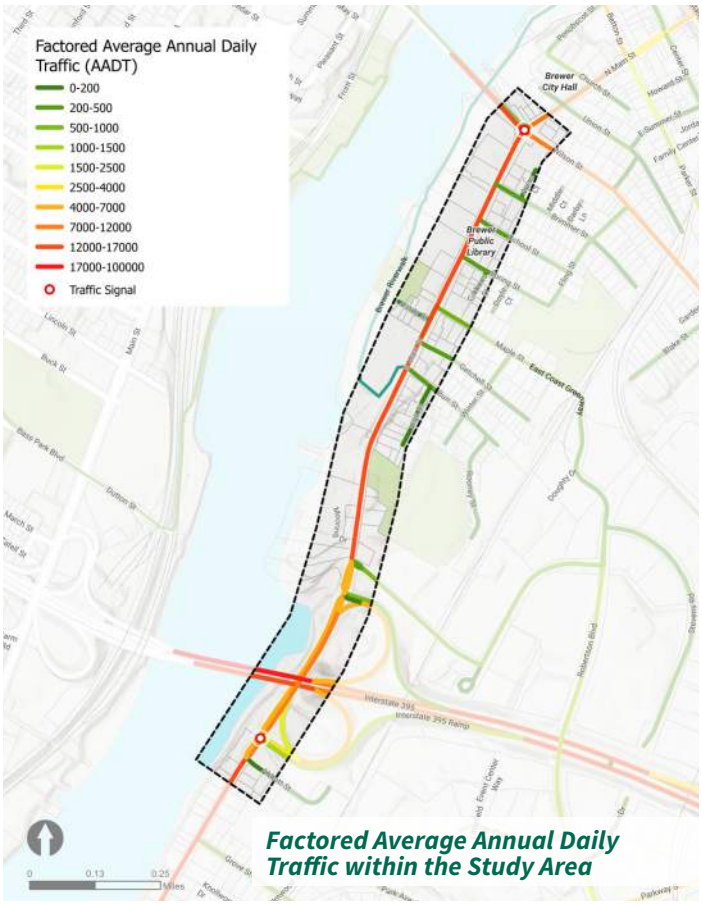
## Future Conditions

Stantec estimated future traffic volumes to ensure the recommendations both meet the study's goals and account for changes in traffic volumes to the year 2045. The full future conditions memorandum can be found in Appendix C.

Stantec reviewed publicly available resources and MaineDOT traffic models to project traffic flow to 2045. Stantec evaluated two potential future outlooks of traffic volumes in the City: A standard MaineDOT-based regional outlook and a local outlook. When comparing the findings of both methods in evaluating future traffic through Brewer and for use in evaluating design alternatives and right-sizing infrastructure for Brewer's future, Stantec recommends planning for infrastructure evaluations and improvements by using the Regional Growth model to estimate future




*High Crash Locations and Heatmap of Crashes 2014-2024 in the Study Area*




*Factored Average Annual Daily Traffic within the Study Area*

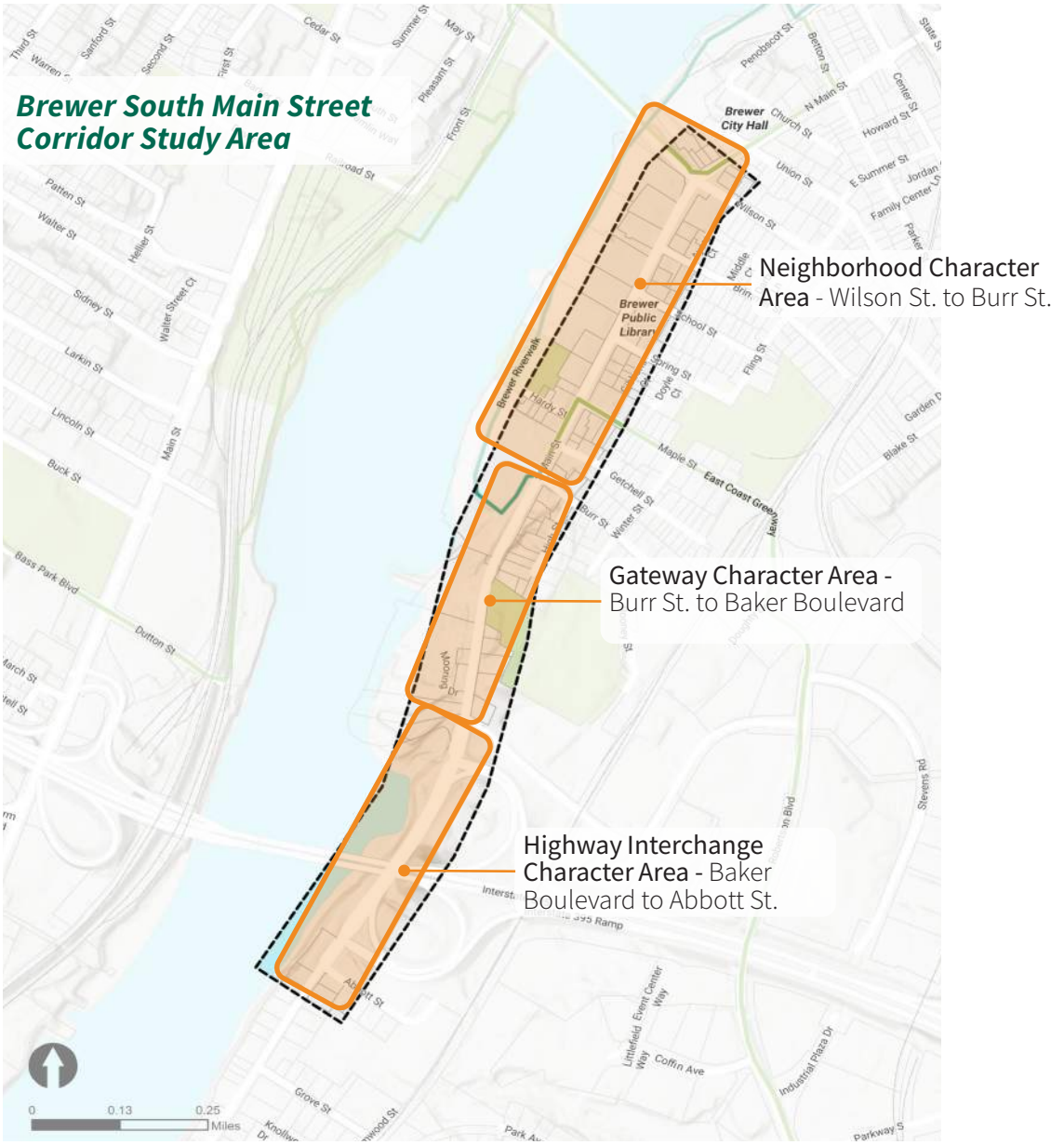
traffic volumes, which incorporates an overall average annual traffic volume growth rate of 0.5 percent per year. This growth rate was chosen because it incorporates the smaller, locally-identified growth rates from MaineDOT's model along with the inclusion of optimistic and development of and trip generation to Brewer's Downtown and South Main Street Corridor.

## Recommendations

Drawing upon Stantec's analysis of existing and future conditions and feedback from the Study Team and the public, the Study Area was divided into three Character Areas based on the context of the roadway and the surrounding built environment:

- **Neighborhood** - Wilson St. to Burr St.
- **Gateway** - Burr St. to Baker Boulevard
- **Highway Interchange** - Baker Boulevard to Abbott St.

In the Neighborhood Character Area, there are context-sensitive land use and transportation recommendations for South Main Street and the area between South Main Street and the Penobscot River. For the other two Character Areas, recommendations are more focused on the roadway itself. Planning level cost estimates are also provided for the recommended roadway improvements in each Character Area.

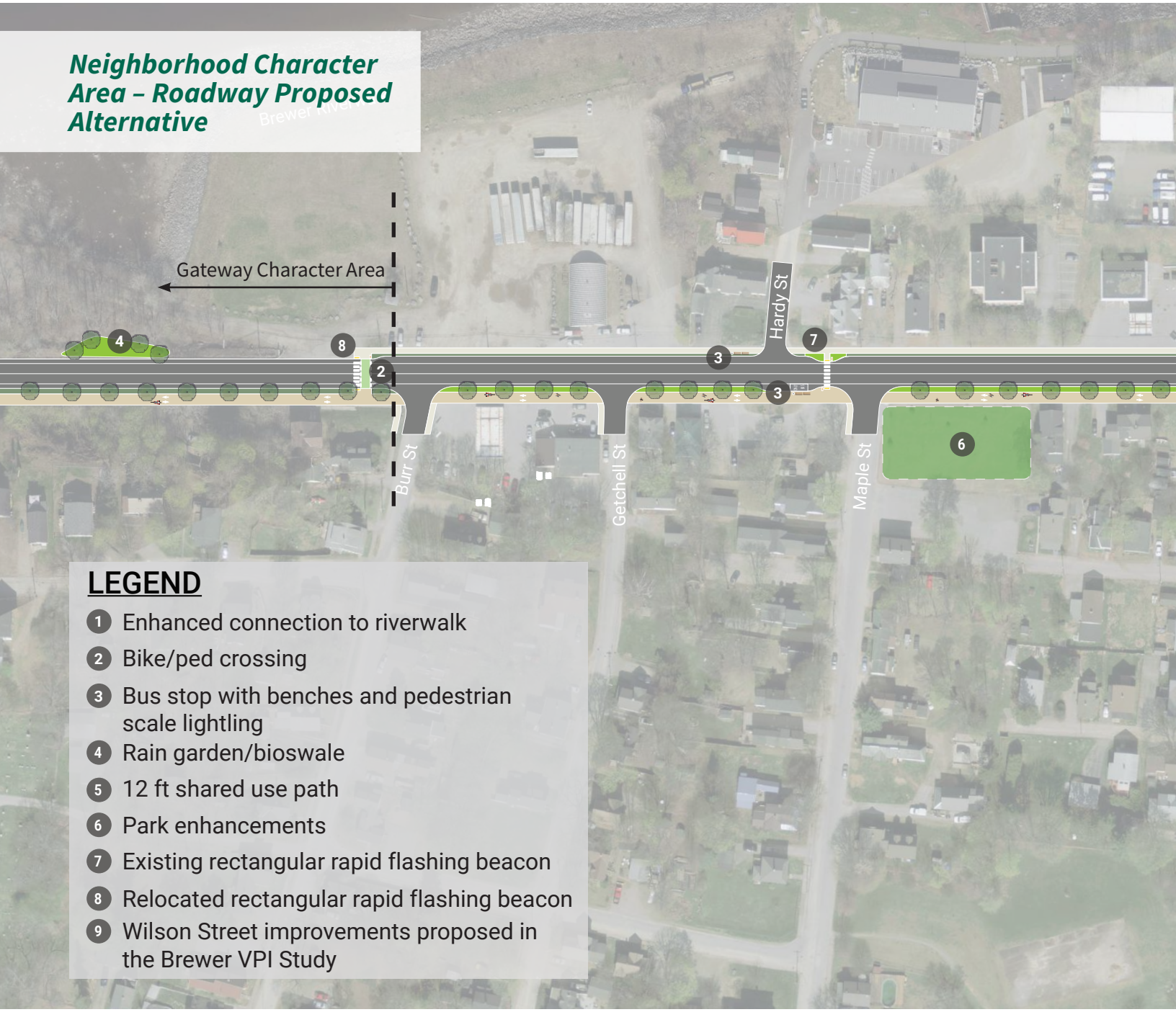


# Neighborhood Character Area

The Neighborhood Character Area extends from the signalized intersection at North Main Street / South Main Street and Wilson Street to Burr Street. This portion of South Main Street parallels the Brewer Riverwalk along the Penobscot River.

The Study Team built off the proposed Alternative for the North Main Street / South Main Street and Wilson Street intersection in the Brewer Village Partnership Initiative Plan for continuity. The proposed intersection upgrade focused on improving the intersection's alignment, reducing crosswalk lengths, and making the area more accessible for bicycles. Key features include:

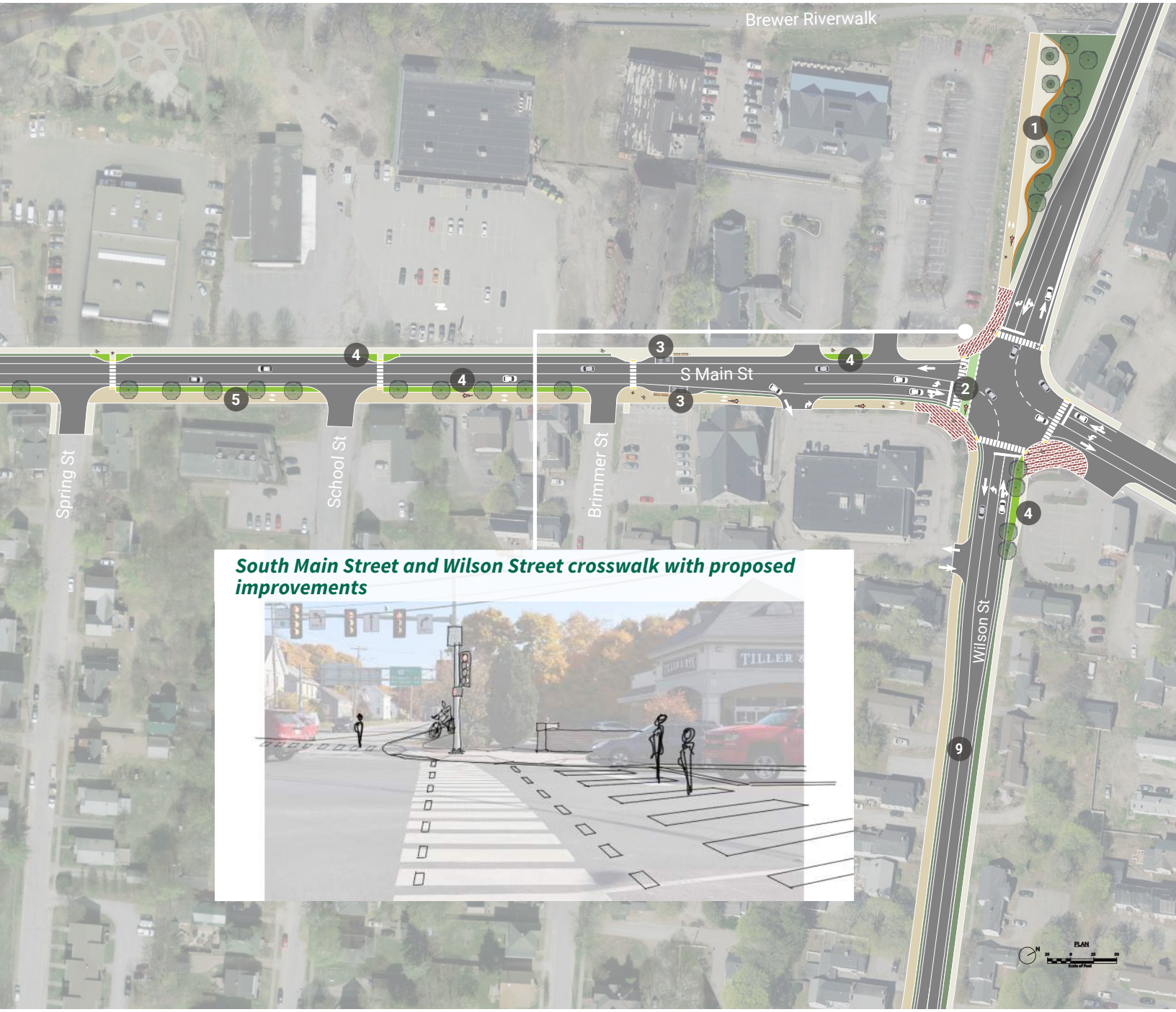
- Adds a bicycle and pedestrian crossing across South Main Street
- Closes driveway on N. Main Street in the intersection and redirects site traffic to



Union St.

- » Access management improvements for Tiller & Rye property
- » Improves signal timing and eliminates right turn on red
- » Reclaims portion of Union Street next to the Riverwalk extension as public green space.

The estimated planning level costs for the roadway recommendations on South Main Street from Wilson Street to Burr Street is $2,860,000. This estimate does not include the improvements at the Wilson Street intersection, which are included in the Village Partnership Initiative Study, and assumes a 30% contingency and construction in 2028. The estimate does not include paving or reconstruction of the existing travelways. The full cost estimate breakdown can be found in Appendix D.




***South Main Street and Wilson Street crosswalk with proposed improvements***

## Land Use Recommendations

The land west of South Main Street, between South Main Street and the Riverwalk, is zoned Convenience Business and contains a mix of uses with several parcels expected to redevelop over the next few years. Across the street is more residential in nature, with mostly single and multi-family development, plus some retail opportunities on South Main Street. Through the public engagement process and meetings with the Study Team, the importance of this area became clear. Given the existing mix of uses between South Main Street and the Penobscot River, the historic mill buildings in the area, and the proximity to the Riverwalk and the Historic Downtown on Center Street, this area has a unique character that needs special consideration moving forward. Additionally, incorporating resiliency, access management to South Main Street and improving riverwalk connectivity and parking standards in the area will make the roadway safer and improve the vibrancy of the entire area.

### Resiliency Zoning

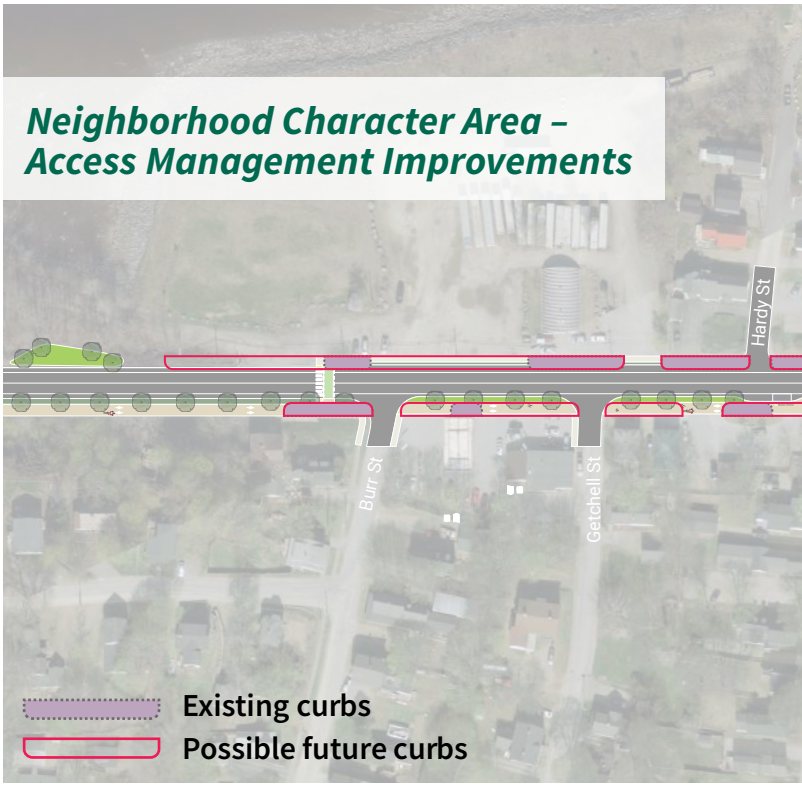
As Brewer considers creating a new Waterfront Zoning District, there is an opportunity to holistically integrate climate resilience into its ordinances by establishing adaptation standards that will help to limit damage and disruption in the future.  The goal of this is to add requirements and guidelines to ensure that Brewer is resilient in the face of risk factors associated with climate change: stormwater flooding and high heat.

### Riverwalk Connectivity

Brewer Riverwalk is envisioned to be a landmark destination with a continuous greenway system along the Penobscot River. To maximize its potential, it is crucial to enhance the connection between the community and the riverfront. The intersection at Main Street and Wilson Street is designed to encourage people to enter the Riverwalk by formalizing the trail head with accent paving, plantings and seating. Its organic design form reflects the shape of the river and adds beauty to the surrounding urban environment. A pocket park, observation deck, and seating terrace along the river are proposed as programmable spaces encouraging visitors to stay longer and return time after time. Additionally, the existing riverfront has potential to be developed into a landscape garden to educate visitors about native plant life. Lastly, maximizing the presence of Mason's Brewery along the riverwalk, an outdoor dining area is proposed with the potential to host markets, parties, festivals, live music, and more.

### Access Management

This segment of South Main Street has a lot of wide curb cuts, particularly on the western (river) side of the road. Reducing the width and number of curb cuts will increase safety by limiting the possible conflicting turning movements in the corridor. As properties are redeveloped and go through the city's site plan review process, there is an opportunity to implement standards to reduce the size of



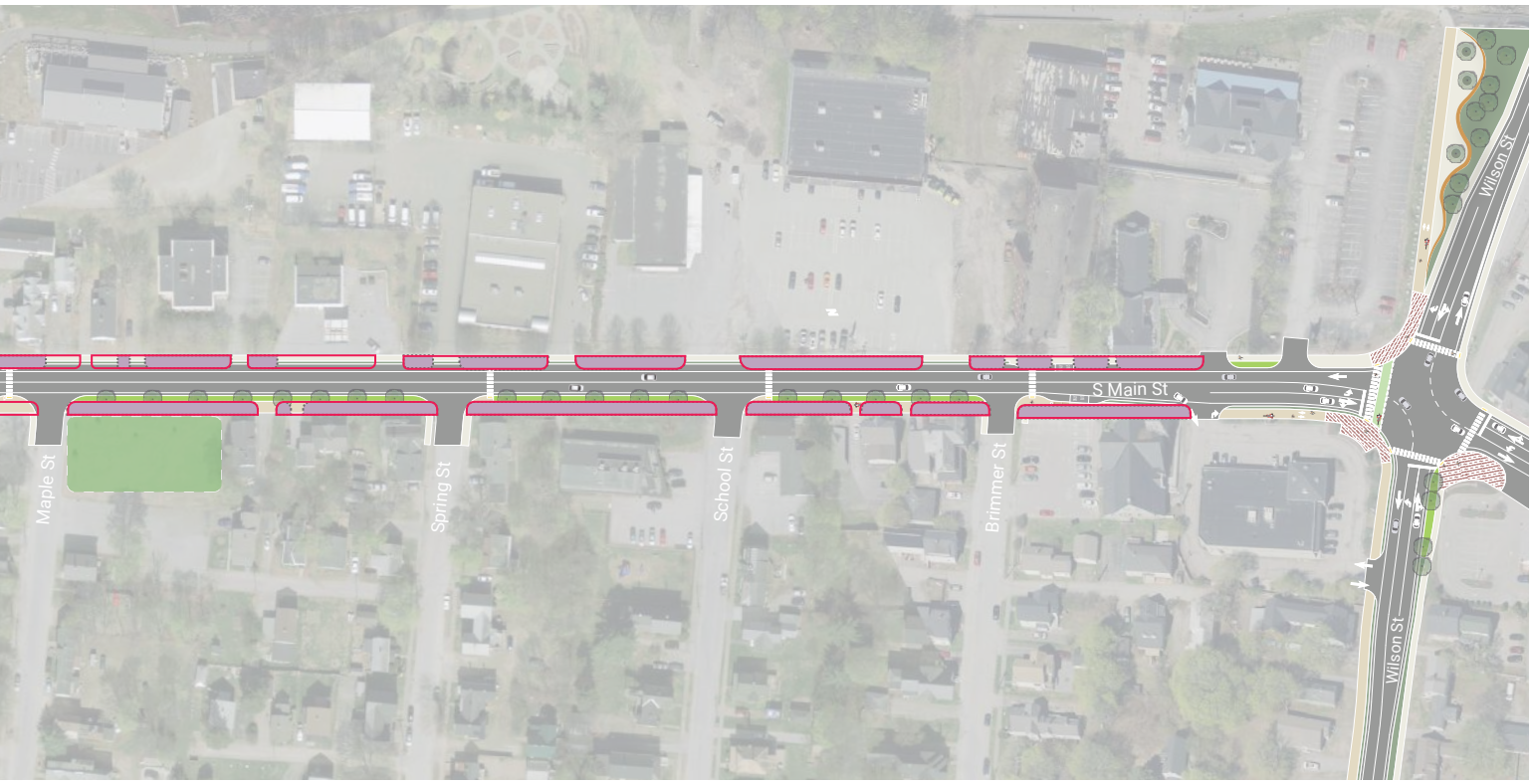
and minimize the quantity of curb cuts and encourage shared driveways.

## Parking Standards

Even though the city's minimum parking requirements are not much higher than the ITE observed parking use rate, this area has many large surface parking lots, which contributes to the area's auto-dependence and roadway safety concerns on South Main Street, despite the fact that the area abuts the Rivewalk and is close to downtown and compact residential areas. In order to improve safety, reduce stormwater runoff, and create a more pedestrian-scale built environment in this area, the following changes to the parking standards are recommended:

- Reduce off-street parking standards to at or below ITE standards.
- Further reduce parking requirements when near public parking.
- Set maximum parking standards at 110% of minimum parking standards.
- Enact shared parking agreements to allow for public parking in private lots when there is excess supply available.
- Prohibit parking in the front setback.
- Require green infrastructure improvements in private parking lots through site plan review.
- Implement time limited parking on South Main Street

***Neighborhood Character Area – Potential Green Infrastructure Improvements in Private Parking Lots***



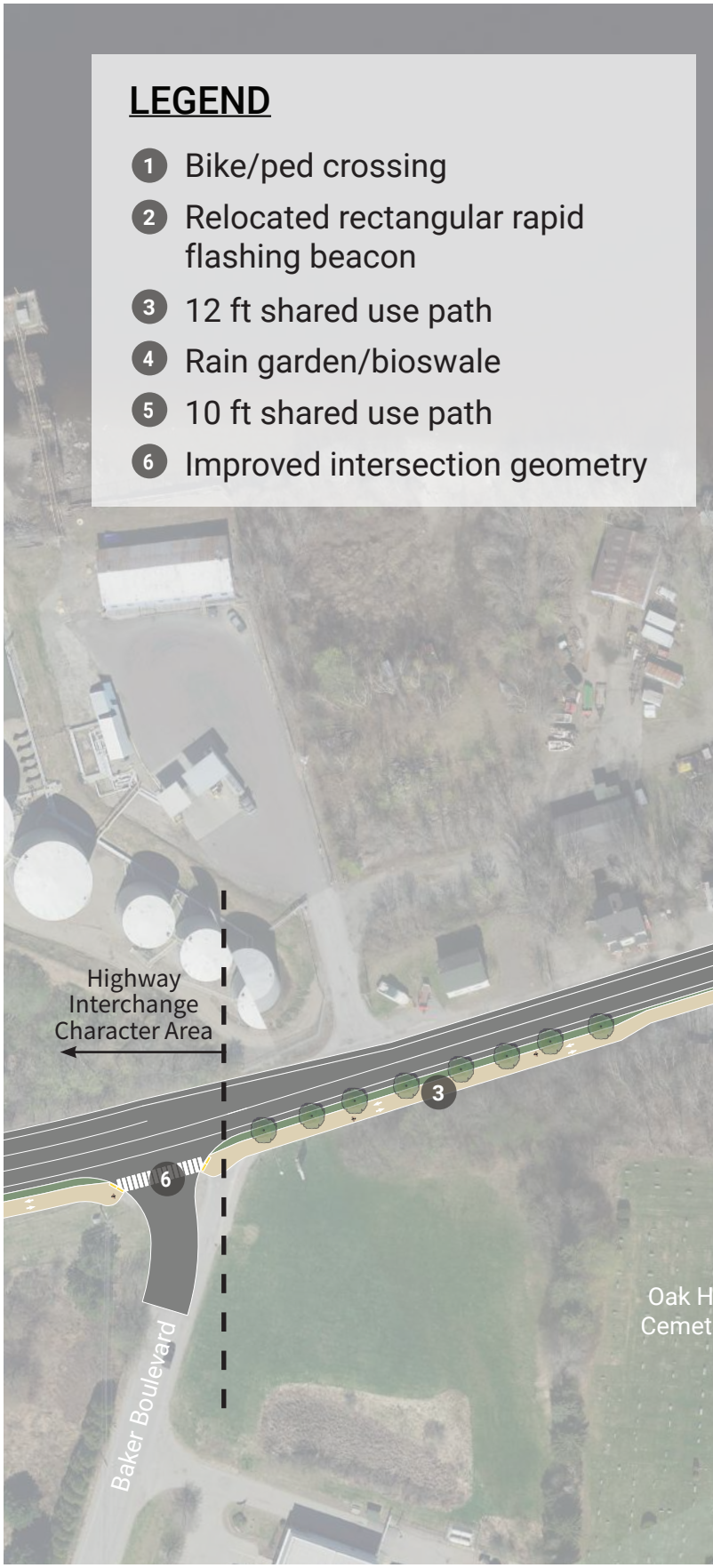
## Gateway Character Area

The Gateway Character Area extends from Burr Street to Baker Boulevard. This area serves as a transitional area between the I-395 highway interchange and the denser mixed-use Neighborhood Character Area. This portion of the corridor is wedged between the Penobscot River and a cemetery. The roadway is hilly, slightly curved, and surrounded by trees. Traffic through this area generally feels fast and there are limited pedestrian facilities, with just one 5.5' sidewalk on the eastern side of the road, and no bicycle facilities.

Once it was determined that the topography and right-of-way width would not accommodate a continuation of the riverwalk in this area, priority was placed on continuing the shared use path on the eastern side of the road.

The proposed alternative continues the 11' travel lanes in each direction, as well as the shared use path on the eastern side of the road as recommended in the last character area. The crosswalk at Burr Street is updated to provide a bicycle and pedestrian crossing to safely connect the shared use path to the terminus of the riverwalk. The continuation of proposed street trees along South Main Street contributes to the aesthetic appeal of street landscape and increases the urban tree canopy. A rain garden is proposed within the existing large green space to help capture and infiltrate stormwater runoff. In order to avoid cemetery impacts, the shared use path narrows to 10' with a reduced esplanade for about 300'.

The estimated planning level costs for the roadway recommendations on South Main Street from Burr Street to Baker Boulevard is $1,500,000. This estimate does not include paving or reconstruction of the existing travelways and assumes a 30% contingency with construction in 2028. The full cost estimate breakdown can be found in Appendix D.



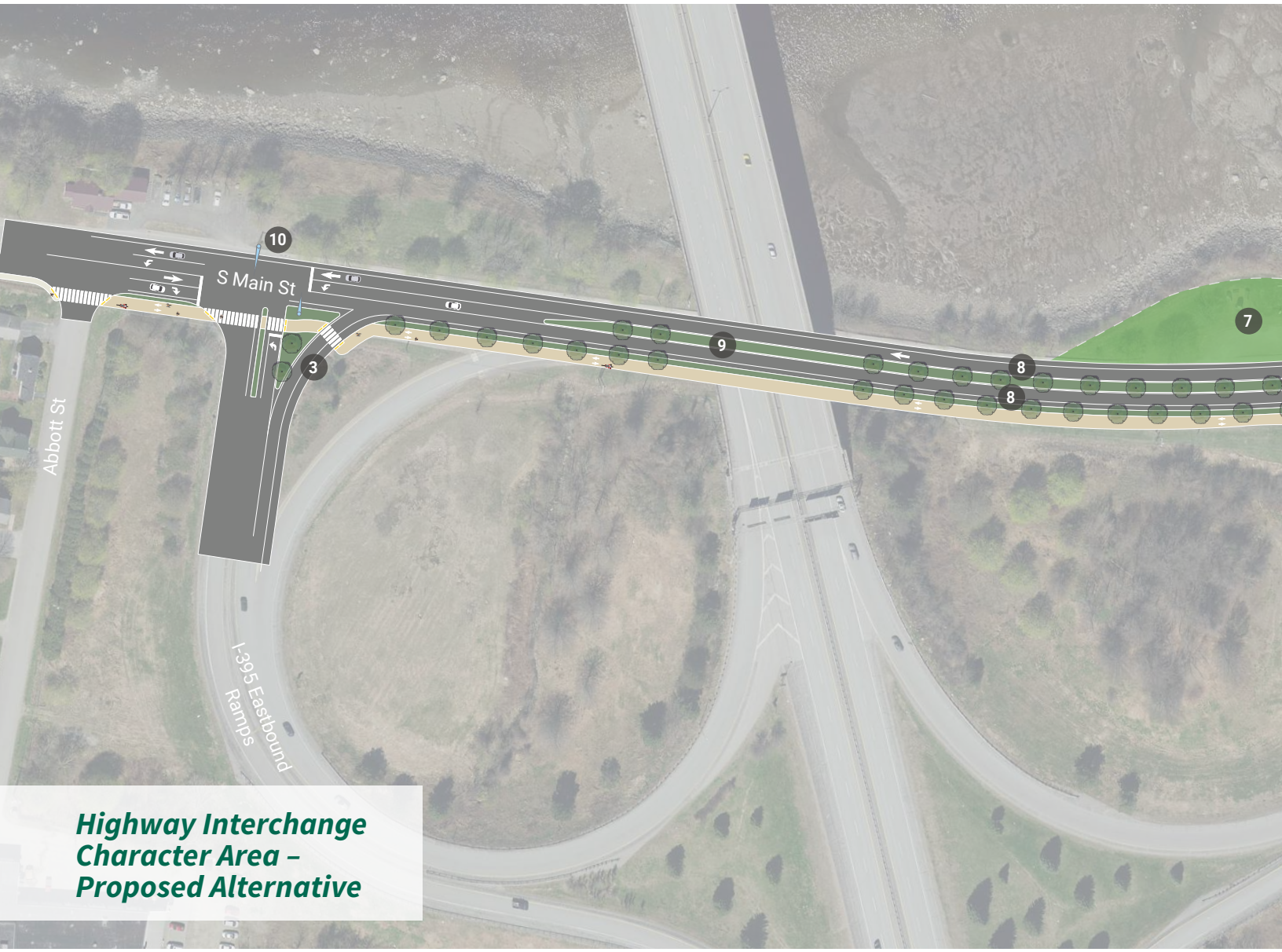
## *Gateway Character Area – Proposed Alternative*

## Highway Interchange Character Area

This segment of South Main Street is dominated by the I-395 interchange (Exit 4) with South Main Street. The I-395 Exit 4 Westbound ramp is stop controlled at the intersection of South Main Street, with a single approach lane for all movements from the off-ramp. Entering the Westbound ramp, a right-turn slip lane is provided for South Main Street northbound from the rightmost through-right lane.

The I-395 Exit 4 Eastbound Ramp intersects with South Main Street at a signalized intersection. There are two approach lanes from the off-ramp: one left turn lane that is controlled at the signal and one sweeping right turn slip lane that is yield-controlled. This slip lane is a MaineDOT high crash location. In addition, the speeds maintained around the sweeping ramp appear fast. The South Main Street southbound approach has a left turn lane at the signal for access onto I-395 Eastbound.

The proposed alternative for this area prioritizes vehicular safety and bicycle and pedestrian safety and accommodations through this area to further reconnect the neighborhoods divided by the highway. The

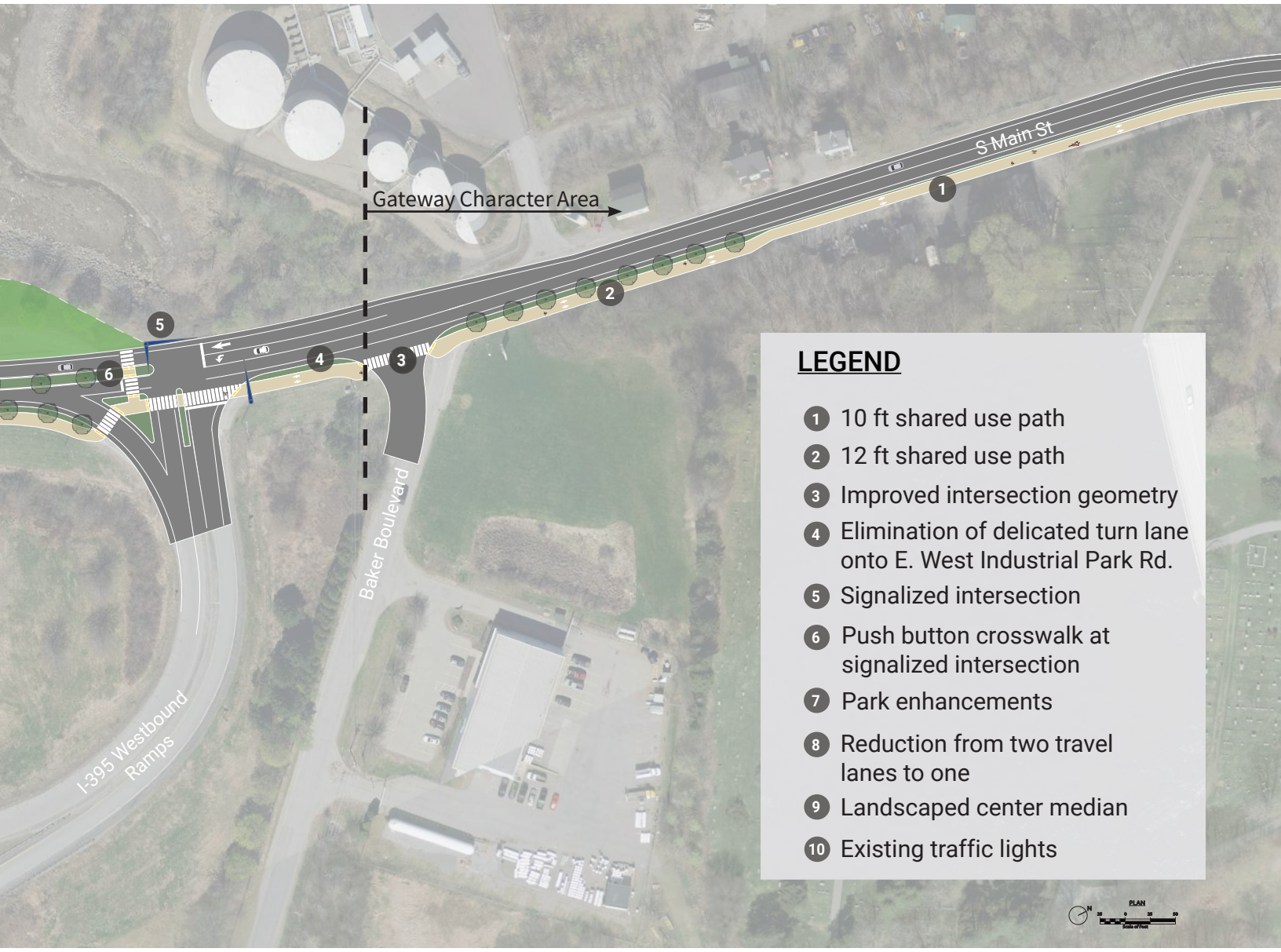



***Highway Interchange Character Area – Proposed Alternative***

12ft shared use path is continued, with safe crossings at the highway interchanges and a signalized crossing between the westbound ramp and the park on the river side of South Main Street. The intersection geometry of the eastbound exit ramp has been realigned to improve safety by tightening up the right turn slip lane to slow traffic and improve sight lines.

The westbound exit ramp intersection with South Main Street is signalized and the right turn only lane into Baker Boulevard has been eliminated. A push-button crosswalk has been added at the intersection to connect the shared use path with the waterfront park on the western side of South Main Street. These improvements will increase safety for all roadway users.

The estimated planning level costs for the roadway recommendations on South Main Street from Baker Boulevard to Abbott St. is $3,740,000. This estimate does not include paving or reconstruction of the existing travelways and assumes a 30% contingency with construction in 2028. The full cost estimate breakdown can be found in Appendix D.

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# 2. Introduction

This report summarizes the Brewer South Main Street Corridor Study performed for the Bangor Area Comprehensive Transportation System (BACTS). Stantec was retained by BACTS in March 2024 to identify solutions to enhance South Main Street in Brewer by looking at the corridor holistically and addressing land use, transit, safety, and mobility for all users by any mode.

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## Study Area

The Study Area for this project is approximately one mile long and extends along South Main Street from the intersection with Abbott Street to the intersection with Wilson Street. Based on the characteristics of the Study Area, it was further divided into three Character Areas:

- Neighborhood - Wilson St. to Burr St.
- Gateway - Burr St. to Baker Boulevard
- Highway Interchange - Baker Boulevard to Abbott St.

## Study Team

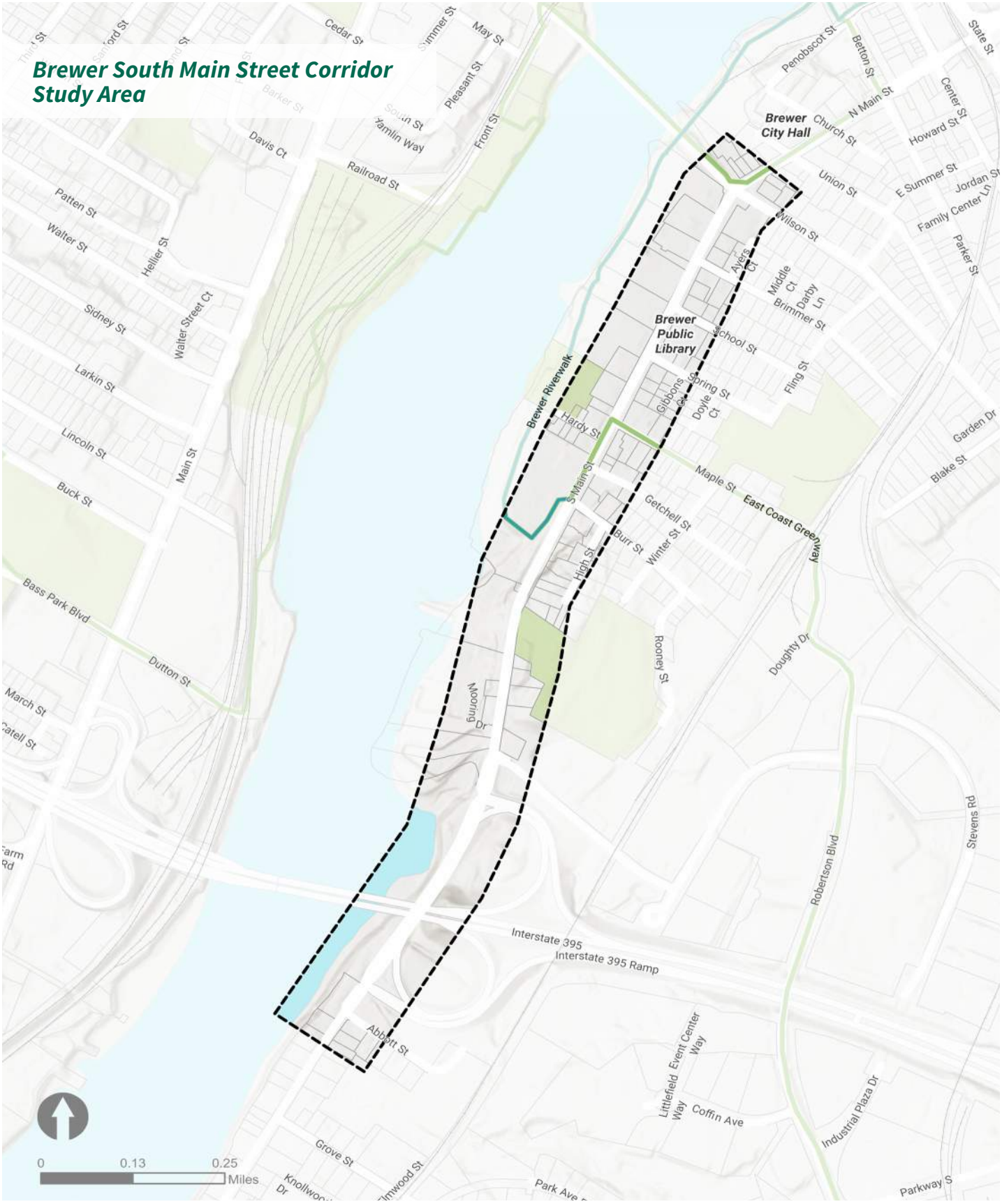
The Study Team guided the planning process and provided guidance and direction throughout the study. Members included:

- Jack Bosies - *Bangor Area Comprehensive Transportation System (BACTS)*
- Jacob Stein - *Bangor Area Comprehensive Transportation System (BACTS)*
- *Sara Devlin - Bangor Area Comprehensive Transportation System (BACTS)*
- Jeremy Caron, P.E. - *City of Brewer, Public Works*
- David Cote - *City of Brewer, Public Works*
- Michael Tupper - *City of Brewer, Public Works*
- Renee Doble - *City of Brewer, Economic Development*
- D'arcy Main-Boyington - *City of Brewer, Economic Development*
- Linda Johns - *City of Brewer, Planning*
- Claire Winter - *MaineDOT*

## Kickoff Meeting

The Kickoff Meeting was held on April 22, 2024 with the Stantec Team. At this meeting, the Study Team reviewed the project scope and timeline and identified the following issues within the study area:

- The Shipyard Parcel (BSA Reality LLC Parcel 28-164) on the river side of South Main Street may be developed soon.
- The former JR Redemption Parcel (Mona Memorial LLC Parcel 28-174), Penobscot Rentals LLC Parcel 29-107, and Bruce Blackmer Parcel 29-110/29-111 also may be further developed.
- There are several parcels in the Study Area that may be developed or redeveloped soon. The City of Brewer is open to ideas and potential uses of these parcels.
- There are bicycle and pedestrian safety concerns for South Main Street between Burr St and I-395. The roadway narrows in this area not leaving much space for bicycle and pedestrian accommodation.
- The Study Team expressed concerns for unknown impacts of redistributed traffic from South Main Street to/from the North to I-395 Exit 4 as a result of the I-395 extension expected to open in 2025.


Brewer South Main Street Corridor Study Area
Brewer City Hall
Brewer Public Library
Brewer Riverwalk
East Coast Greenway
Penobscot St
Betton St
State St
N Main St
Church St
Center St
Howard St
Union St
E Summer St
Jordan St
Family Center Ln
Parker St
Wilson St
Ayers Ct
Middle Ct
Darby Ln
Brimmer St
School St
Fling St
Spring St
Gibbons Ct
Doyle Ct
Hardy St
S Main St
Maple St
Garden Dr
Blake St
Getchell St
Burr St
Winter St
High St
Rooney St
Dougherty Dr
Mooring Dr
Railroad St
Front St
Pleasant St
May St
Cedar St
Davis Ct
Hamlin Way
Patten St
Walter St
Hellier St
Walter Street Ct
Sidney St
Larkin St
Lincoln St
Main St
Buck St
Bass Park Blvd
Dutton St
March St
Interstate 395
Interstate 395 Ramp
Robertson Blvd
Stevens Rd
Abbott St
Littlefield Event Center Way
Coffin Ave
Industrial Plaza Dr
Grove St
Park Ave
Parkway S
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0.13
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Miles

## Study Team Meetings

Additional Study Team meetings were held on the following dates:

- Road Safety Audit and Meeting #1 - May 23, 2024 (in-person)
- Meeting #2 - August 1, 2024 (virtual)
- Meeting #3 - October 31, 2024 (virtual)

The Road Safety Audit and Meeting #1 in May consisted of a day-long meeting where the Study Team and other municipal representatives reviewed safety data along the South Main Street Corridor, conducted a site visit, and then returned indoors to discuss what the group observed.

# Purpose and Need

The following Purpose and Need statement was endorsed by the Study Team:

> Improve **safety and accessibility** for all users (walkers, bikers, drivers, and transit riders).
>
> Expand **active transportation** connections and facilities.
>
> Support **future growth and economic development** by enhancing the look, feel, and character of the streetscape.


Daniels

# 3. Public Engagement

This study included an extensive public engagement component. There were two public meetings, a survey with over 50 responses, and roundtable discussions for members of the public to share their comments and concerns with the Study Team.

## Community Survey

A map-based community survey was released in May 2024 using the Social Pinpoint platform. In order to maximize engagement and reduce survey fatigue, this survey simultaneously requested input on both this study and the Brewer Village Partnership Initiative (VPI) Study, which was also being led by Stantec.

Social pinpoint allows users to provide geographically-specific feedback by placing a pin on the map and entering a comment about that location. Users can also "like" a comment entered by another user, which gave the Study Team additional insights to help prioritize focus areas and improvements. The survey was open for a month and distributed to residents across the city's social media channels. Representatives from BACTS also attended the Riverwalk Festival in June 2025 to solicit feedback on both projects. This feedback was incorporated into the Social Pinpoint survey. There were over 65 unique comments and nearly 100 likes on the map within the Study Area.

### BREWER SOUTH MAIN STREET CORRIDOR SOCIAL PINPOINT SURVEY - KEY FEEDBACK OVERVIEW

#### Neighborhood Character Area (Wilson St. to Burr St.)

- North Main Street / South Main Street & Wilson Street Intersection:
  - This entire intersection is unsafe for pedestrians. Specifically, cars turning right from N. Main onto the bridge and cars turning right from the bridge onto S. Main are accustomed to rolling through the intersection and often roll through the crosswalk without yielding as pedestrians are trying to cross. (**+8 likes**)
  - Have the traffic lights stop all traffic to allow pedestrians to cross, or add blinking yellow cross walk lights, and cameras. Or move the crosswalk away from the busy intersection. (**+4 likes**)
  - There need to be some traffic-calming ideas utilized at this intersection, whether it is street murals, islands of some sort, plantings... something. (**+1 like**)
- Public, clean restrooms needed on Riverwalk (**+2 likes**)
- Add a crosswalk at Burr Street (**+2 likes**)

#### Gateway Character Area (Burr St. to Baker Boulevard)

- Add more sidewalk towards Orrington (**+1 like**)
- Pedestrian environment/walking feels unsafe

#### Highway Interchange Character Area (Baker Boulevard to Abbott St.)

- This section of South Main either needs a bike lane or discreet signs to bike on the sidewalk (and keep roadwork signs off the sidewalk). Very stressful and dangerous to ride bike here or even walk on the sidewalk.

***Social Pinpoint survey results map***

# Public Meeting #1 and Virtual Roundtables

The first public meeting was held on September 30th, 2024. Like the survey, this meeting was for both the Brewer South Main Street Corridor project and the Brewer VPI project. The meeting was held in Council Chambers, with one session at 2pm and a second session at 6pm. Approximately 30 people attended in total. At these meetings, the Stantec Team gave a brief presentation and then answered questions and solicited feedback from the public regarding desired street improvements, intersection concerns and ideas, preferred cross-sections of key corridors, and future zoning/land uses. In advance of this meeting, the Stantec Team coordinated with the City and BACTS to host 5 virtual roundtables for specific user groups, sharing similar content as the public meeting. Only the roundtables for local businesses and the Bangor Area Recovery Network (BARN) had attendees, with a total of 5 people participating. Key takeaways from the Public meeting and roundtables are summarized below:

## Street Improvement Priorities:

- Bicycle lanes and bus shelters were the most requested improvements.
- Additional on-street parking was not a high priority.

## Intersections Review:

- Pedestrian crossings are challenging across the board.
- Existing RRFB's (push button flashing lights at a crosswalk) are very popular.

## Street Cross Sections:

- On-street bike facilities are desirable, even near the Riverwalk.
- Separated bicycle facilities were preferred.
- Street alternatives that added street trees were generally more popular.

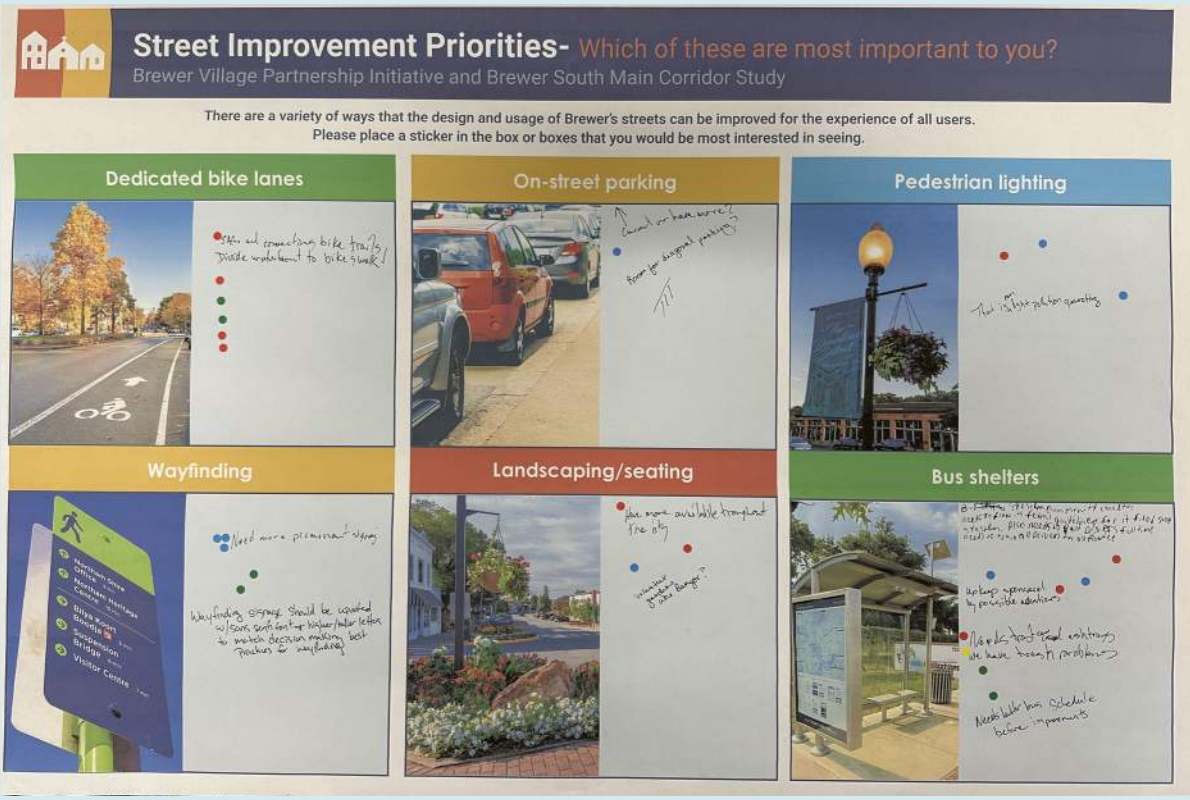
## Future Zoning:

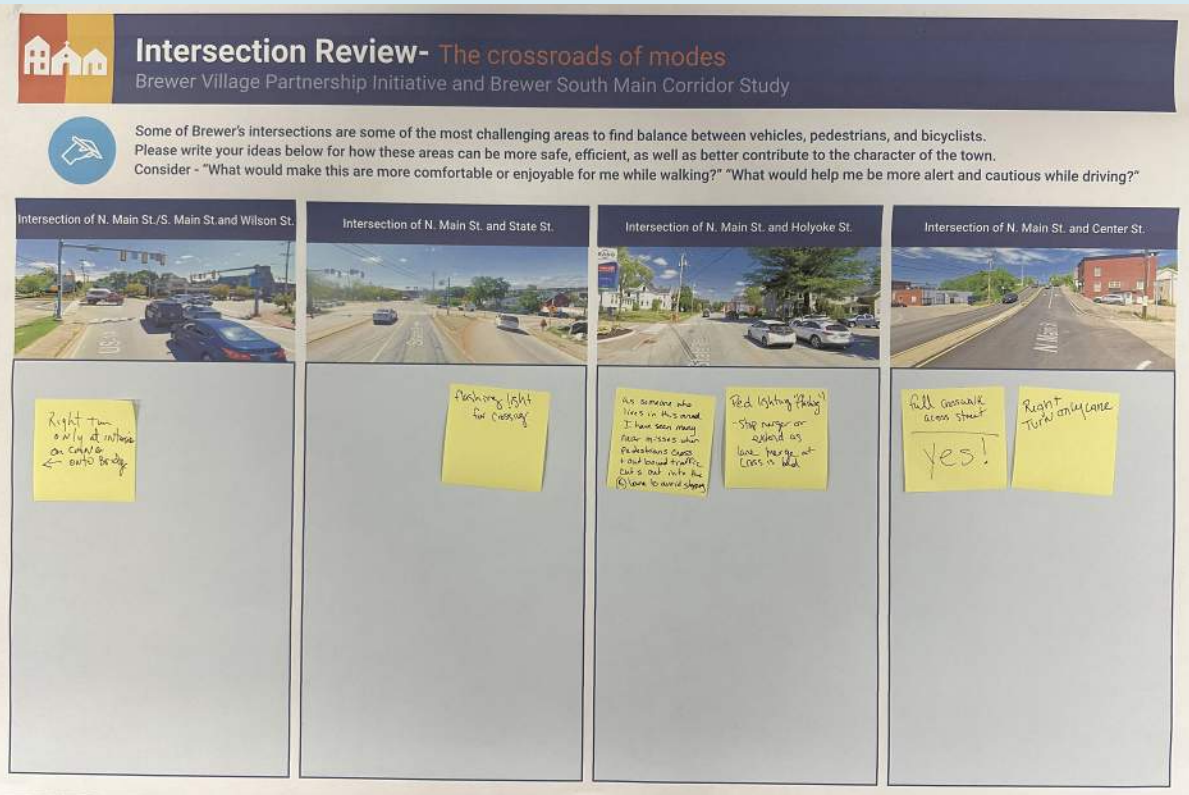
- Mixed Use Development was desired most frequently.
- Housing in this area is desirable.
- Active recreation, community space, and commercial development to compliment the Riverwalk was frequently requested.

# Public Meeting #2

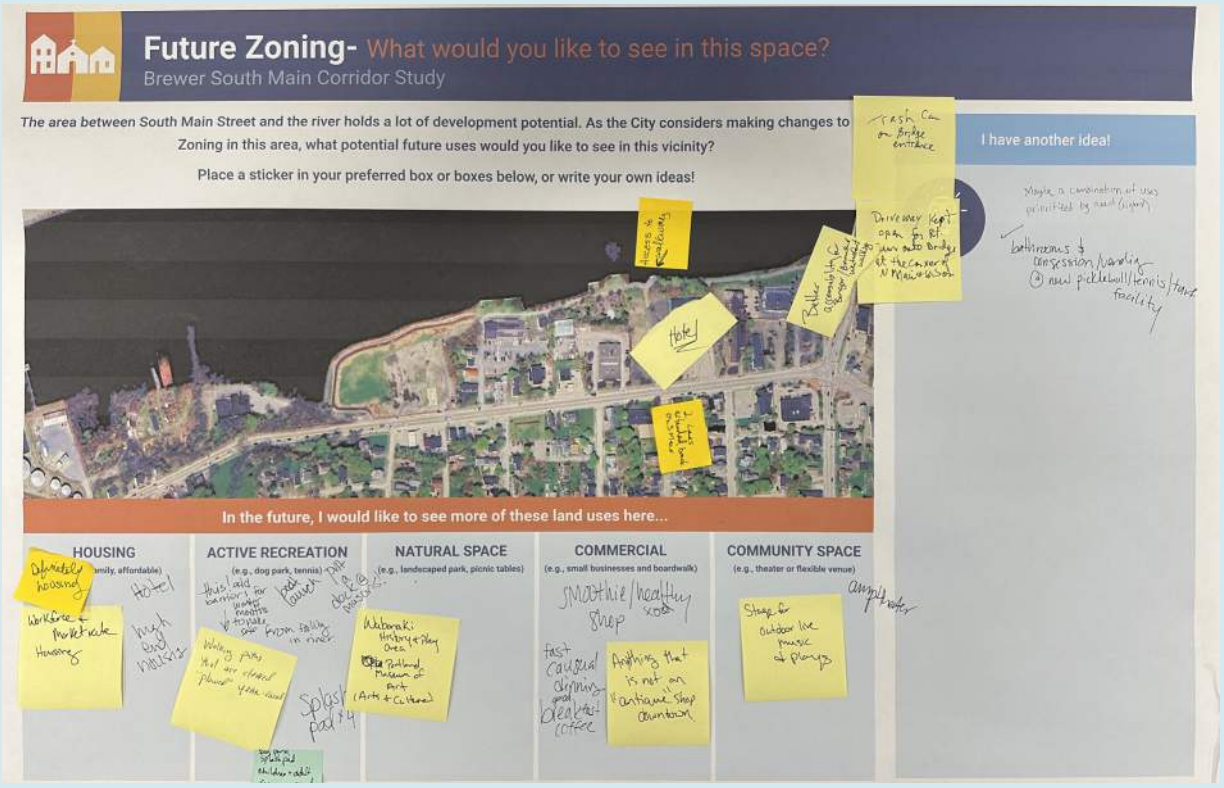
The second public meeting was held from 4pm to 6pm on December 18th in City Council Chambers. At this meeting, the Stantec Team reviewed the study process to date and shared the draft alternatives with the public for feedback. The presentation and posters of the draft recommendations were also posted on the City's website for additional feedback. The comments heard at this meeting will be noted later in this report under the recommendations for each Character Area.

# PUBLIC MEETING #1 - INTERACTIVE POSTERS



# PUBLIC MEETING #1 - INTERACTIVE POSTERS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# 4. Existing Conditions

In order to fully understand the Study Area, Stantec completed an Available Data Summary report, including an in depth review of available plans, reports, and data. The full report can be found in Appendix A. Stantec also completed an Assessment of Current Conditions, which includes an analysis of multimodal traffic, road safety and land uses, which is available in Appendix B. This section of the report includes an overview of both documents.

## Review of Existing Plans

Stantec reviewed recently-completed local and regional plans and reports relevant to this study. This review focused on findings and recommendations within the Study Area to use as background and a basis for the recommendations in this study. Below is a summary of findings from existing plans and reports that are associated with key locations within the Study Area.

### PRIOR PLANS AND REPORTS REVIEWED

- City of Brewer Comprehensive Plan | March 2015
- Comprehensive Plan Appendix A: Waterfront Master Plan (Penobscot Landing) | March 2015
- Brewer Penobscot Landing Report | 2004
- Heads Up! Pedestrian Safety Action Plan | January 2021
- Brewer Revitalization Plan – Highland Street
- Action Plan for Walkability and Place-making in Brewer, Maine | October 2017
- Brewer Retail Consumer Survey | 2023
- BACTS Long Range Pedestrian and Bicycle Transportation Plan | July 2019
- BACTS Vision 2043 | November 2023
- BACTS Draft Transportation Improvement Program
- BACTS Penobscot Climate Vulnerability Analysis | 2022
- BACTS Penobscot Regional Inventory of 2019 Greenhouse Gas Emissions | 2022

# Intersection of Wilson Street and North Main Street / South Main Street

The following plans and studies addressed existing conditions and proposed recommendations for the intersection of Wilson Street and North Main Street / South Main Street.

## Brewer Comprehensive Plan

### RECOMMENDATIONS

- Waterfront Zoning District: Establish a new waterfront district, between the three bridges, including the areas between the river and Main Street, to promote a variety of retail, restaurant and entertainment uses along the waterfront; high-density residential developments (but not single-family dwellings); and water-related uses, parks, and trails. This district will encourage the creative use of existing underutilized structures consistent with the goal of creating a vibrant, attractive waterfront area. The Waterfront Area is broken down into two areas based on density of use.
  - The "Dense Use" area is located between the Penobscot and Chamberlain Bridge areas, and occurs at the widest point between the River and Main Street.
  - The "Less Dense Use" area stretches from the Chamberlain Bridge south to Harris Street. Features include a multi-use trail, an open green, a Children's Garden, an Outdoor Public Events Space, and parking. Additional amenities farther south should include a boat launch, shelter, picnic and beach areas, and additional parking.
- Streetscape Improvement Area: Located along Main Street, from Chamberlain Street south to Harris Street, the streetscape improvement area aims to enhance mobility and safety, improve aesthetics and open space access, and reaffirm the community's history. Improvements include the following items:
  - The addition of designated bicycle lanes, one along the west edge of Main Street and the other along the east edge;
  - Parallel parking lanes where space and traffic considerations permit;
  - Vehicular-scale and pedestrian-scale lights at the back of the street curbs;
  - Public sidewalks of a minimum 5- foot width on both sides of the street;
  - Street trees lining both side of Main Street, either at the back of curb or back of sidewalk, as space permits.
- Traffic efficiency. Provide for traffic efficiency improvements whenever possible rather than new construction or rerouting projects on South and North Main, Wilson, and State Streets, to reduce noise and congestion, improve visual quality, and strengthen economic potential.

## BACTS Long Range Pedestrian and Bicycle Transportation Plan

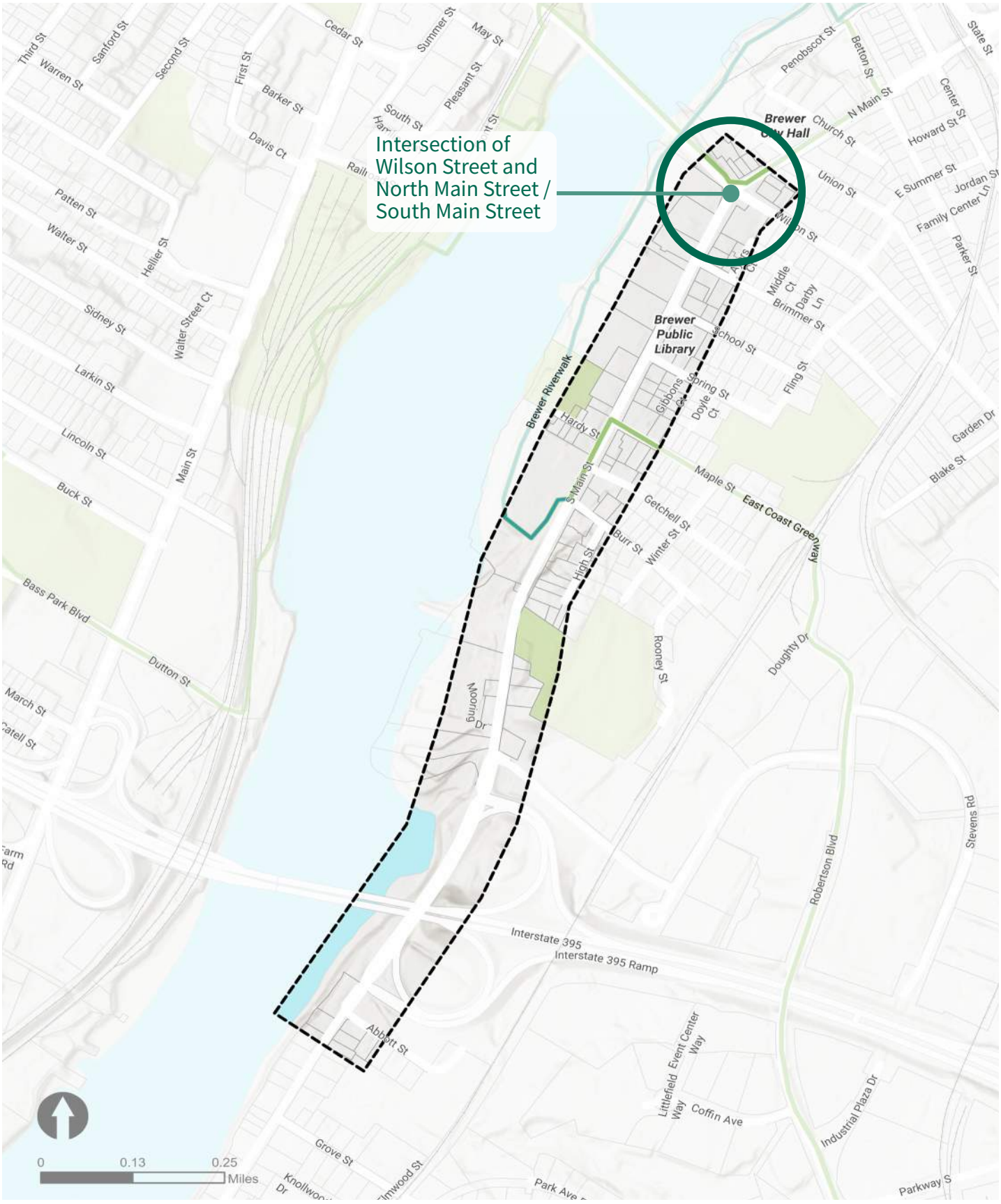
### RECOMMENDATIONS

- Intersection Improvements: This intersection was the #1 priority in Brewer
  - Notes about the problem: Speeding traffic, crosswalks are too long, roads/crosswalks are poorly lit, signals not present or working well, motorists' turn signals conflict with ped crossing, too much traffic

## Heads Up! Pedestrian Safety Action Plan

### RECOMMENDATIONS

- Calm turning traffic
  - Complete a field review and a safety assessment to determine the appropriate turning radius for each leg of the intersection
  - Evaluate the appropriateness of using flexible delineators to tighten the radius of intersection corners to slow turning vehicles
  - Consider changing radii (through curb extensions or other strategies) of the southwest and northwest corners to slow turning traffic
- Modify pedestrian signals to improve crossing safety
  - Consider a leading pedestrian interval (LPI) phase to reduce the number of potential conflicts between turning vehicles and pedestrians
- Increase visibility of crosswalks
  - Evaluate the appropriateness of flexible delineators to create seasonal curb extensions to enhance pedestrian visibility and shorten crossing distances
  - Evaluate current overhead lighting and consider upgrading to LEDs and expanding the number of luminaires
- Increase ADA functionality of crosswalks
  - Consider upgrading to Accessible Pedestrian Signals


Intersection of Wilson Street and North Main Street / South Main Street
Brewer City Hall
Brewer Public Library
Brewer Riverwalk
East Coast Greenway
Interstate 395
Interstate 395 Ramp
Third St
Warren St
Sanford St
Second St
First St
Barker St
Cedar St
Summer St
May St
Pleasant St
South St
Davis Ct
Patten St
Walter St
Hellier St
Sidney St
Walter Street Ct
Larkin St
Lincoln St
Main St
Buck St
Bass Park Blvd
Dutton St
March St
Penobscot St
Betton St
State St
N Main St
Church St
Center St
Howard St
Union St
E Summer St
Jordan St
Family Center Ln
Parker St
Middle Ct
Darby Ln
Brimmer St
School St
Fling St
Spring St
Gibbons Ct
Doyle Ct
Hardy St
S Main St
Maple St
Garden Dr
Blake St
Getchell St
Burr St
Winter St
High St
Rooney St
Doughty Dr
Mooring Dr
Robertson Blvd
Stevens Rd
Abbott St
Littlefield Event Center Way
Coffin Ave
Industrial Plaza Dr
Parkway S
Grove St
Park Ave
0
0.13
0.25
Miles

# South Main Street – Brimmer Street to Burr Street

The following plans and studies addressed existing conditions and proposed recommendations for South Main Street between Brimmer Street and Burr Street.

## Brewer Comprehensive Plan

### RECOMMENDATIONS

- Waterfront Zoning District: Establish a new waterfront district, between the three bridges, including the areas between the river and Main Street, to promote a variety of retail, restaurant and entertainment uses along the waterfront; high-density residential developments (but not single-family dwellings); and water-related uses, parks, and trails. This district will encourage the creative use of existing underutilized structures consistent with the goal of creating a vibrant, attractive waterfront area. The Waterfront Area is broken down into two areas based on density of use.
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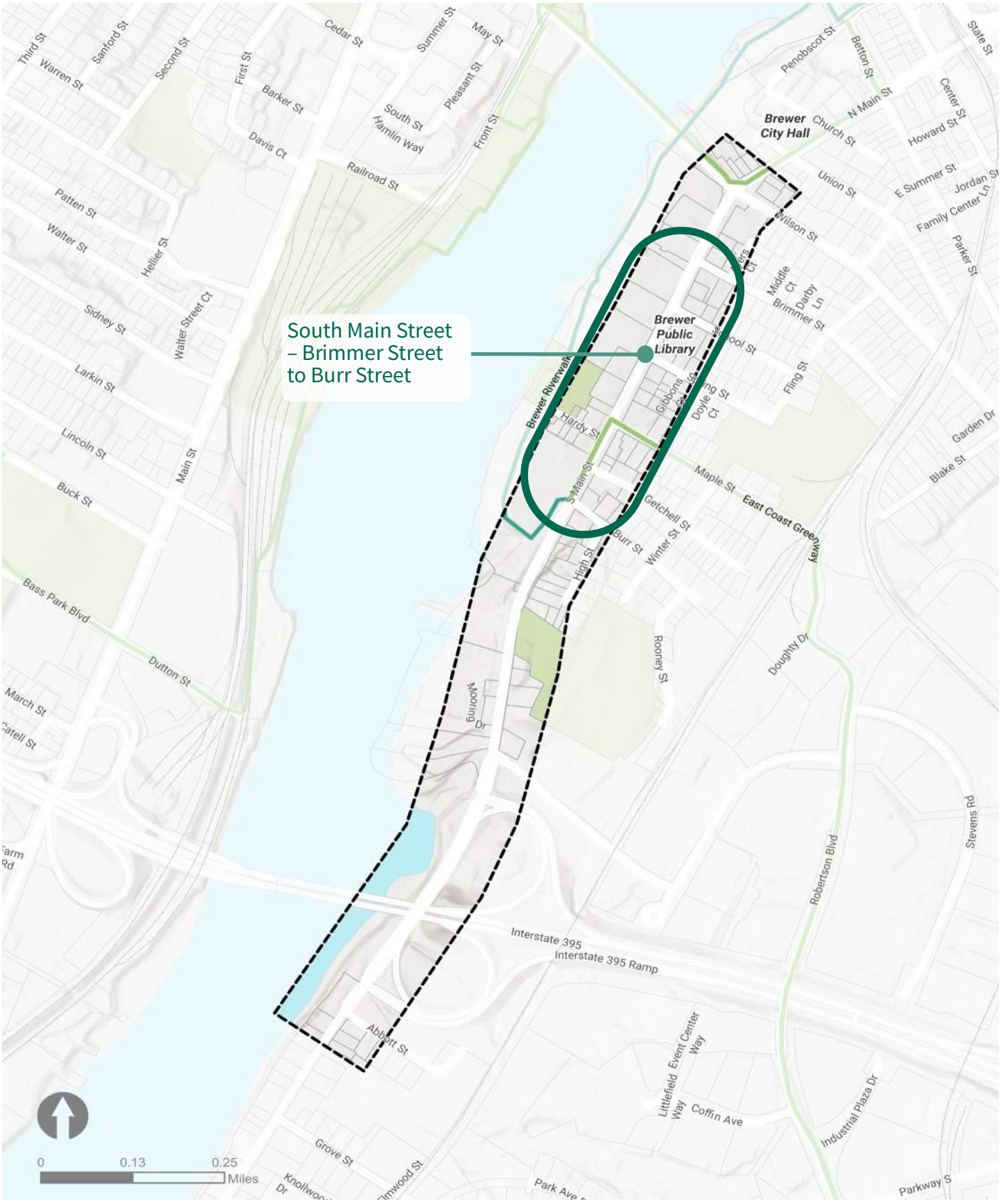
- Traffic efficiency. Provide for traffic efficiency improvements whenever possible rather than new construction or rerouting projects on South and North Main, Wilson, and State Streets, to reduce noise and congestion, improve visual quality, and strengthen economic potential.


South Main Street – Brimmer Street to Burr Street
Brewer City Hall
Brewer Public Library
Brewer Riverwalk
East Coast Greenway
Interstate 395
Interstate 395 Ramp
Third St
Warren St
Sanford St
Second St
First St
Cedar St
Summer St
May St
Barker St
Pleasant St
South St
Hamlin Way
Front St
Davis Ct
Railroad St
Penobscot St
Betton St
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N Main St
Center St
Howard St
Church St
Union St
E Summer St
Jordan St
Family Center Ln
Parker St
Wilson St
Middle Ct
Darby Ln
Brimmer St
Fling St
Garden Dr
Blake St
Patten St
Walter St
Hellier St
Sidney St
Walter Street Ct
Larkin St
Lincoln St
Main St
Buck St
Bass Park Blvd
Dutton St
March St
Hardy St
S Main St
Maple St
Getchell St
Burr St
Winter St
High St
Gibbons St
Doyle Ct
Rooney St
Doughty Dr
Mooring Dr
Robertson Blvd
Stevens Rd
Abbott St
Littlefield Event Center Way
Coffin Ave
Industrial Plaza Dr
Parkway S
Grove St
Park Ave
0
0.13
0.25
Miles

# South Main Street – Baker Boulevard to Abbott Street

The following plans and studies addressed existing conditions and proposed recommendations for South Main Street between Baker Boulevard to Abbott Street.

## Brewer Comprehensive Plan

### RECOMMENDATIONS

- Waterfront Zoning District: Establish a new waterfront district, between the three bridges, including the areas between the river and Main Street, to promote a variety of retail, restaurant and entertainment uses along the waterfront; high-density residential developments (but not single-family dwellings); and water-related uses, parks, and trails. This district will encourage the creative use of existing underutilized structures consistent with the goal of creating a vibrant, attractive waterfront area. The Waterfront Area is broken down into two areas based on density of use.
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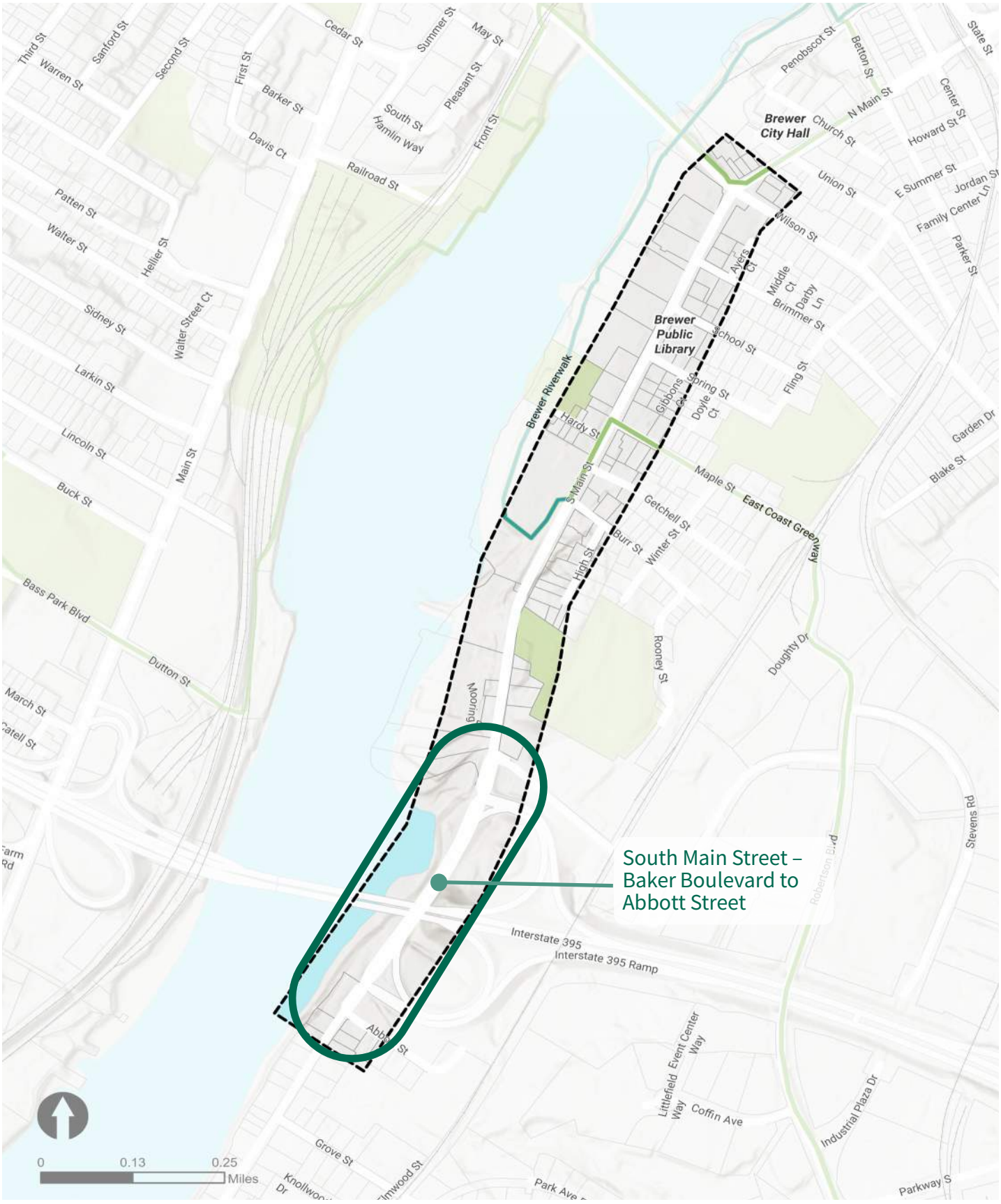
## BACTS Long Range Pedestrian and Bicycle Transportation Plan

### RECOMMENDATIONS

- Improve shoulders and conduct a Road Diet for South Main Street under I-395 overpass.


South Main Street – Baker Boulevard to Abbott Street
Brewer City Hall
Brewer Public Library
Brewer Riverwalk
East Coast Greenway
Interstate 395
Interstate 395 Ramp
Penobscot St
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State St
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Church St
Howard St
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Parker St
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Avers Ct
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Brimmer St
School St
Fling St
Spring St
Gibbons Ct
Doyle Ct
Hardy St
S Main St
Maple St
Garden Dr
Blake St
Getchell St
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Winter St
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Dutton St
March St
Littlefield Event Center Way
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Park Ave
0
0.13
0.25
Miles

# Multimodal Analysis

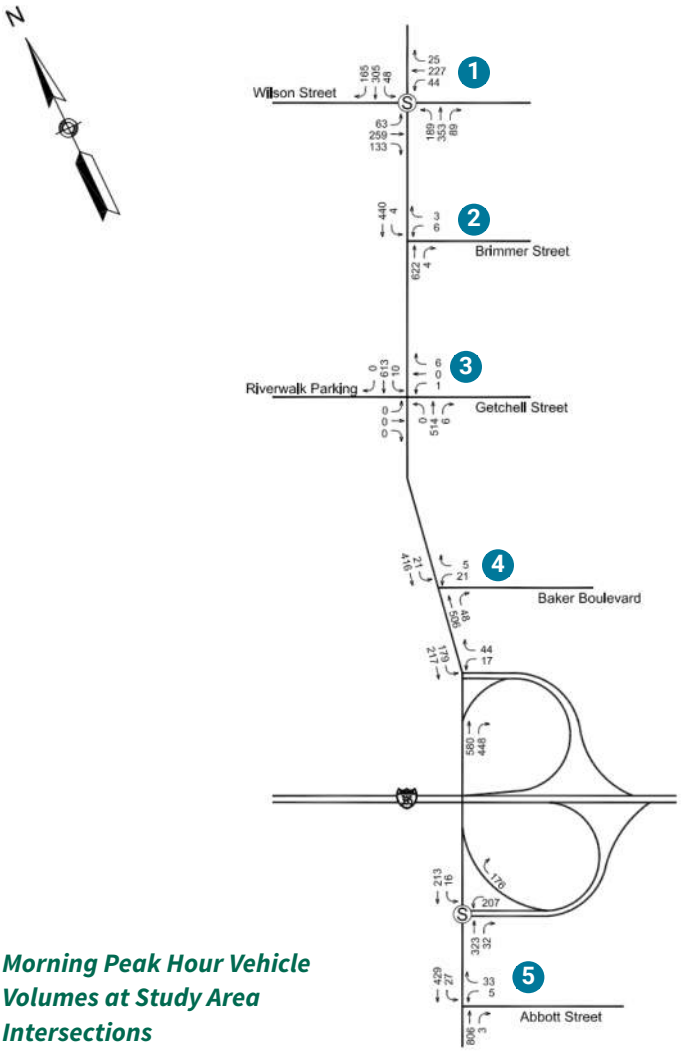
A detailed Multimodal Analysis was completed in the Assessment of Current Conditions. This document is available in its entirety in Appendix B.

## Traffic Volumes

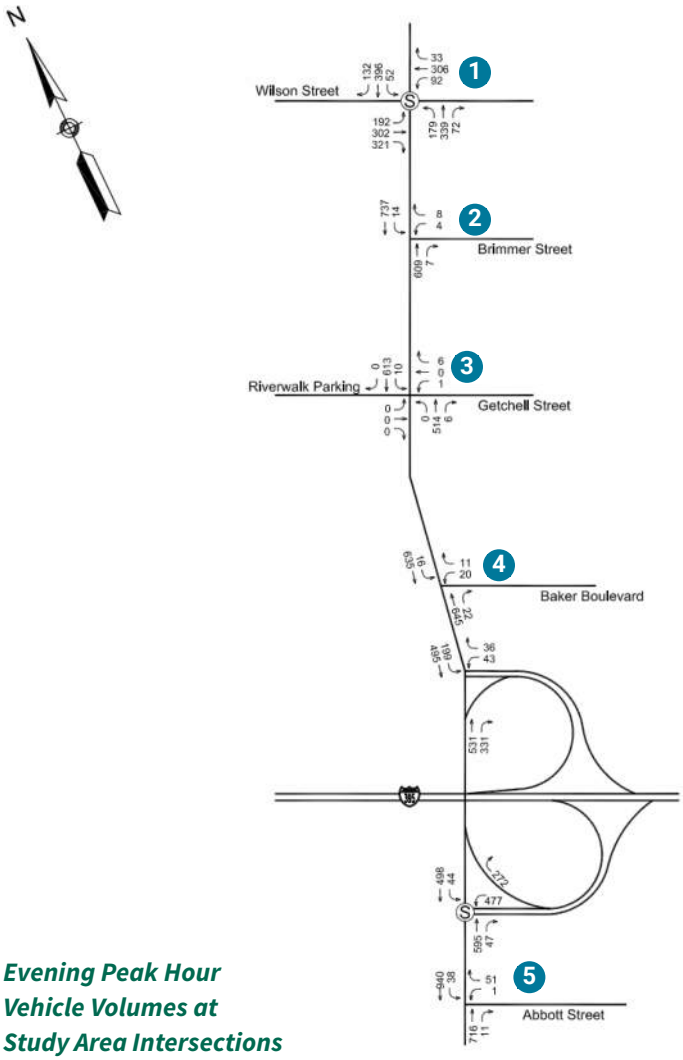
Factored Average Annual Daily Traffic Volumes for the Study Area were accessed through the MaineDOT Public Map Viewer. Traffic volumes are highest along the State-controlled corridors (North Main Street, State Street, and Wilson Street) and are significantly lower on the surrounding residential streets.

To further evaluate existing and future traffic operations, BACTS led the turning movement count (TMC) data collection. The traffic data was collected using video-based traffic counting equipment and conducted over twelve-hour, mid-week periods to capture the operations of a general workday. The following intersections were collected by BACTS in the months of April and May of 2024 and between 7am and 7pm:

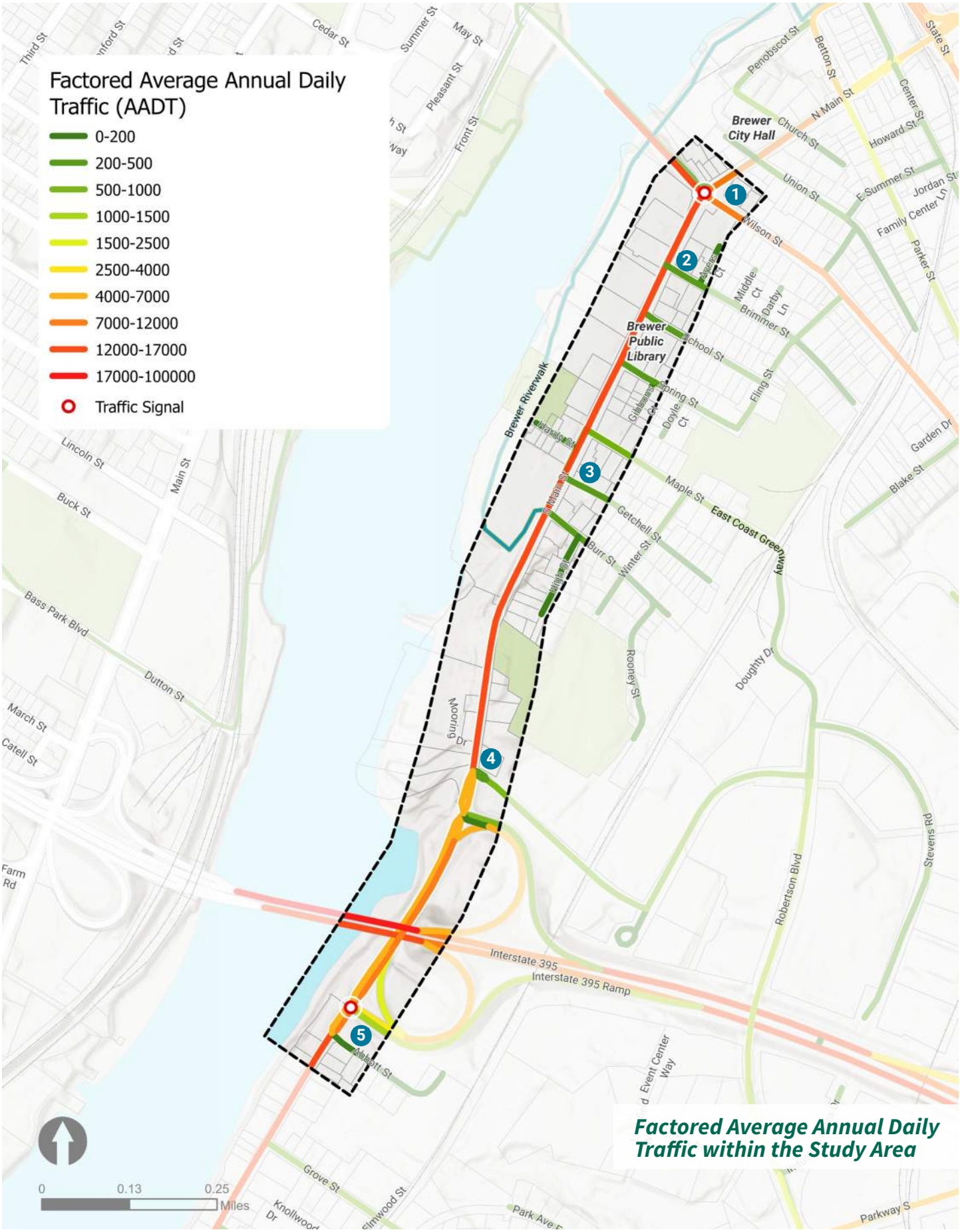
1. North Main Street and South Main Street at Wilson Street – Collected April 23, 2024
2. South Main Street at Brimmer Street – Collected May 9, 2024
3. South Main Street at Getchell Street – Collected May 23, 2024
4. South Main Street at Baker Boulevard (Baker Boulevard) – Collected June 13, 2024
5. South Main Street at Abbott Street – Collected June 13, 2024




***Morning Peak Hour Vehicle Volumes at Study Area Intersections***




***Evening Peak Hour Vehicle Volumes at Study Area Intersections***




***Factored Average Annual Daily Traffic within the Study Area***

## Vehicular Operations

Level of Service (LOS), an expression of traffic flow, is a commonly used and accepted measure of effectiveness of traffic operating conditions, typically focused on peak hours of travel. It considers such factors as automobile and truck volumes, roadway width, speed, grades, parking restrictions, pedestrian activity, and traffic control devices.

LOS is designated in a range from Level "A", which is where a roadway's operating conditions are at their least delayed and congested, to Level "F", which indicates excessive delays and typically high levels of congestion. Levels "A" through "D" are typically associated with acceptable levels of traffic operation within urban areas.

The Synchro traffic analysis software package (Version 11) was used to evaluate operating conditions at signalized intersections for existing traffic conditions. The analysis methodology is based on the Federal Highway Capacity Manual (HCM) and is widely accepted for use by MaineDOT.

Nearly all studied intersections within the Brewer South Main Street Corridor Study area operate acceptably at LOS C or better during the morning peak hour period. The Baker Boulevard stop-controlled approach operates at LOS D with average vehicle delays estimated at 30.1 seconds and 95th percentile queue of 30 feet. The stop-controlled I-395 Westbound Off-Ramp operates at LOS E.

During the afternoon peak hour period, most studied intersections operate acceptably at LOS C or better, except for the signalized intersection of North/South Main Street at Wilson Street which operates at LOS D. The worst performing lane is the Wilson Street eastbound left-turn lane, which operates at LOS F with an average vehicular delay of 93.6 seconds and a 95th percentile queue of 313 feet, exceeding the existing storage by approximately 100 feet. This queue impacts the operations of the other lanes approaching this intersection from the Chamberlain Bridge.

The next worse performing lanes of this intersection during the afternoon peak hour period are the Wilson Street left-turn lane, Wilson Street westbound through-right lane, North Main Street southbound left-turn lane, and Main Street southbound through lane, which all operate at LOS D.

At the intersection of South Main Street and I-395 Westbound Ramps, the stop-controlled approach of the I-395 Westbound Off-Ramp operates at LOS F with an average vehicle delay of 91.7 seconds and 95th percentile queue of 113 feet, or just under five passenger vehicles in length.

| Signalized Intersection Level of Service | |
|---|---|
| LOS | Delay Range |
| A | <=10.0 seconds |
| B | >10.0 and <=20.0 seconds |
| C | >20.0 and <=35.0 seconds |
| D | >35.0 and <=55.0 seconds |
| E | >55.0 and <=80.0 seconds |
| F | >80.0 seconds |

Source: Highway Capacity Manual 2010, TRB

| Unsignalized Intersection Level of Service | |
|---|---|
| LOS | Delay Range |
| A | <=10.0 seconds |
| B | >10.0 and <=15.0 seconds |
| C | >15.0 and <=25.0 seconds |
| D | >25.0 and <=35.0 seconds |
| E | >35.0 and <=50.0 seconds |
| F | >50.0 seconds |

Source: Highway Capacity Manual 2010, TRB

| Existing Weekday Peak Hour Intersection Level of Service | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Approach | Direction / Turning Movement | AM Peak | | | | PM Peak | | | |
| | | Delay | LOS | v/c | Queue 95th% | Delay | LOS | v/c | Queue 95th% |
| **1. North Main Street / South Main Street @ Wilson Street (Signalized)** | | | | | | | | | |
| Wilson St | EB L | 36.5 | D | 0.35 | 84 | 93.6 | F | 0.98 | 313 |
| Wilson St | EB T | 25.2 | C | 0.51 | 231 | 29.7 | C | 0.61 | 266 |
| Wilson St | EB R | 11.8 | B | 0.09 | 31 | 16.0 | B | 0.35 | 124 |
| Wilson St | WB L | 40.5 | D | 0.41 | 64 | 42.0 | D | 0.55 | 120 |
| Wilson St | WB T/R | 29.6 | C | 0.60 | 219 | 36.6 | D | 0.77 | 294 |
| S. Main St | NB L | 56.5 | E | 0.83 | 276 | 63.9 | E | 0.85 | 278 |
| S. Main St | NB T/R | 27.2 | C | 0.71 | 450 | 31.9 | C | 0.72 | 435 |
| N. Main St | SB L | 40.6 | D | 0.40 | 67 | 41.4 | D | 0.34 | 73 |
| N. Main St | SB T | 27.6 | C | 0.59 | 265 | 36.3 | D | 0.75 | 367 |
| N. Main St | SB R | 13.5 | B | 0.11 | 36 | 14.5 | B | 0.08 | 35 |
| **OVERALL** | | **28.9** | **C** | | | **37.9** | **D** | | |
| **2. South Main Street @ Brimmer Street (Stop-Controlled)** | | | | | | | | | |
| Brimmer St | WB L/R | 23.8 | C | 0.08 | 8 | 20.0 | C | 0.08 | 8 |
| S. Main St | SB L | 9.6 | A | 0.01 | 0 | 8.9 | A | 0.02 | 3 |
| **OVERALL** | | **0.3** | **A** | | | **0.4** | **A** | | |
| **3. South Main Street @ Getchell Street (Stop-Controlled)** | | | | | | | | | |
| S. Main St | SB L | 8.6 | A | 0.01 | 0 | 8.6 | A | 0.01 | 0 |
| Getchell St | WB L/R | 15.0 | C | 0.03 | 3 | 15.0 | C | 0.03 | 3 |
| **OVERALL** | | **0.2** | **A** | | | **0.2** | **A** | | |
| **4. South Main Street @ Baker Boulevard (Stop-Controlled)** | | | | | | | | | |
| Baker Blvd | WB L/R | 30.1 | D | 0.30 | 30 | 33.5 | D | 0.30 | 30 |
| S. Main St | SB R | 9.2 | A | 0.03 | 3 | 9.0 | A | 0.02 | 3 |
| **OVERALL** | | **1.7** | **A** | | | **1.3** | **A** | | |
| **5. South Main Street @ Abbott Street (Stop-controlled)** | | | | | | | | | |
| Abbott St | WB L/R | 16.4 | C | 0.13 | 10 | 14.1 | B | 0.14 | 13 |
| S. Main St | SB L | 10.3 | B | 0.04 | 3 | 10.2 | B | 0.06 | 5 |
| **OVERALL** | | **0.7** | **A** | | | **0.6** | **A** | | |
| **South Main Street @ Interstate 395 Exit 4 Westbound Ramps (Stop-Controlled)** | | | | | | | | | |
| I-395 Exit 4 WB | WB L/R | 36.9 | E | 0.51 | 65 | 91.7 | F | 0.77 | 113 |
| S. Main St | SB L | 9.9 | A | 0.22 | 20 | 9.6 | A | 0.22 | 23 |
| **OVERALL** | | **3.7** | **A** | | | **6.5** | **A** | | |
| **South Main Street @ Interstate 395 Exit 4 Eastbound Ramps (Signalized)** | | | | | | | | | |
| I-395 Exit 4 EB | WB L | 18.9 | B | 0.44 | 177 | 22.5 | C | 0.70 | 418 |
| I-395 Exit 4 EB | WB R | 16.6 | B | 0.12 | 49 | 15.2 | B | 0.19 | 57 |
| S. Main St | NB T T/R | 13.2 | B | 0.57 | 267 | 23.1 | C | 0.58 | 241 |
| S. Main St | SB L | 28.3 | C | 0.15 | 29 | 35.4 | D | 0.29 | 63 |
| S. Main St | SB T | 6.3 | A | 0.22 | 90 | 16.6 | B | 0.60 | 313 |
| **OVERALL** | | **13.6** | **B** | | | **20.4** | **C** | | |

Delay: Delay in seconds per vehicle LOS: Level of Service according to HCM v/c: Volume to Capacity Ratio
Queue 95th%: Queue in feet per lane: 95th percentile (25 feet per vehicle)

## Bicycle and Pedestrian Infrastructure and Operations

One of Downtown Brewer's highlights in transportation infrastructure is the Brewer Riverwalk, a multiuse path along the Penobscot River, beginning at the intersection of Betton Street and Penobscot Street to the north and Burr Street and South Main Street at its southern terminus, approximately 0.60 miles long.

The East Coast Greenway, a 3,000-mile continuous multi-use route for biking, walking, and other activities between Florida and Maine, passes through Brewer. The official route of the East Coast Greenway enters Brewer from the south on Maple Street and follows South Main Street for approximately 485 feet between Maple Street and Burr Street, where it crosses the road and follows the Brewer Riverwalk. There is also an on-road segment of the East Coast Greenway going through the intersection of Wilson Street and North/South Main Street. Despite these designated on-road sections, there are no on-street bicycle facilities provided. The City has shown tremendous interest in expanding their bicycle infrastructure based on the success of the Brewer Riverwalk trail, and it encourages multi-use transportation from the Downtown area to past the I-395 intersection.

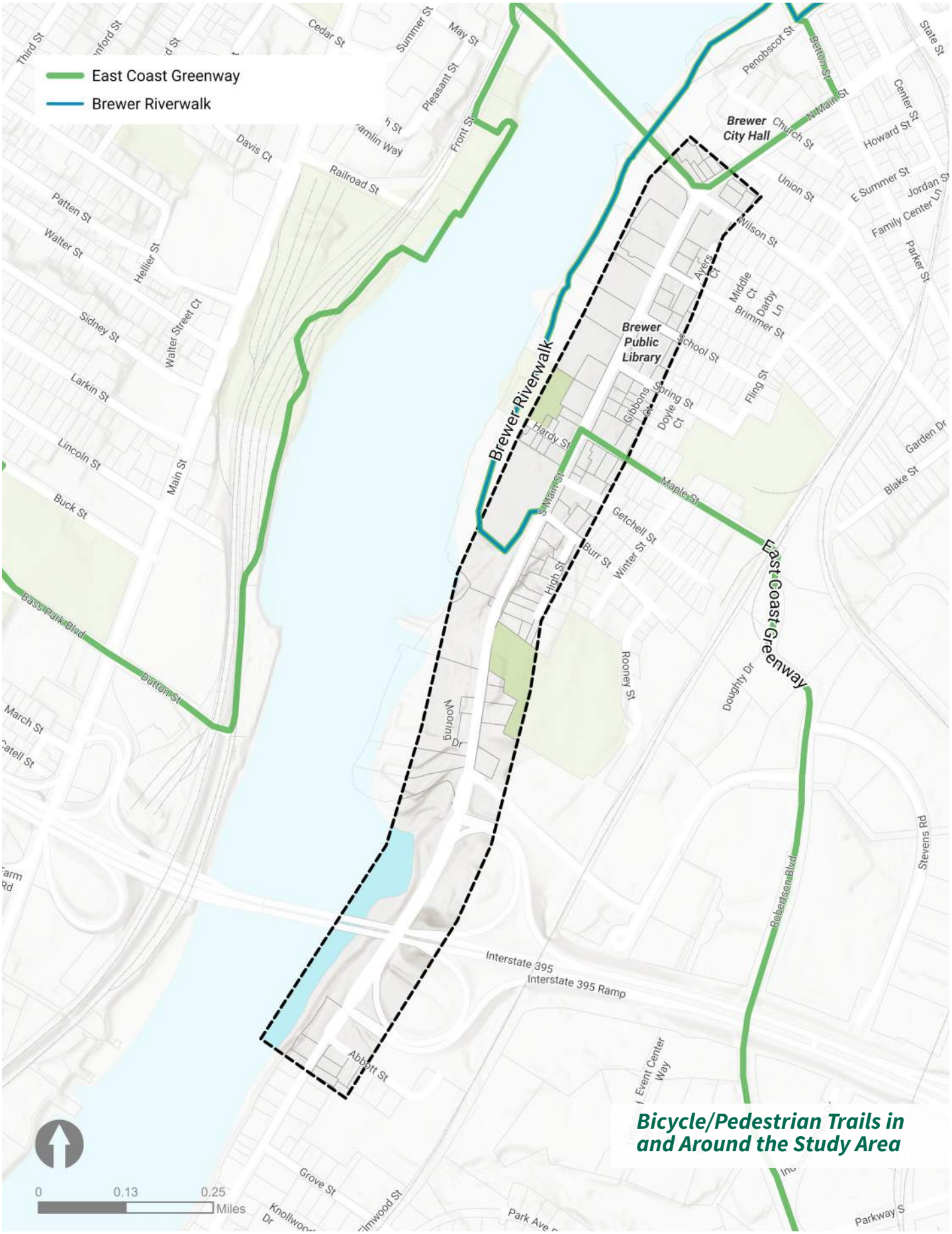
As part of the Maine Rail Trail Plan 2020-2030 by Maine Trails Coalition and discussions with City staff, the intent for the City is to extend off-road multi-use pathways from the existing Brewer Riverwalk to points south and east along the Calais Branch of the railroad corridor, either through rail-to-trail conversion or rail-with-trail conversions, depending on available right-of-way and future agreements.

To gain a holistic understanding of the infrastructure in the Study Area affecting pedestrians, a desktop asset analysis was completed, identifying sidewalk gaps, crosswalks, curb cuts, on-street parking, and wayfinding signage. This full analysis can be found in Appendix B. While most streets have sidewalks, there is no sidewalk on the western side of South Main Street from Burr Street south to beyond the I-395 intersection. There are also many large curb cuts, on South Main Street, particularly between Wilson Street and Getchell Street, which makes the environment less safe for pedestrians.

The presence of sidewalks does not mean conformance to the most current Public Rights-of-Way Access Guidelines (PROWAG) for accessibility, Manual of Uniform Traffic Control Devices (MUTCD) for signing, or access management guidelines for driveways along major roadways, as there are many areas where some of these guidelines are not met:

- Some sidewalks are noted to have less than four feet of effective width available for navigating utility poles, signs, and other impedances to pedestrians.
- Maximum acceptable grades for sidewalk cross-slopes and curb ramps are not always met.
- Detectable warning surfaces at pedestrian crossings of the roadway are not always present.
- The minimum seven-foot vertical clearance to the bottom of signs along pedestrian access routes / sidewalks and crosswalks is not always present.
- There are excessive access driveway openings onto roadways with no curbing or delineation of roadway and sidewalk.

It is notable that steps were recently made by the City to improve pedestrian crossings of South Main Street with the addition of a rectangular rapid flashing beacon (RRFB) to provide visibility of the crossing between Hardy Street and Maple Street.




***Bicycle/Pedestrian Trails in and Around the Study Area***

## Transit

The only public transportation in Brewer is the Community Connector Bus based in Bangor, which has two routes in Brewer: Brewer North and Brewer South. Brewer North is in the study area at the intersection of Wilson and North/South Main Street. Brewer South is in the study area along the length of South Main Street. In June 2024, the Community Connector transitioned from a flagging system to having fixed stops across its entire system. Both routes in Brewer have hourly service, and there are currently no bus shelters along this corridor. Ridership on both routes declined from 2019 to 2023 but is starting to increase again in 2024. Given the Covid 19 pandemic, this dip in ridership is expected and consistent with national trends.

**Annual Transit Ridership - Brewer North**

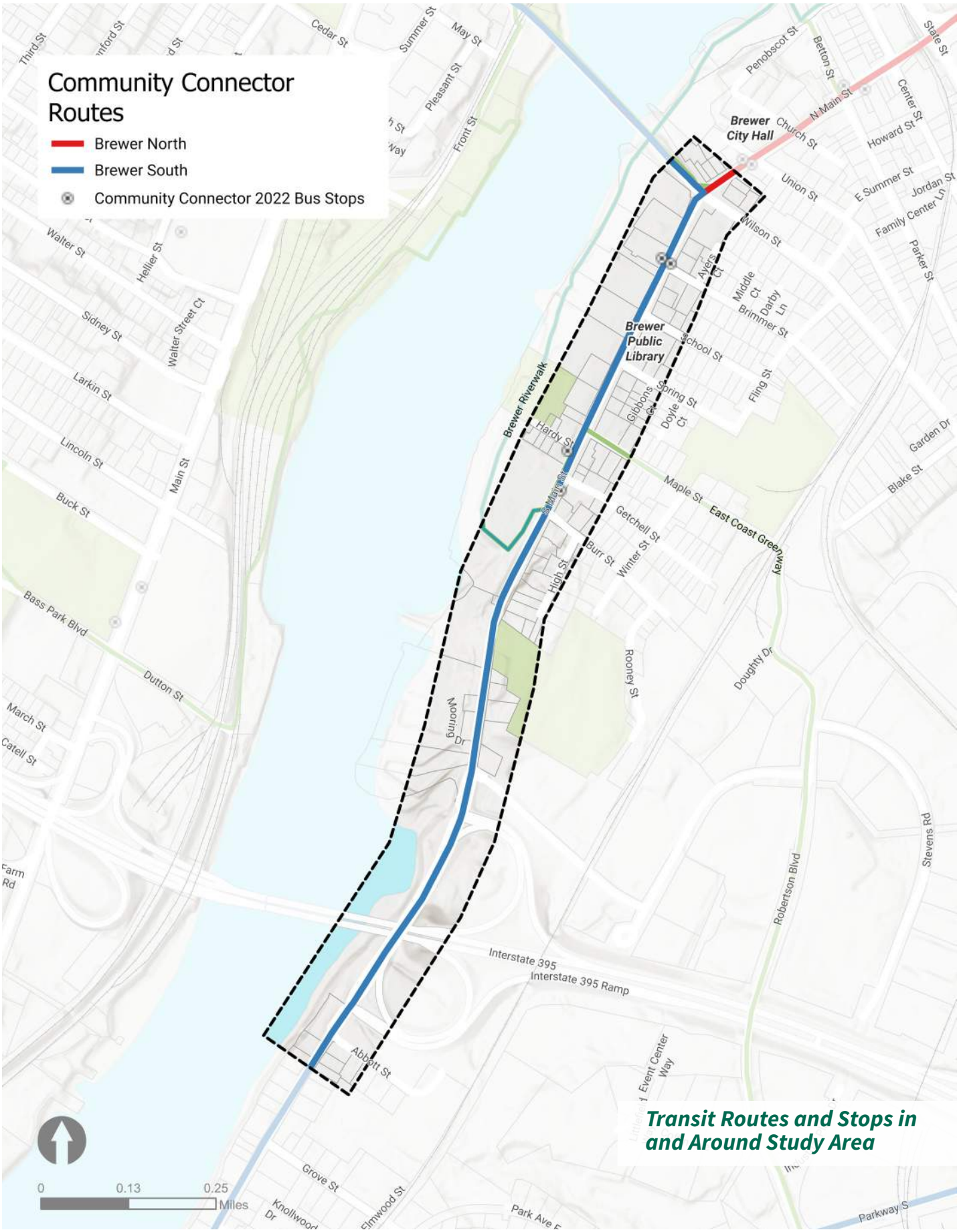
| Fiscal Year | Annual Ridership |
|---|---|
| 2019 | 53,272 |
| 2020 | 48,652 |
| 2021 | 31,853 |
| 2022 | 30,936 |
| 2023 | 28,510 |
| 2024 | 40,506 |

Source: BACTS

**Annual Transit Ridership - Brewer South**

| Fiscal Year | Annual Ridership |
|---|---|
| 2019 | 46,997 |
| 2020 | 40,822 |
| 2021 | 30,849 |
| 2022 | 30,909 |
| 2023 | 28,855 |
| 2024 | 37,269 |

Source: BACTS




***Transit Routes and Stops in and Around Study Area***

# Road Safety Assessment

## Crash History and High Crash Locations

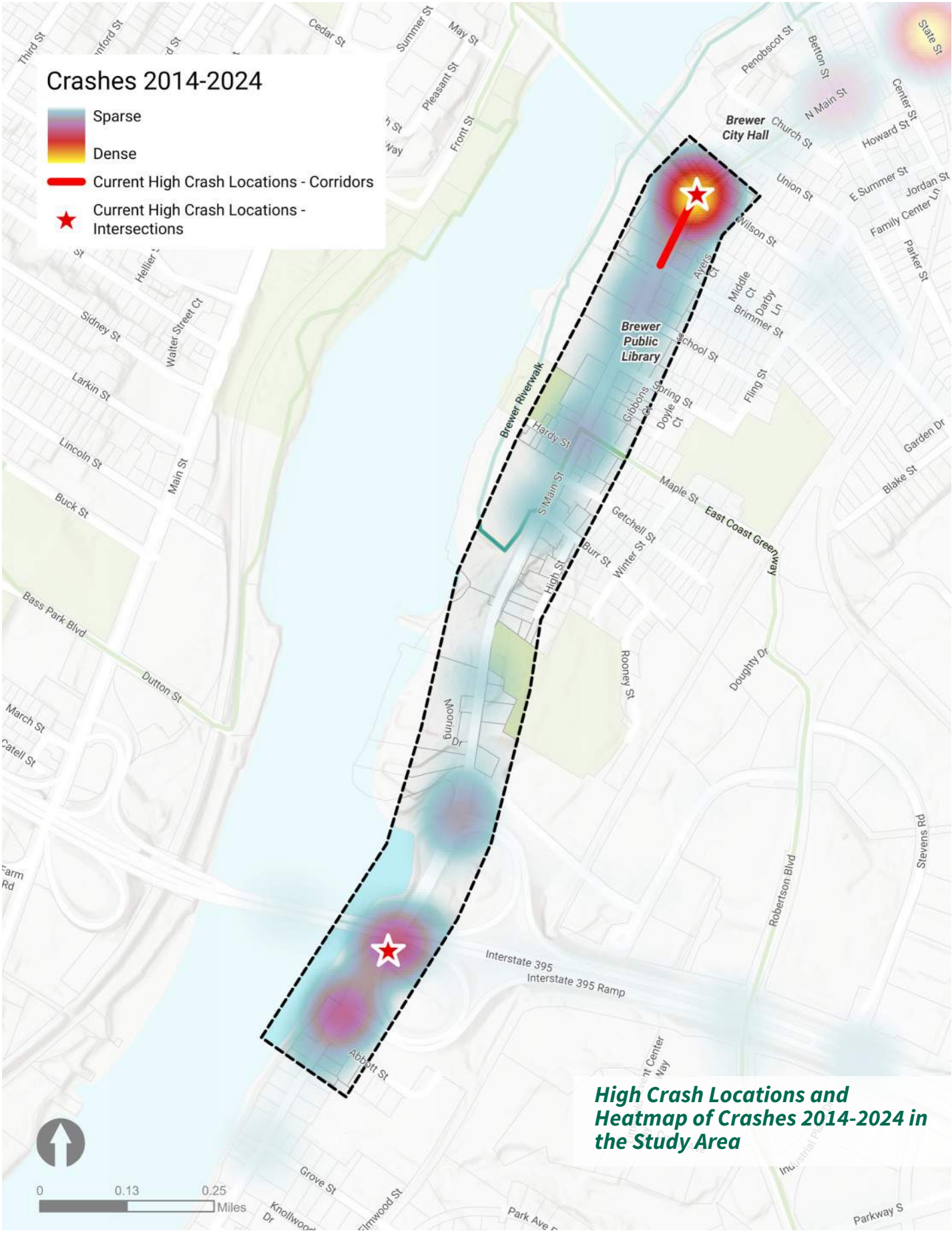
MaineDOT provides a public map, the Maine Public Crash Query Tool, using Geographic Information Systems (GIS) to identify and make available crash data throughout the State of Maine for download and analysis.

This resource also incluses High Crash locations. As referenced by the Androscoggin Transportation Resource Center, High Crash Locations (HCLs) are locations that have eight or more traffic crashes and a Critical Rate Factor (CRF) greater than 1.00 in a three-year period. A highway location with a CRF greater than 1.00 has a frequency of crashes that is greater than the statewide average for similar locations. A CRF is a statistical measure to determine the "expected crash rate" as compared to similar intersections in the State of Maine.

For the years of 2020 through 2023, the following locations were identified as HCLs in the Brewer South Main Street Corridor Study area:

- North Main Street / South Main Street at Wilson Street (Intersection)
- South Main Street, between Wilson Street and Brimmer Street (Segment)
- South Main Street at Interstate 395 eastbound off-ramp merge with South Main Street northbound (Intersection)

In addition to the High Crash Locations within the Study Area, there appears to be a concentration of crashes at the I-395 eastbound on- ramp and westbound off-ramp merge with South Main Street. There is also a less intense concentration of crashes in the northern section of the corridor from Burr Street to Wilson Street.




***High Crash Locations and Heatmap of Crashes 2014-2024 in the Study Area***

## Road Safety Audit

A Road Safety Audit (RSA) was conducted on May 24, 2024 for both the Brewer South Main Street Corridor Study project and VPI Study. See **Appendix B** for a complete summary of the RSA.

Representatives from MaineDOT, the City of Brewer, and Stantec met at the Joseph L. Ferris Community Center at 318 Wilson Street. After introductions and presenting the data collected before the RSA, the RSA team conducted a site visit to evaluate and observe four locations along North Main Street prioritized for the audit. After visiting the locations, participants discussed their observations of the areas and identified positive elements of the existing infrastructure as well as safety concerns and deficiencies. The following locations were visited during the RSA field audit and discussed later in the return to the Community Center:

- **Site 1** – North Main Street / South Main Street at Wilson Street intersection
- **Site 2** – South Main Street between Wilson Street and School Street
- **Site 3** – South Main Street between Maple Street and Burr Street
- **Site 4** – South Main Street between Baker Boulevard and Abbott Street

## Site 1 – North Main Street / South Main Street at Wilson Street Intersection

The signalized intersection at North Main Street / South Main Street and Wilson Street is a High Crash Location. The North Main Street and Wilson Street eastbound approaches consist of a left turn lane, a through lane and a right turn lane. South Main Street and Wilson Street westbound consist of one left turn lane and one shared through/right lane. A public parking lot is provided at the northeast corner of the intersection and the parking lot at the southwest corner of the intersection is for the High Tide Restaurant and Bar.

A driveway is located in the northwest corner of the intersection, with access located past the stopbar for the North Main Street approach to the signalized intersection. The driveway is uncontrolled, with no signal indication nor intersection control sign provided. Observed during the RSA visit and noted by local stakeholders, access into and out of the driveway is difficult for vehicles that require access to the businesses and residences on this driveway.

Although there is ample access for pedestrians in the area, lighting is lacking for safe crossings at night. The curb ramps at this site are causing drainage issues. The intersection is very wide which allows for options for possible reworking of its pedestrian crossings.

| Site 1 – North Main Street / South Main Street at Wilson Street | |
|---|---|
| Pros | Cons |
| » Pedestrian crossings on all side | » Pedestrian curb ramps have poor drainage |
| » Access to Riverwalk | » Access to/from High Tide and apartment via uncontrolled driveway near the intersection (NW corner) |
| » Access to city-owned parking | » Pavement width is excessive for pedestrian crossings |
| » City provided wayfinding signs | » Placemaking /gateway is difficult |
| » Roadway is wide enough to accommodate crossing improvements | » “Big” intersection requires difficult compromises to reduce its size |
| » City landscaping present | » Pedestrian-scale lighting improvements are needed |

## Site 2 – South Main Street between Wilson Street and School Street

This location is a MaineDOT designated high crash segment, containing two intersections with stop-controlled minor roadways (Brimmer Street and School Street) and several residential and commercial driveways. South Main Street is generally one travel lane for each direction, with South Main Street northbound adding a lane approaching the signalized intersection with Wilson Street just north of Brimmer Street. South of Brimmer Street, on-street parking is permitted in spaces marked along both sides of the street. The posted speed limit through this area is 25 miles per hour.

Based on this segment's crash data, 75% of all crashes are either rear end/side swipes or intersection movements.

The crosswalks are not compliant with current ADA/PROWAG standards for ramp treatments on sidewalks, with one ramp missing at the School Street crossing due to MaineDOT construction. Sightlines for both pedestrians and vehicles can be difficult due to encroachments by utility poles and parked vehicles along the east curbline of the roadway.

At the Brimmer Street intersection, the offset of the access driveway to the now closed Tozier Market increases the number of potential conflicts with turning vehicles in a relatively short segment of South Main Street. Aside from the parallel Brewer Riverwalk along the Penobscot River, there are no bicycle-specific facilities provided.

Drainage issues were seen along the roadway segment after a storm prior to the RSA site visit. City staff noted that this area is difficult for stormwater management due to flat grading along the roadway segment. Another observation during the RSA site visit was the limited pedestrian-scale lighting available.

| Site 2 – South Main Street between Wilson Street and School Street | |
|---|---|
| Pros | Cons |
| » Extra pavement width allows for some modifications | » Mid-block crossings are long and have poor visibility |
| » City is working on improvements to Hardy St. intersection | » Bumpouts could help with adjacent street parking |
| » Access to Riverwalk | » Segment is flat and has drainage issues |
| » Access to City parking and Library | » Vehicular and pedestrian-scale lighting needs improvement |
| » Mid-block crossings exist and are expected by roadway users | » Brimmer St. intersection is offset from Toziers and close to the Wilson St. signal |
| » Side streets on east side connect along the back | » Sidewalk conditions are poor |
| » Wayfinding signs are present | |

## Site 3 – South Main Street between Maple Street and Burr Street

This segment includes four intersections with stop-controlled minor roadways (Maple Street, Hardy Street, Getchell Street, and Burr Street) and several residential and commercial driveways. There is a single travel lane for both directions of South Main Street, with eight to ten-foot paved shoulders on both sides. On-street parking is allowed along the segment. The posted speed limit is 25 miles per hour.

Based on crash data, most crashes occur during the day and 83% of all crashes are rear-end/ sideswipe crashes.

There is a public park and parking lot on the eastern side of the road and a mid-block pedestrian crossing between the Maple Street and Hardy Street intersections with a raised bump-out to shorten the crossing and rectangular rapid-flashing beacons (RRFBs). This crossing connects the Brewer Riverwalk to the public parking. City staff noted improvements are underway for the south side of Hardy Street, including demolition of existing housing and the construction of improved parking and sidewalk.

The southern terminus of the Brewer Riverwalk is located on the west side of South Main Street at the intersection with Burr Street.

Due to a storm prior to the RSA audit, drainage issues were noted. City staff again explaining that grades on South Main Street are relatively flat and stormwater management difficult, especially for pedestrian curb ramps. Any potential geometric changes to paved areas, curbing, and ramps through this segment would require significant review of stormwater management.

| Site 3 – South Main Street between Maple Street and Burr Street | |
|---|---|
| Pros | Cons |
| » Extra pavement width allows for some modifications | » Mid-block crossings are long and have poor visibility |
| » City is working on improvements to Hardy St. intersection | » Bumpouts could help with adjacent street parking |
| » Access to Riverwalk | » Segment is flat and has drainage issues |
| » Mid-block crossings exist and are expected by roadway users | » Vehicular and pedestrian-scale lighting needs improvement |
| » Side streets on east side connect along the back | » Sidewalk conditions are poor |
| » Wayfinding signs are present | |

## Site 4 – South Main Street between Baker Boulevard and Abbott Street

This segment of South Main Street is dominated by the I-395 interchange (Exit 4) with South Main Street. South Main Street has two general travel lanes, one northbound and one southbound with two-foot paved shoulders. The posted speed through the segment is 35 miles per hour.

At the intersection with Baker Boulevard, two travel lanes are provided for the northbound approach that are not well marked or signed but operate as a through lane and through-right lane. During the RSA, the team noted vehicles appeared confused over the rightmost lane's use. South Main Street's single southbound lane begins to widen in advance of Baker Boulevard; however no lane use signs or pavement markings are provided.

The Baker Boulevard approach to the intersection with South Main Street is a single, stop-controlled lane and a 36-foot wide receiving lane, separated by a raised median. A pedestrian crosswalk is provided across the Baker Boulevard leg, using the raised median as a pedestrian refuge for the crossing. Due to the skew of the leg, the paved area is wide for the crossing.

The I-395 Exit 4 Westbound ramp is stop controlled at the intersection of South Main Street, with a single approach lane for all movements from the off-ramp. Entering the Westbound ramp, a right-turn slip lane is provided for South Main Street northbound from the rightmost through-right lane. Left turns into the Westbound ramp from South Main Street southbound originate from the leftmost travel lane, acting as a left-through lane. However, no lane use signs (ground mounted or overhead) or pavement markings are present. The RSA team noted improvements could be made to pavement markings and signage, as well as highway and pedestrian-scale lighting.

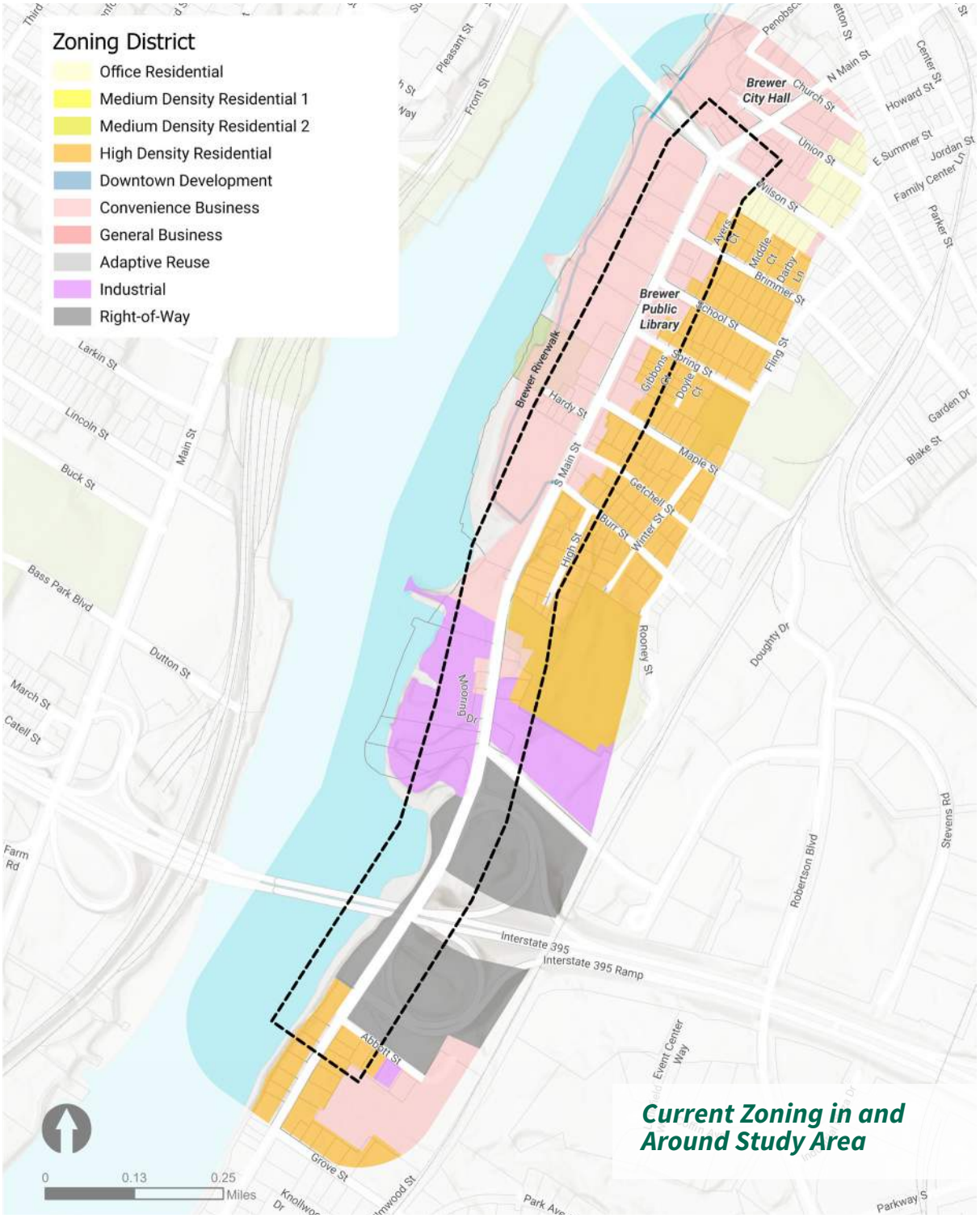
The I-395 Exit 4 Eastbound Ramp intersects with South Main Street at a signalized intersection. There are two approach lanes from the off-ramp: one left turn lane that is controlled at the signal and one sweeping right turn slip lane that is yield-controlled. This slip lane is noted by MaineDOT as a high crash location and the RSA team noted confusion in operations, as it is not clear whether the right-turn movement is merging into a South Main Street lane or if it is an added lane for off-ramp traffic. In addition, the speeds maintained around the sweeping ramp appear fast. The South Main Street southbound approach has a left turn lane at the signal for access onto I-395 Eastbound.

| Site 4 – South Main Street between Baker Boulevard and Abbott Street | |
|---|---|
| Pros | Cons |
| » Landscaping is present<br>» Crosswalks are present along the eastern side<br>» Pedestrian signals are present at the eastbound ramps<br>» There is a median present<br>» Trucks/commuters may be diverted from intersection when the I-395 Extension is opened | » Sidewalks are only present on the eastern side of the road<br>» No pedestrian crossing of South Main Street<br>» Abbott St. is close to I-395 interchange<br>» Eastbound off-ramp to South Main Street northbound has high speeds and poor sight lines<br>» Sightlines are poor from Baker Boulevard to South Main Street due to utility poles and a low Stop sign |

# Land Use Analysis

## Zoning and Current Uses

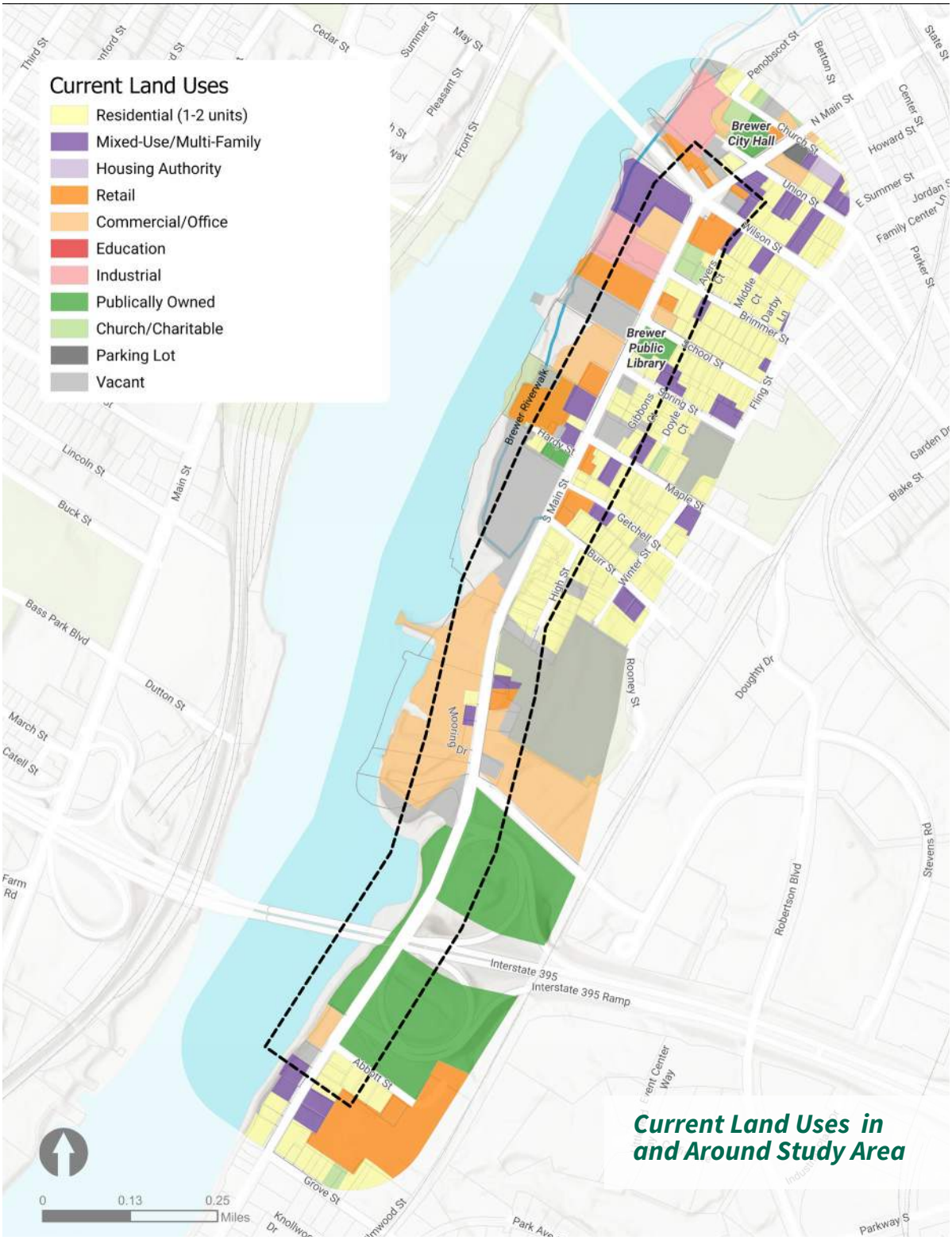
Existing zoning and current land uses were reviewed to gain an understanding of both the current and potential future uses that impact Brewer's multi-modal networks. Most of the corridor is zoned Convenience Business, switching to Industrial near I-395. Current land use on the western side (river side) of the corridor is quite diversified, ranging from mixed use to retail, commercial, and industrial uses. There are also several large vacant parcels in this area. The eastern side of South Main Street is primarily residential, with some retail mixed in along the frontage of South Main Street.




***Current Zoning in and Around Study Area***

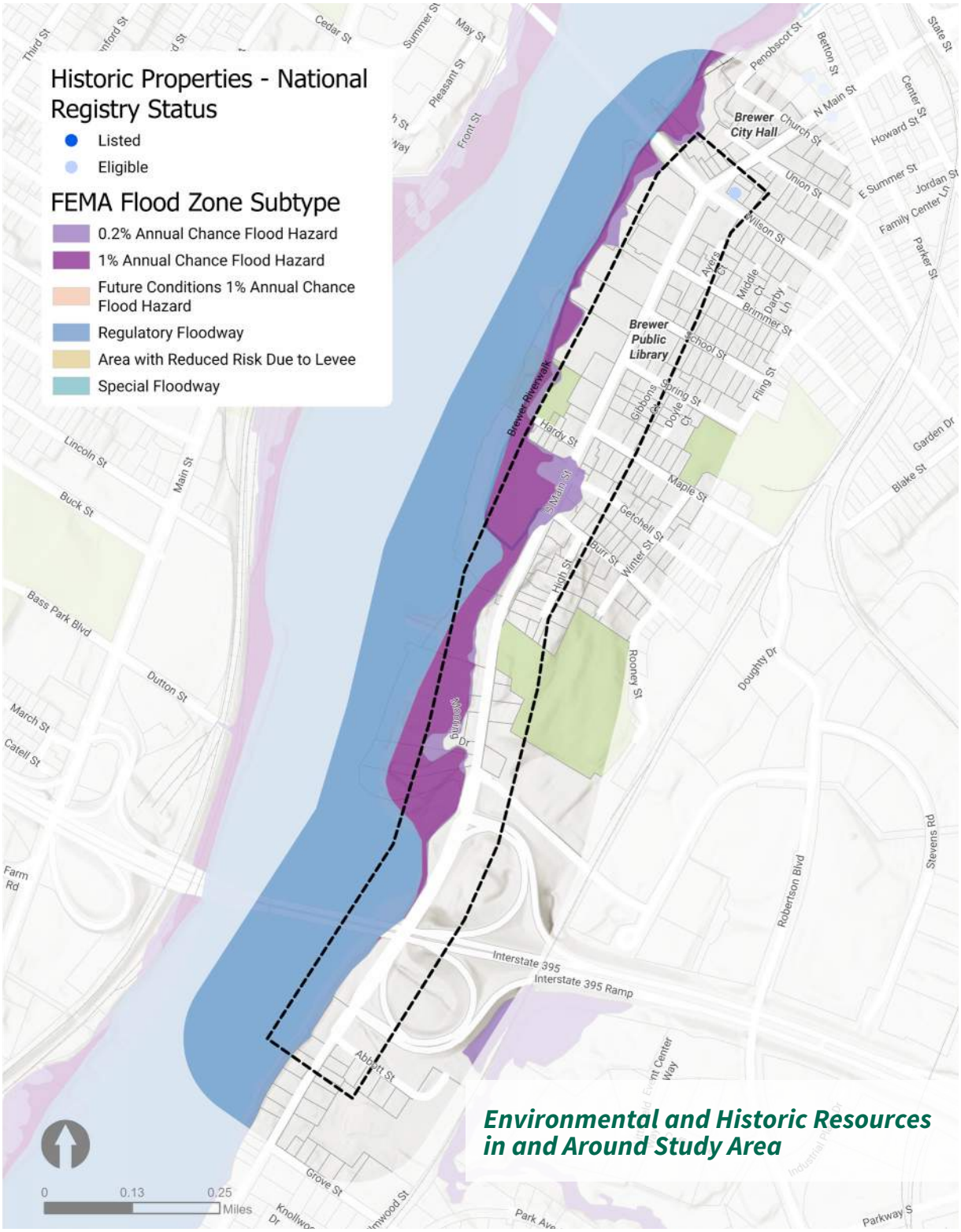
## Environmental and Historic Resources

A desktop environmental and historic resources screening was performed for the study area to identify any environmental characteristics in or around the project boundary limits. The characteristics searched for include historic properties, aquifers, wildlife habitats, FEMA flood zones, conservation zones, and wetlands. The characteristics found came from the following sources: Maine Department of Environmental Protection data maps, Maine Fish and Wildlife maps, the National Register




***Current Land Uses in and Around Study Area***

of Historic Places and the City of Brewer's Axis GIS Map. Much of the area in and around the river side of the study area is in a FEMA Flood Zone. The area abutting the river, including the Brewer Riverwalk, is in the FEMA Flood Zone Subtype with a 1% Annual Chance Flood Hazard. A small portion of South Main Street itself, between Burr Street and Getchell Street, is in the FEMA Flood Zone Subtype with a 0.2% Annual Chance Flood Hazard. There are no properties on the National Historic Registry in and around the study area, but there is one eligible property at the northeastern corner of Wilson Street and North Main Street.




***Environmental and Historic Resources in and Around Study Area***


Brimmer St

# 5. Future Conditions

Stantec estimated future traffic volumes within the Study Area to ensure the recommendations both meet the projects' goals and account for changes in traffic volumes to the year 2045. The full future conditions memorandum can be found in Appendix C.

Stantec reviewed publicly available resources and MaineDOT traffic models to project traffic flow to 2045. Stantec evaluated two potential future outlooks of traffic volumes in the city: A standard MaineDOT-based Regional Growth outlook and a local outlook.

## Interstate 395 Extension

The construction of the I-395 Extension from its current terminus at the interchange with South Main Street in Brewer to a new terminus with Route 9 in Eddington is planned for completion in 2025. Per the I-395 / Route 9 Transportation Study's Environmental Impact Statement by MaineDOT, this extension is anticipated to reduce traffic in the downtown districts of Brewer, including a reduction of 12.4 percent of average annual daily traffic along Route 9 (South Main Street and North Main Street) between Brewer and Eddington. In addition, this extension is anticipated to reduce average annual daily truck traffic by up to 32.5 percent through downtown Brewer. For the purpose of this study, Stantec assumed a general ten percent (10%) reduction in some traffic patterns through the South Main Street Corridor when the I-395 / Route 9 connector is completed and some traffic is diverted to the new highway.

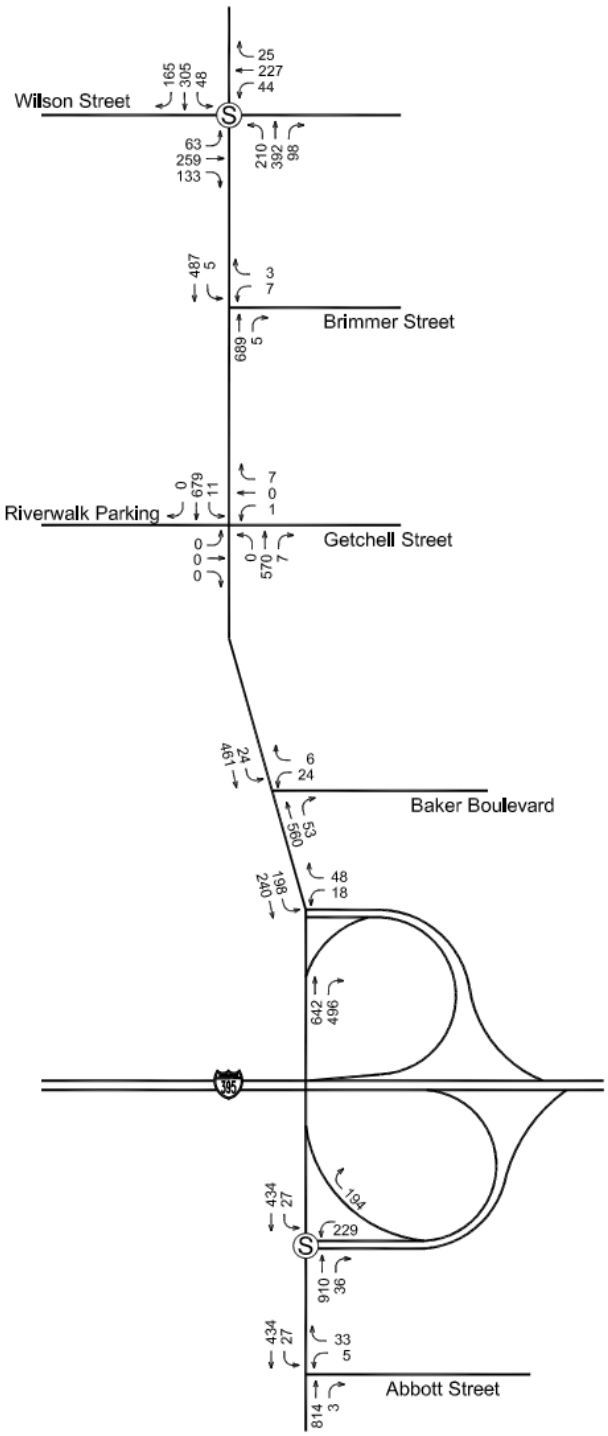
About one year after the completion of the I-395 Extension, MaineDOT will be collecting traffic data throughout the city. This data will be used to assess the changes in traffic flows in Brewer and can be used for future evaluations of the alternatives from this study.

## Local and Regional Growth Outlooks

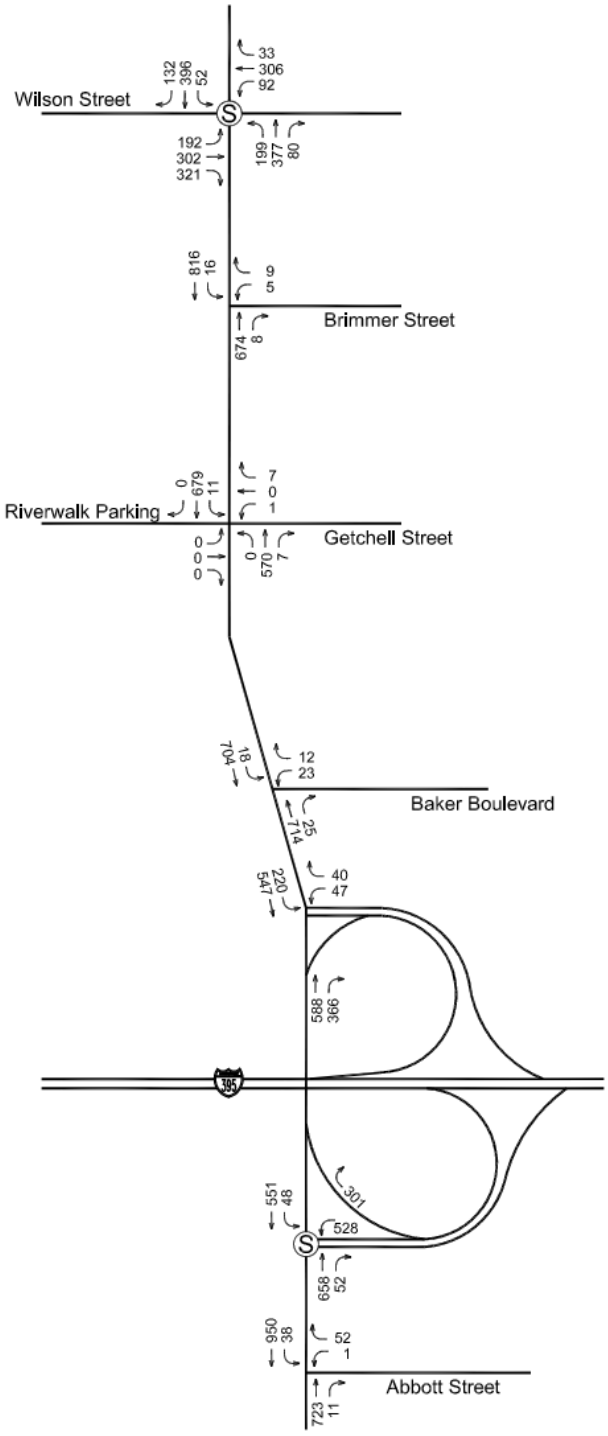
For the Regional Growth outlook, Stantec used the MaineDOT-recommended average annual growth rate of 0.5% per year alongside the changes in traffic demand due to the completion of the I-395 Extension and Route 9 Connector.

For the Local Growth outlook, Stantec used the actual growth rates from count stations in Brewer as identified in the MaineDOT Future Traffic Model, as these growth rates ranged from 0.01% to 0.14%; relatively stagnant or just above baseline. Stantec then coordinated with the City of Brewer to determine reasonable potential developments in the Study Area that have potential to add specific traffic. This traffic was distributed in kind with current traffic flows throughout the city's roadway network.

When comparing the findings of both methods in evaluating future traffic through Brewer and for use in evaluating design alternatives and right-sizing infrastructure for Brewer's future, Stantec recommends planning for infrastructure evaluations and improvements by using the Regional Growth model to estimate future traffic volumes, which incorporates an overall average annual traffic volume growth rate of 0.5 percent per year. This growth rate was chosen because it incorporates the smaller, locally-identified growth rates from MaineDOT's model along with the inclusion of optimistic land development and resulting new trip generation to Brewer's Downtown and South Main Street Corridor.




***Projected 2045 AM Peak Hour Traffic Volumes (Regional Growth Outlook)***




***Projected 2045 PM Peak Hour Traffic Volumes (Regional Growth Outlook)***

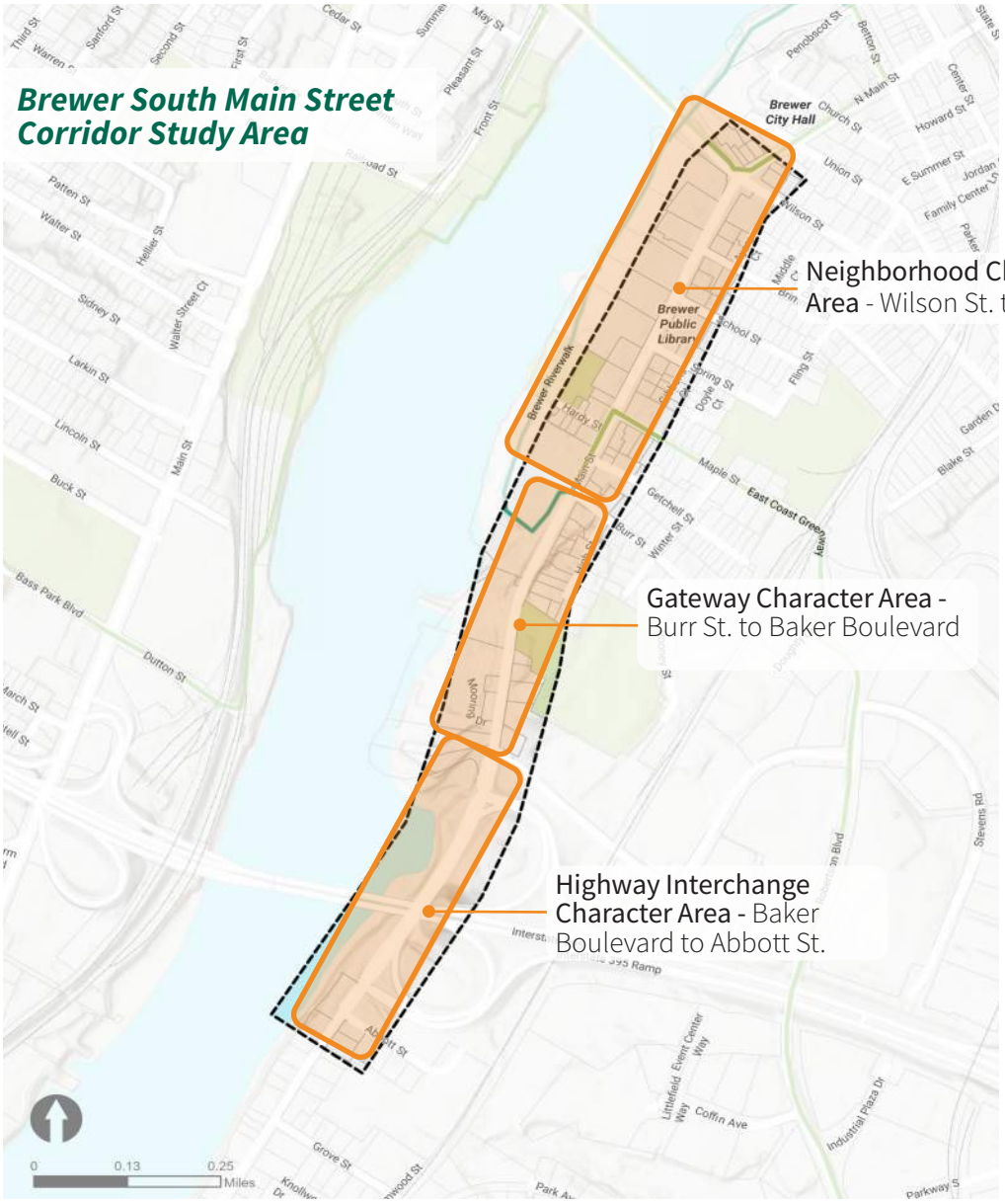

START CROSSING
Watch For Vehicles
DON'T START
Finish Crossing If Started
TIME REMAINING To Finish Crossing
DON'T CROSS
PUSH BUTTON TO CROSS
ONLY
LEFT ON ARROW ONLY
S Main St
N Main St

# 6. Recommendations

Drawing upon Stantec's analysis of existing and future conditions and feedback from the Study Team and the public, the Study Area was divided into three Character Areas based on the context of the roadway and the surrounding built environment:

- Neighborhood - Wilson St. to Burr St.
- Gateway - Burr St. to Baker Boulevard
- Highway Interchange - Baker Boulevard to Abbott St.

In the Neighborhood Character Area, there are context-sensitive land use and transportation recommendations for South Main Street and the areas between South Main Street and the Penobscot River. For the other two Character Area, recommendations are more focused on the roadway itself. Planning level cost estimates are also provided for the recommended roadway improvements in each Character Area.



# Neighborhood Character Area

The Neighborhood Character Area extends from the signalized intersection at North Main Street / South Main Street and Wilson Street to Burr Street. This portion of South Main Street parallels the Brewer Riverwalk along the Penobscot River.

The signalized intersection at Wilson Street and North Main Street / South Main Street is a High Crash Location. This intersection supports a lot of turning and through traffic in all directions. The geometry of the intersection makes it particularly challenging because none of the legs of the intersection meet at right angles. Although there is ample sidewalk width for pedestrians, lighting is lacking, crosswalks are long and traffic feels like it is moving quickly.

The section of South Main Street between Wilson Street and School Street is a MaineDOT designated high crash segment, containing two intersections with stop-controlled minor roadways (Brimmer Street and School Street) and several residential and commercial driveways. The southern terminus of the Brewer Riverwalk is located on the west side of South Main Street at the intersection with Burr Street.

The grades on South Main Street are relatively flat and stormwater management is difficult, especially for pedestrian curb ramps. Any potential geometric changes to paved areas, curbing, and ramps through this segment would require significant review of stormwater management.

## Roadway Evaluation

Within this Character Area, the following roadway components were evaluated:

- Improving the Wilson Street intersection alignment
- Relocating the entrance to High Tide to further away from the intersection for increased safety
- Adding on-street bicycle lanes or sharrows
- Eliminating left turns out of Brimmer Street to increase safety at this location
- Integrating green infrastructure features to address drainage issues
- Adding Bump outs to reduce the length of crosswalks
- Narrowing travel lanes to reduce speeds

After evaluation and discussion with the Study Team, it was decided to focus on traffic calming and adding a shared use path on the eastern side of the road in the proposed alternative.

## Proposed Alternative

The Study Team built off the proposed Alternative for the North Main Street / South Main Street and Wilson Street intersection in the Brewer Village Partnership Initiative Plan for continuity. The proposed intersection upgrade focused on improving the intersection's alignment, reducing crosswalk lengths, and making the area more accessible for bicycles. Key features include:

- Adds a bicycle and pedestrian crossing across South Main Street
- Closes driveway on N. Main Street in the intersection and redirects site traffic to Union St.
- Access management improvements for Tiller & Rye property
- Improves signal timing and eliminates right turn on red
- Reclaims portion of Wilson Street next to the Riverwalk extension as public green space.

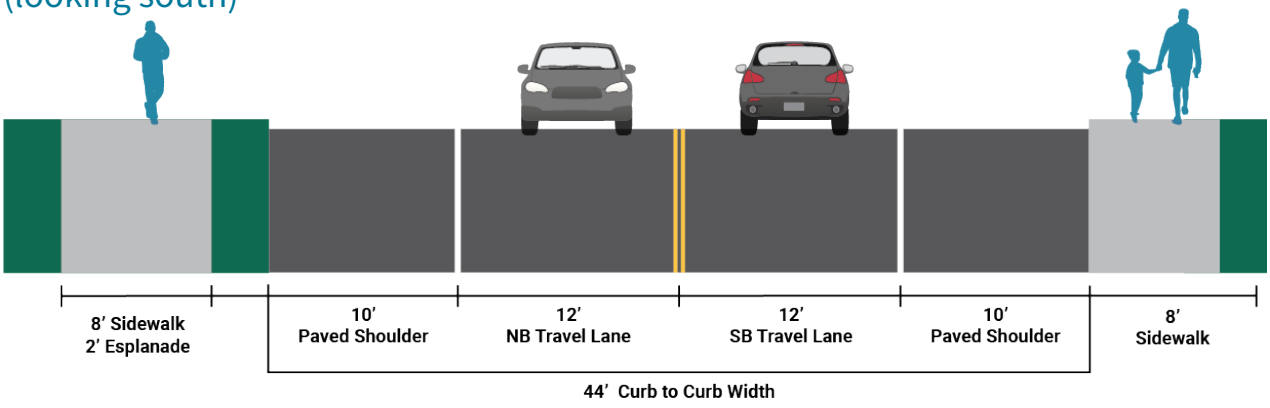
The proposed roadway alignment for this section of the corridor prioritized reducing the travel lane widths and paved shoulders to provide traffic calming and adding a shared use path on the eastern side of the road, connecting to the Riverwalk and the proposed shared use path on Wilson Street. Parking on the river side of the road is maintained to support local businesses in this area.

Street trees will be planted along the shared path to enhance the cycling and pedestrian experience. Bus shelters or bench seating are proposed to provide spaces for people to rest while visiting local shops or strolling to the nearby Riverwalk. Additionally, it is recommended that improvements be made to the existing park located at Maple Street to create a more vibrant and welcoming experience for visitors.

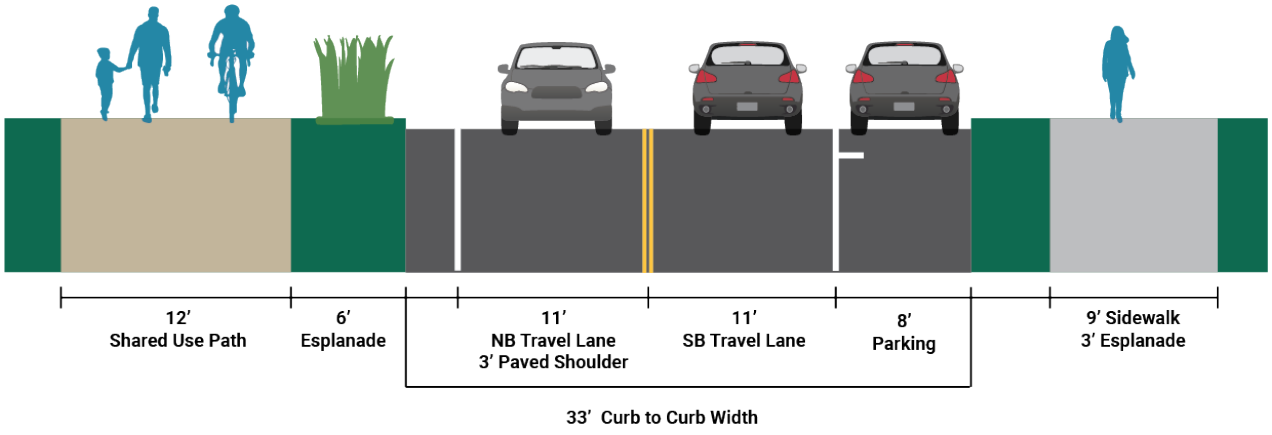
The proposed green infrastructure typology for this project includes bioswales, infiltration planters, and rain gardens. Along South Main Street, bioswales are proposed where the green strips are at least 4 feet wide. It is recommended that public parking lots be integrated with bioswales to reduce runoff and prevent pollutants from entering storm drains and waterways. Infiltration planters, which are suitable for small spaces, can be proposed in bump-outs to add greenery. To reduce the risk of flooding and water pollution, rain gardens are proposed in larger green spaces. The combination of these green infrastructure elements can create a more pleasant and attractive streetscape for residents and visitors to enjoy in addition to improving water quality.

The estimated planning level costs for the roadway recommendations on South Main Street from Wilson Street to Burr Street is $2,860,000. This estimate does not include the improvements at the Wilson Street intersection, which are included in the Village Partnership Initiative Study, and assumes a 30% contingency and construction in 2028. The estimate does not include paving or reconstruction of the existing travelways. The full cost estimate breakdown can be found in Appendix D.

## South Main Street Existing Cross Section - Wilson Street to Burr Street (looking south)




## South Main Street Proposed Cross Section - Wilson Street to Burr Street (looking south)




***Neighborhood Character Area – Roadway Proposed Alternative***

***South Main Street and Wilson Street crosswalk with proposed improvements***


Brewer Riverwalk

S Main St

Spring St

School St

Brimmer St

Wilson St

1

2

3

4

5

9

Brewer Riverwalk

Hardy St

Burr St

Maple St

## *Neighborhood Character Area – Green Infrastructure Improvements*

- **A** Bioswale along road
- **B** Infiltration planter at bumpout
- **C** Rain garden
- **D** Public park & parking lot integrated with green infrastructure

## Land Use Recommendations

The land west of South Main Street, between South Main Street and the Riverwalk, is zoned Convenience Business and contains a mix of uses with several parcels expected to redevelop over the next few years. Across the street is more residential in nature, with mostly single and multi-family development, plus some retail opportunities on South Main Street. Through the public engagement process and meetings with the Study Team, the importance of this area became clear. Given the existing mix of uses between South Main Street and the Penobscot River, the historic mill buildings in the area, and the proximity to the Riverwalk and the Historic Downtown on Center Street, this area has a unique character that needs special consideration moving forward. Additionally, incorporating resiliency, access management to South Main Street and improving riverwalk connectivity and parking standards in the area will make the roadway safer and improve the vibrancy of the entire area.

### Land Use and Design Standards

Given the development potential of this area as well as its critical location between South Main Street and the Riverwalk, establishing a Waterfront Zoning District in this area is recommended. This will allow for a broader range of uses than the current zoning. Additionally, the standards for this new zoning district would focus on resiliency, Riverwalk connectivity, access management, and context-sensitive parking standards. In addition to the uses currently allowed in the Commercial Business (CB) district, the following uses are recommended to be permitted by right in the new Waterfront Zoning District:

- Public Parks / Trails
- Public Playground
- Multi-family Residential
- Microbrewery
- Community Service Organizations
- Government Uses Except Essential Services

### Resiliency Zoning

As Brewer considers creating a new Waterfront Zoning District, it has an opportunity to holistically integrate climate resilience into its ordinances by establishing adaptation standards that will help to limit damage and disruption in the future. The goal of this is to add requirements and guidelines to ensure that Brewer is resilient in the face of risk factors associated with climate change: stormwater flooding and high heat. Addressing these risk factors in local ordinances will help spur economic development in the area by giving the community confidence in the longevity of their investments. This area of the City is particularly vulnerable to stormwater flooding given its topography and proximity to the river. The impacts of high heat will also be felt here in particular as a result of the lack of canopy cover and large surface parking lots.

Increasingly intense and frequent storms resulting in precipitation that exceeds the

**STORMWATER**

*Increasingly intense or frequent storms resulting in precipitation that exceeds the capacity of local infrastructure, contributing to flooding and combined sewer overflows.*

**HIGH HEAT**

*More frequent high heat events that last longer. Areas with fewer trees and more pavement are most vulnerable.*

capacity of local infrastructure are being seen. Local ordinance can be developed to require green infrastructure solutions to reduce stormwater runoff and increase on-site detention/infiltration and design with the capacity of existing infrastructure in mind.

More frequent high heat events that last longer are occurring as a result of climate change. Areas with fewer trees and more pavement are most vulnerable. Local ordinances can help mitigate the negative effects of increasingly extreme heat by implementing new standards for impervious areas and large rooftops.

The Maine Community Resilience Partnership is a statewide program that provides funding for resiliency projects. This program could be used to complete a Resiliency Zoning study.

## Riverwalk Connectivity

Brewer Riverwalk is envisioned to be a landmark destination with a continuous greenway system along the Penobscot River. To maximize its potential, it is crucial to enhance the connection between the community and the riverfront. The intersection at Main Street and Wilson Street is designed to encourage people to enter the Riverwalk by formalizing the trail head with accent paving, plantings and seating. Its organic design form reflects the shape of the river and adds beauty to the surrounding urban environment. A pocket park, observation deck, and seating terrace along the river are proposed as programmable spaces encouraging visitors to stay longer and return time after time. Additionally, the existing riverfront has potential to be developed into a landscape garden to educate visitors about native plant life. Lastly, maximizing the presence of Mason's Brewery along the riverwalk, an outdoor dining area is proposed with the potential to host markets, parties, festivals, live music, and more.

OUTDOOR DINING AREA

TERRACE

Brewer Riverwalk

POSSIBLE CONNECTION

EXISTING CONNECTION

Burr St

Getchell St

Maple St

OBSERVATION DECK TO CONNECT WATER

***Neighborhood Character Area – Riverwalk Enhancements and Connectivity***

**ENTRY PLAZA WITH SEATING**

Brewer Riverwalk

POSSIBLE CONNECTION

POSSIBLE CONNECTION

POSSIBLE CONNECTION

EXISTING CONNECTION

S Main St

School St

St

Wilson St

**EDUCATIONAL RIVERFRONT AREA**

**POCKET PARK ALONG THE TRAIL**

## Access Management

This segment of South Main Street has a lot of wide curb cuts, particularly on the western (river) side of the road. Reducing the width and number of curb cuts will increase safety by limiting the possible conflicting turning movements in the corridor. As properties are redeveloped and go through the city's site


***Neighborhood Character Area – Access Management Improvements***

plan review process, there is an opportunity to implement standards to reduce the size of and minimize the quantity of curb cuts and encourage shared driveways.

## Parking Standards

The Stantec Team consulted the Institute for Transportation Engineers (ITE) Parking Generation manual for similar land use categories to be able to make a more accurate comparison between Brewer's parking requirements and typical/best practice parking requirements as informed by data collected for similar cities across the country. Even though the city's minimum parking requirements are not much higher than the ITE observed parking use rate, this area has many large surface parking lots, which contributes to the area's auto-dependence and roadway safety concerns on South Main Street, despite the fact that the area abuts the Rivewalk and is close to downtown and compact residential areas.

In order to improve safety, reduce stormwater runoff, and create a more pedestrian-scale built environment in this area, the following changes to the parking standards are recommended:

- Reduce off-street parking standards to at or below ITE standards.
- Further reduce parking requirements when near public parking.
- Set maximum parking standards at 110% of minimum parking standards.
- Enact shared parking agreements to allow for public parking in private lots when

| Land Use | Brewer Requirement | Equivalent ITE Category ID # | ITE Observed Parking Use Rate | Brewer as Compared to ITE | Recommendation |
|---|---|---|---|---|---|
| Multi-family Residential | 1.25 spaces/unit (1 bed)<br>1.75 space/unit (2 bed)<br>2 spaces/unit (3+ bed) | Multifamily Housing, Low-Rise (221) | 1.21 spaces/ unit | 3%-65% higher | **1.2 spaces per unit** |
| Office | 1 for every 350 ft. of gross floor area | General Office Bldg (710) | 1 space/420 sf | 17% higher | **1 space/420 sf** |
| Retail | 1 per each 350 sq. ft. of net leasable area | Shopping Center (820) | 1 space/515 sf | 47% higher | **1 spaces/515 sf** |
| Restaurant | 1 for every 4 seats (including bar stools) plus one space for each employee | High-Turnover, Sit Down Restaurant (932) | 1 space/5 seats | Similar | **1 space/5 seats** |

there is excess supply available.

  - » Shared parking agreements can be time or location limited and the terms of the agreement often include in-kind maintenance services from the city in-lieu of a financial arrangement, such as snow plowing, cleaning, or re-paving.

- » Prohibit parking in the front setback.
- » Require green infrastructure improvements in private parking lots through site plan review.
- » Implement time limited parking on South Main Street
  - » Restrict all on-street parking to 2 hours to encourage employees and residents to park elsewhere.
  - » Implement a process for businesses to petition for 15-minute parking outside of a high turnover establishments.


***Neighborhood Character Area – Potential Green Infrastructure Improvements in Private Parking Lots***

# Gateway Character Area

The Gateway Character Area extends from Burr Street to Baker Boulevard. This area serves as a transitional area between the I-395 highway interchange and the denser mixed-use Neighborhood Character Area. This portion of the corridor is wedged between the Penobscot River and a cemetery. The roadway is hilly, slightly curved, and surrounded by trees. Traffic through this area generally feels fast and there are limited pedestrian facilities, with just one 5.5' sidewalk on the eastern side of the road, and no bicycle facilities.

## Roadway Evaluation

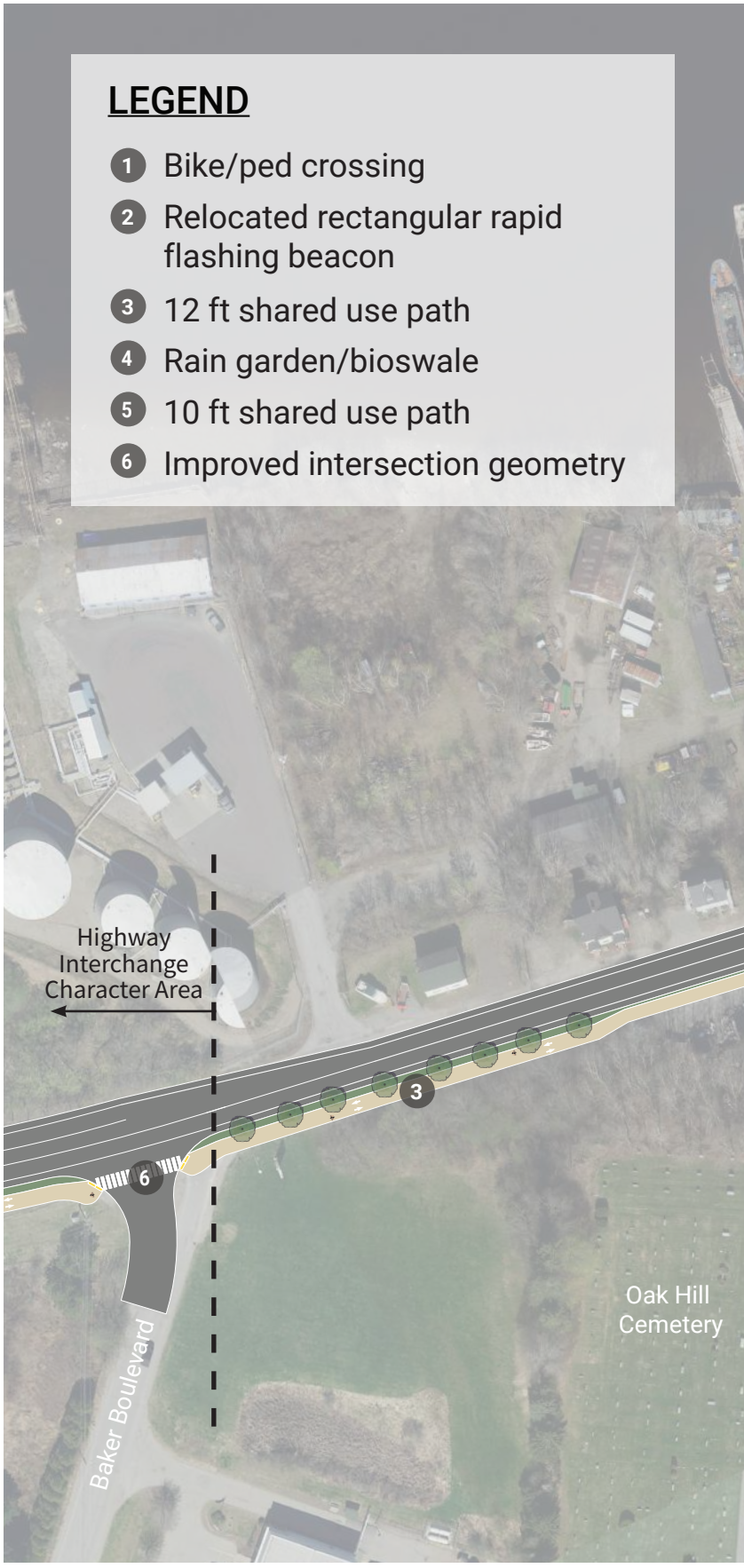
Within this Character Area, the following roadway components were evaluated:

- Continuing the riverwalk on the western side of the road
- Continuing the shared use path on the eastern side of the road
- Reducing roadway widths to provide traffic calming
- Providing green infrastructure features

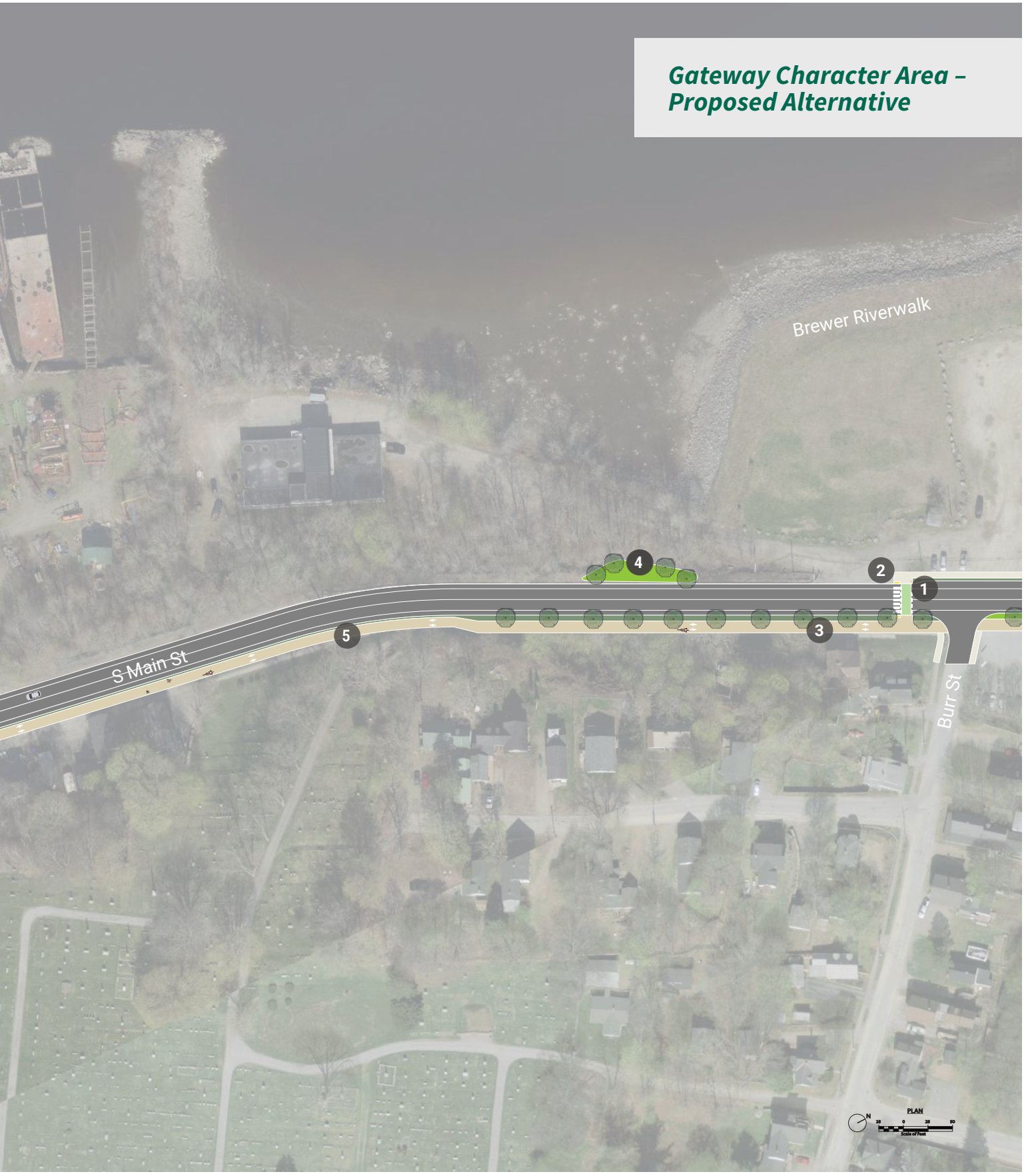
Once it was determined that the topography and right-of-way width would not accommodate a continuation of the riverwalk in this area, priority was placed on continuing the shared use path on the eastern side of the road.

## Proposed Alternative

The proposed alternative continues the 11' travel lanes in each direction, as well as the shared use path on the eastern side of the road as recommended in the last character area. The crosswalk at Burr Street is updated to provide a bicycle and pedestrian crossing to safely connect the shared use path to the terminus of the riverwalk. The continuation of proposed street trees along South Main Street contributes to the aesthetic appeal of street landscape and increases the urban tree canopy. A rain garden is proposed within the



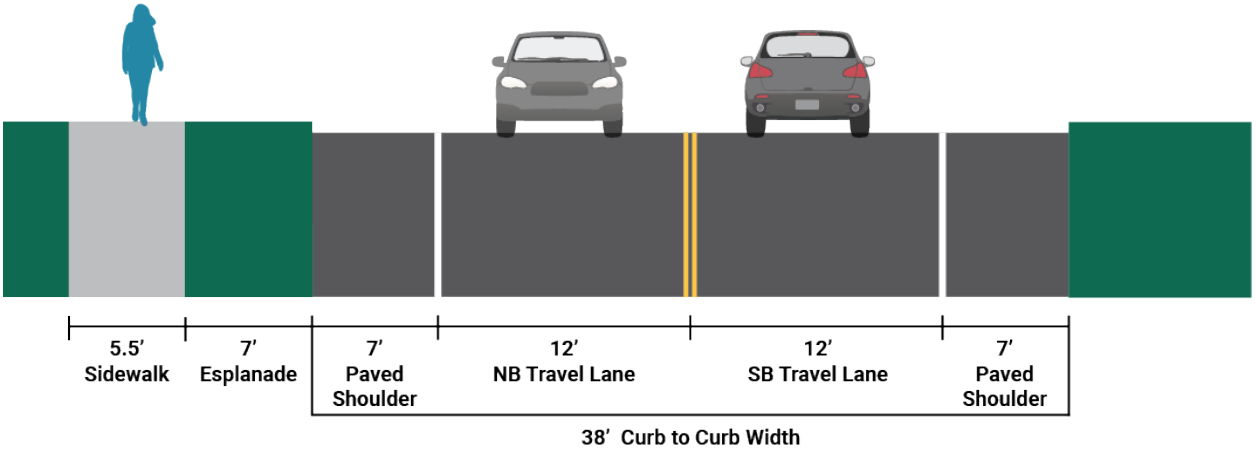
## *Gateway Character Area – Proposed Alternative*



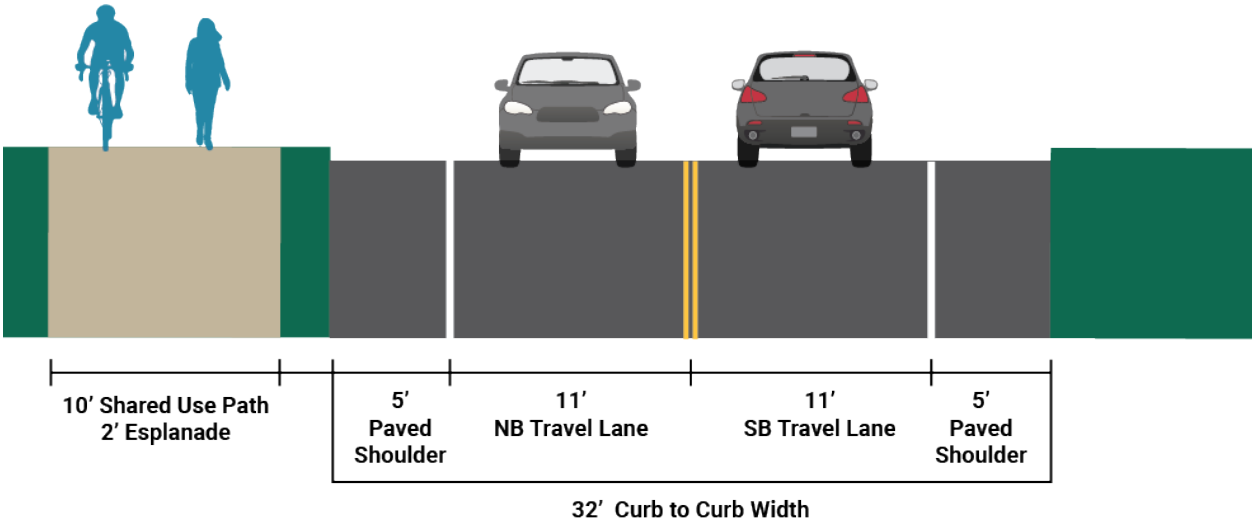
existing large green space to help capture and infiltrate stormwater runoff. In order to avoid cemetery impacts, the shared use path narrows to 10' with a reduced esplanade for about 300'.

The estimated planning level costs for the roadway recommendations on South Main Street from Burr Street to Baker Boulevard is $1,500,000. This estimate does not include paving or reconstruction of the existing travelways and assumes a 30% contingency with construction in 2028. The full cost estimate breakdown can be found in Appendix D.

## Existing South Main Street Cross Section - Burr Street to Baker Boulevard (looking south)




## Proposed South Main Street Cross Section - Burr Street to Baker Boulevard (looking south)



# Highway Interchange Character Area

This segment of South Main Street is dominated by the I-395 interchange (Exit 4) with South Main Street. The I-395 Exit 4 Westbound ramp is stop controlled at the intersection of South Main Street, with a single approach lane for all movements from the off-ramp. Entering the Westbound ramp, a right-turn slip lane is provided for South Main Street northbound from the rightmost through-right lane.

The I-395 Exit 4 Eastbound Ramp intersects with South Main Street at a signalized intersection. There are two approach lanes from the off-ramp: one left turn lane that is controlled at the signal and one sweeping right turn slip lane that is yield-controlled. This slip lane is a MaineDOT high crash location. In addition, the speeds maintained around the sweeping ramp appear fast. The South Main Street southbound approach has a left turn lane at the signal for access onto I-395 Eastbound.

## Roadway Evaluation

Within this Character Area, the following roadway components were evaluated:

- Eliminating travel lanes
- Adding a landscaped median
- Signalizing the Exit 4 Westbound ramp
- Reducing roadway widths to provide traffic calming
- Continuing the shared use path on the eastern side of South Main Street

## Proposed Alternative

The proposed alternative for this area prioritizes vehicular safety at the I-395 interchange and bicycle and pedestrian safety and accommodations through this area to further reconnect the neighborhoods divided by the highway. Travel lanes in both directions are narrowed from 12ft to 11ft. The 12ft shared use path is continued, with safe crossings at the highway interchanges and a signalized crossing between the westbound ramp and the park on the river side of South Main Street. The tree planting in the center median of South Main Street plays a key role in enhancing the overall streetscape aesthetic and increases the urban tree canopy. Where feasible, sidewalk grass strip and tree plantings are proposed.

The intersection geometry of the eastbound exit ramp has been realigned to improve safety by tightening up the right turn slip lane to slow traffic and improve sight lines.

The westbound exit ramp intersection with South Main Street is signalized and the right turn only lane into Baker Boulevard has been eliminated. A push-button crosswalk has been added at the intersection to connect the shared use path with the waterfront park on the western side of South Main Street. These improvements will increase safety for all roadway users.

The estimated planning level costs for the roadway recommendations on South Main Street from Baker Boulevard to Abbott St. is $3,740,000. This estimate does not include paving or reconstruction of the existing travelways and assumes a 30% contingency with construction in 2028. The full cost estimate breakdown can be found in Appendix D.


***Highway Interchange Character Area – Proposed Alternative***


Gateway Character Area
S Main St
1
2
3
4
5
6
Oak Hill
Cemetery
Baker Boulevard
I-395 Westbound
Ramps

# Funding Opportunities

The City of Brewer has several options for procuring funding to implement some or all of the recommendations from this study. Funding sources are subject to change and should be reviewed regularly. A list of potential funding sources is provided below:

## USDOT Funding Programs

### INFRASTRUCTURE FOR REBUILDING AMERICA (INFRA) PROGRAM:

The INFRA program awards competitive grants to multimodal freight and highway projects of national or regional significance to improve the safety, accessibility, efficiency, and reliability of the movement of freight and people in and across rural and urban areas. Eligible projects will improve safety, generate economic benefits, reduce congestion, enhance resiliency, and hold the greatest promise to eliminate supply chain bottlenecks and improve critical freight movements.

### RURAL SURFACE TRANSPORTATION GRANT (RURAL) PROGRAM:

The Rural program supports projects that improve and expand our nation's surface transportation infrastructure in rural areas in order to increase connectivity, improve the safety and reliability of the movement of people and freight, and generate regional economic growth and improve quality of life. Eligible projects for Rural grants include highway, bridge, and tunnel projects that help improve freight, safety, and provide or increase access to agricultural, commercial, energy, or transportation facilities that support the economy of a rural area. 90% of rural funding must be awarded in $25 million or greater amounts.

### RECONNECTING COMMUNITIES AND NEIGHBORHOODS (RCN) GRANT PROGRAM:

The RCN Program provides opportunities to redress the legacy of harm from transportation infrastructure including: construction-related displacement, environmental degradation, limited access to goods and services, degraded public health due to air and noise pollution, limited opportunities for physical activity, and hampered economic vitality of the surrounding community.

### NEIGHBORHOOD ACCESS AND EQUITY GRANT (NAE) PROGRAM:

This program provides funds for projects that improve walkability, safety, and affordable transportation access through context-sensitive strategies and address existing transportation facilities that create barriers to community connectivity or negative impacts on the human or natural environment, especially in disadvantaged or underserved communities. The program also provides funding for planning and capacity building activities in disadvantaged or underserved communities as well as funding for technical assistance to units of local government to facilitate efficient and effective contracting, design, and project delivery and to build capacity for delivering surface transportation projects.

### SAFE STREETS AND ROADS FOR ALL (SS4A) GRANT PROGRAM:

The program supports the development of a comprehensive safety action plan (Action Plan) that identifies the most significant roadway safety concerns in a community and the implementation of projects and strategies to address roadway safety issues. Planning and Demonstration Grants provide Federal funds to develop, complete, or supplement a comprehensive safety action plan. The goal of an Action Plan is to develop a holistic, well-defined strategy to prevent roadway fatalities and serious injuries in a locality, Tribe, or region.

## MaineDOT Funding Programs

### VILLAGE PARTNERSHIP INITIATIVE (VPI):

The Village Partnership Initiative is designed to be available to all willing communities that have or can agree upon a local vision. Village projects can vary from small, spot improvements to large, once-in-a-lifetime

investments if we can successfully partner to access federal discretionary funds. Working with other agencies, these communities should have access to broadband, as good Internet connections are as important as physical connections are today.

The VPI program is for the planning phase of the project, with the goal of pursuing federal funding for implementation. Ten million dollars has been allocated by MaineDOT for this program annually for the next three years. Spot VPI project do not include any federal funds, and MaineDOT matches only construction funds. A 50% local match is required.

#### URBAN PARTNERSHIP INITIATIVE (UPI):

The Urban Partnership Initiative is only available to municipalities that are a part of a Metropolitan Planning Organization. The funding program is intended for active transportation projects. A 50% local match is required.

#### MUNICIPAL PARTNERSHIP INITIATIVE (MPI):

MaineDOT's Municipal Partnership Initiative is intended to be a streamlined program to address municipal requests that deal with transportation infrastructure issues on state and state aid highways, encourage economic opportunities, and make improvements to infrastructure to increase its life or correct safety deficiencies. This program is focused on the road core and may include surface treatments, road reconstruction, drainage improvements, intersection improvements, and more.

Funding cannot be bike & pedestrian focused, but it could be used to reconstruct roadway pavement and subgrade. A project cannot have both Village Partnership Initiative (VPI) and MPI funding. A 50% local match is required.

#### BICYCLE AND PEDESTRIAN PROGRAM FUNDING:

This program assists with funding sidewalks, pedestrian crossing improvements, off-road transportation- related trails, downtown transportation improvements, projects that address safety and/or ADA compliance concerns, etc. The goal of this program is to improve transportation and safety, encourage healthful activities, and promote economic development, while improving the livability and vitality of local communities. MaineDOT is currently accepting applications for projects to be constructed 3 years out.

## BACTS

Whether funded through UPWP, PPI, or VPI; municipalities are required to participate in the MPO through the development of the UPWP and MPO process (including requisite local match commitments), and work with both the MPO and MaineDOT to build a vision to bring the project to a state of "Grant Readiness"
- Once at a state of Grant Readiness, and if all three parties agree to pursue funding, MaineDOT, the MPO, and the Municipality will pursue funding through the development of the Work Plan and/or from the discretionary grant or other federal funding opportunities that are most applicable to the project.

## State of Maine

#### MAINE COMMUNITY RESILIENCE PARTNERSHIP:

This statewide program provides grants of up to $75,000 to local governments. Recommended by Maine's four-year climate action plan, Maine Won't Wait, the Partnership offers communities support for both climate mitigation and adaptation activities. It is administered by the Governor's Office of Policy Innovation and the Future. Completing a Resiliency Zoning Study for the land between the Penobscot River and South Main Street would be an eligible activity. In 2024, the City of Portland completed a similar study with grant funding through the Maine Community Resilience Partnership.

# Implementation Plan

## Priority of Roadway Improvements

Depending on the future of funding availability, the Stantec Team recommends either implementing the roadway improvements for the entire South Main Street Corridor as a single project or implementing the recommendations as two separate projects in the following sequence:

1. Neighborhood Character Area - Wilson St. to Burr St.
2. Gateway Character Area and Highway Interchange Character Area- Burr St. to Abbott St.

This prioritization builds on the recommendations of MaineDOT's Village Partnership Initiative program, this study's Purpose and Need, and feedback received from the Study Team and the public throughout the planning process. Since the Neighborhood Character Area overlaps with the VPI Study Area, this is a logical first step. This portion of the Study Area also includes the greatest density of residential and commercial uses and is poised to change the most over the coming decade. The Gateway Character Area and Highway Interchange Character Area continue southward sequentially from there and should be implemented accordingly as funding permits.

## Construction Considerations

South Main Street is a State road and will need coordination with MaineDOT. In particular, the projects will need to go through the Traffic, Analysis, and Movement Evaluation (TAME) process. This input along with the City's review will identify acceptable traffic control restrictions during construction, including times of day work, lane/shoulder closures, allowable alternating two-way traffic, traffic control at the signalized intersections, and sidewalk detours.

## Implementation Timeline

Once funding is secured, the design process from conducting topographic surveys, preliminary and final design, and advertising a contract is expected to take a minimum of 24 months with the length of the ROW process being a critical path item on the timeline. If the full corridor is constructed at once, it is anticipated that it would take two construction seasons; whereas if the project is phased, the Neighborhood Character Area should be expected to be completed within one construction season, while the Gateway and Highway Interchange Character Areas will take two seasons.

## Design

| Design Services Tasks | Year 1 | | | | | | | | | | | | Year 2 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | January | February | March | April | May | June | July | August | September | October | November | December | January | February | March | April | May | June | July | August | September | October | November | December |
| Preliminary Design | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | | | | | | | | | |
| Final Design | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| ROW Process | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Utility Coordination | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Environmental Permits | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Maintenance of Traffic Assessment | | | | | ■ | ■ | | | | | | | | | | | ■ | ■ | ■ | ■ | ■ | | | |

## Construction

### Gateway Character Area and Highway Interchange Character Area- Burr St. to Abbott St.

| Design Services Tasks | Year 1 | | | | | | | | | | | | Year 2 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | January | February | March | April | May | June | July | August | September | October | November | December | January | February | March | April | May | June | July | August | September | October | November | December |
| Project Advertisement & Award | ■ | ■ | | | | | | | | | | | | | | | | | | | | | | |
| Mobilization | | | ■ | | | | | | | | | | | | | | | | | | | | | |
| Drainage, Utilities, Foundations | | | | ■ | ■ | ■ | ■ | | | | | | | | | | | | | | | | | |
| Excavation | | | | | ■ | ■ | ■ | | | | | | | | | | | | | | | | | |
| Gravel & Base Pavements | | | | | | | ■ | ■ | ■ | ■ | | | | | | | | | | | | | | |
| Curbing | | | | | | | ■ | ■ | ■ | ■ | | | | | | | | | | | | | | |
| Signals, Signing, and Landscaping | | | | | | | | | | | | | | | | | ■ | ■ | ■ | ■ | | | | |
| Surface Pavements & Striping | | | | | | | | | | | | | | | | | | ■ | ■ | ■ | ■ | | | |

## Construction

### Neighborhood Character Area - Wilson St. to Burr St

| Design Services Tasks | Year 1 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | January | February | March | April | May | June | July | August | September | October | November | December |
| Project Advertisement & Award | ■ | ■ | | | | | | | | | | |
| Mobilization | | | ■ | | | | | | | | | |
| Drainage, Utilities, Foundations | | | | ■ | ■ | ■ | | | | | | |
| Excavation | | | | | ■ | ■ | | | | | | |
| Gravel & Base Pavements | | | | | | ■ | ■ | ■ | | | | |
| Curbing | | | | | | ■ | ■ | ■ | | | | |
| Signals, Signing, and Landscaping | | | | | | | | ■ | ■ | ■ | | |
| Surface Pavements & Striping | | | | | | | | | ■ | ■ | | |