FEASIBILITY STUDY

Lower Road Rail Corridor Study

Brunswick to Augusta, Maine

MaineDOT

Maine Department of Transportation
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Introduction and Summary

The Maine Department of Transportation retained VHB to study potential uses of the state-owned Lower Road rail corridor from Brunswick to Augusta The work effort included analysis of the environmental impacts and potential economic benefits of either the introduction of a trail along the state-owned, inactive rail corridor (to either temporarily replace the railroad tracks or to run alongside them) or preserving the existing rail corridor for possible restoration of rail service in the future. This report summarizes the findings of the 9-month-long study.

1.1 Purpose of the Study

The purpose of this report is to summarize the analysis of potential uses along the Lower Road corridor rail line from downtown Brunswick to the east side of the Maine Central Railroad Bridge in Augusta. The 33.5-mile-long, state-owned corridor runs through Brunswick, Topsham, Bowdoinham, Richmond, Gardiner, Farmingdale, Hallowell, and Augusta. The intent is to inform the recommendation of the Rail Use Advisory Council (RUAC), as established by Maine's Legislative Document (LD) 1133. The RUAC's recommendation will be addressed to the MaineDOT Commissioner for final assessment and decision. Throughout the process, the consultant team—led by VHB, with assistance from economists RKG Associates—evaluated three potential uses for the corridor with sub-options for the first alternative. The potential alternatives include:

- **Maintain and Preserve Existing Rail Corridor** – provides for possible restoration of rail service in the future with potential rehabilitation of the existing railroad infrastructure to support the reestablishment of rail operations. Operations may include:
    - Continuation of MaineDOT's current patrol and maintenance activities along the existing track corridor to ensure the existing rails remains intact and viable for possible reestablishment of rail service in the future.

  - Reestablishment of freight rail service, including performance of State of Good Repair and Deferred Maintenance projects, targeted to accommodate delivery of materials and goods to commercial and industrial customers.
  - Implementation of a passenger rail service, including capital infrastructure improvements needed to attain higher operating speeds and support a level and frequency of service that would meet ridership demands.

- **Interim Trail (IT)** – interim multi-use trail using the existing rail bed. This alternative includes removal of the existing tracks and ties and developing a multi-use trail on the former track bed. The trail surface may be gravel/stone dust or paved. The corridor will require minor modifications to support trail user loads and provide a uniform surface appropriate for the trail as well as a railing system, where needed, to safely accommodate bicyclists and pedestrians.
- **Rail with Trail (RWT)** – multi-use trail running adjacent to the existing rail bed. This alternative maintains the existing tracks and ties in current condition and establishes an adjacent and parallel multi-use trail with either a gravel/stone dust or paved surface. Grade differences in certain areas of the corridor will require retaining walls to support a new trail. Since this option assumes the rail will be in service, or someday return to service, the near edge of the trail (not including shoulder) shall be a minimum of 15 feet from the nearest rail, in accordance with MaineDOT standards for development of a RWT. However, this setback may be reduced to 10.5 feet, with MaineDOT approval if a fence meeting MaineDOT standards is installed at the edge of the trail shoulder between the trail and the closest rail. It should be noted that a RWT configuration adjacent to inter-city passenger trains—typically moving much faster than freight trains or scenic excursion trains —may be an uncomfortable experience for adjacent trail users and most, if not all, the existing RWT facilities currently operated within the State are located

Members of the Lower Road Rail Use Advisory Council (RUAC)

- Mathew Eddy (Chair), Director, Midcoast Council of Governments
- Doug Beck, ME Bureau of Parks and Lands
- Nicole Briand, Town Manager, Town of Bowdoinham
- Tony Cameron, CEO, Maine Tourism Association
- Jeremy Cluchey, Chair of the Merrymeeting Board of Supervisors (Bowdoinham)
- Doug Ebert, Chair of Select Board, Town of Farmingdale
- Tom Farrell, Director of Parks and Rec., Town of Brunswick
- Gay Grant, City of Gardiner and Chair of Trail Committee
- Gary Lamb, Hallowell City Manager
- Keith Luke, Economic Development Director, City of Augusta
- Matt Nixon, Select Board member, Town of Topsham
- Carolann Ouellette, Director, Maine Office of Outdoor Recreation
- Richard Rudolph Ph.D, ME Rail Users Network, MRG Board
- F. Bruce Sleeper, TrainRiders/ Northeast President and attorney (replaced Richard Rudolph)
- Larissa Loon, Town Manager, Town of Richmond

MaineDOT Staff Support

- Nate Moulton, Director of Freight and Passenger Services
- Nate Howard, Project Manager and Director, Rail Program
- Dakota Hewlett, Active Transportation Program Manager

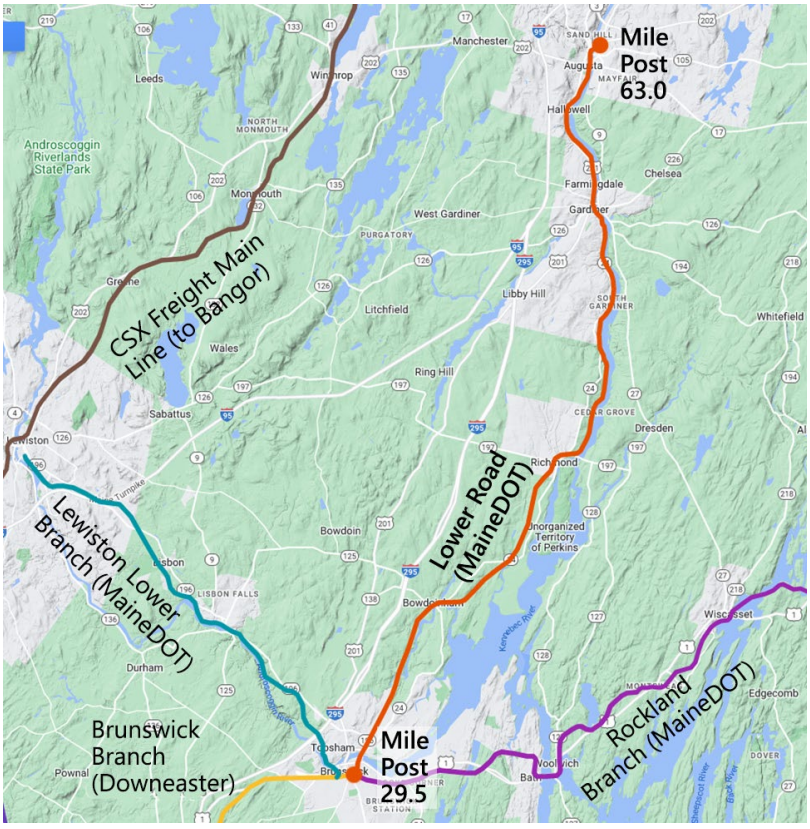
where tracks are out of services or where trains operate at relatively lower speeds.

For this high-level analysis, GIS-based maps were reviewed and analyzed, and online information was gathered (e.g., Google Earth). The study team was familiar with the corridor from previous studies performed for MaineDOT. Additionally, MaineDOT and VHB staff conducted a one-day review of the rail corridor via hi-rail vehicle. Detailed site inspection visits and topographic survey were not performed as part of this study.

Monthly meetings were held with the RUAC. These meetings were critical to help the study team understand the key issues along the corridor. In June, one public meeting allowed members of the public to bring forth ideas or to express concerns. **Future planning and design work along the corridor will require additional research, topographical survey, environmental review, site investigations, and more extensive outreach to abutters and nearby residents and businesses**.

1.2 Study Area

The Lower Road Rail Corridor runs along a 66-99-foot-wide state-owned corridor (some segments are as wide as 110 feet). The 33.5-mile-long corridor runs through eight towns, including Brunswick, Topsham, Bowdoinham, Richmond, Gardiner, Farmingdale, Hallowell and Augusta. The combined population of the towns is roughly 71,000, while just over 30,000 live within one-half mile of the corridor. Termini of the state-owned portion of the corridor includes the rail "Y" adjacent to Federal Street in Brunswick at the south end and the east end of the bridge over the Kennebec River in downtown Augusta at the north end. The Kennebec River Rail Trail (KRRT) runs along a roughly 6.3-mile-long segment between Farmingdale and downtown Augusta adjacent to the Lower Road corridor, in a rail-with-trail configuration.



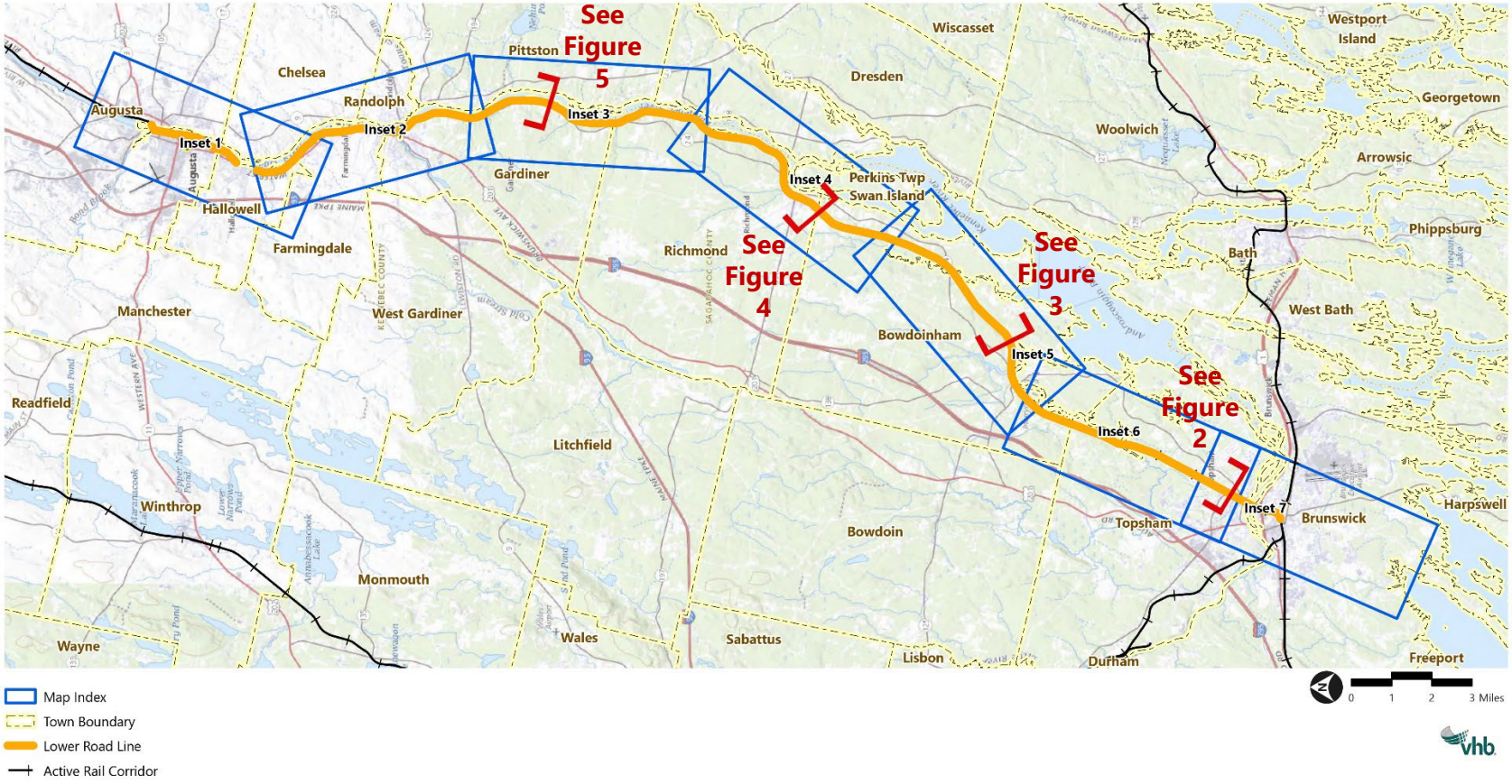
Lower Road Rail Corridor Study Context Map

The corridor crosses 30 public roadways at-grade. Approximately half of the publicly accessible at-grade crossings on the Corridor were equipped with Automated Highway Crossing Warning (AHCW) devices, all of which are currently out of service (turned off) and would need restoration or replacement if rail is placed back into service. There are also three locations where the existing KRRT crosses the Lower Road corridor at grade in Farmingdale and Hallowell. Additionally, there are three semi-private roadways or driveways and 21 additional at-grade crossings of private and/or farm roads

where cross traffic volumes and speeds are much lower and less of a concern for interim trail use. Twenty-four extant bridges help the former rail line cross rivers and streams and there are three additional existing roadway bridges over the ROW. The corridor crosses through two environmentally sensitive areas, including:

- Topsham: NWI wetlands in the area adjacent to the multiple stream crossings between Head of the Tide Park and the Kennebec River
- Richmond: NWI wetlands in the State Wildlife Management Area adjacent to the Kennebec

Figure 1: Study Area Overview Map



See subsequent pages for example cross sections (Figures 2-5) and individual inset maps (Figures 6-12).

EXISTING CONDITION CROSS SECTIONS

Figure 2: Topsham, just south of the Tedford Road crossing

Figure 3: Bowdoinham, Rt. 24/River Road just west of the bridge

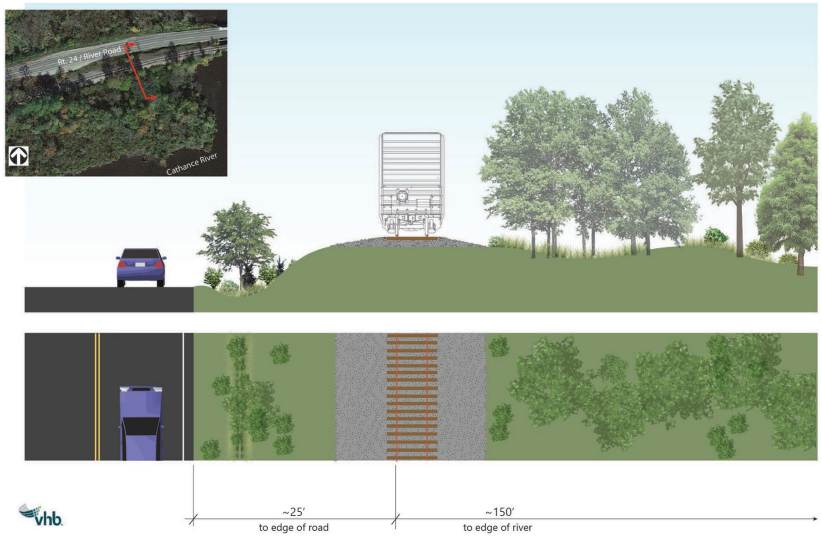


Figure 4: Richmond, at the Main Street crossing

Figure 5: Gardiner, Rt. 24/River Road adjacent to Kennebec River

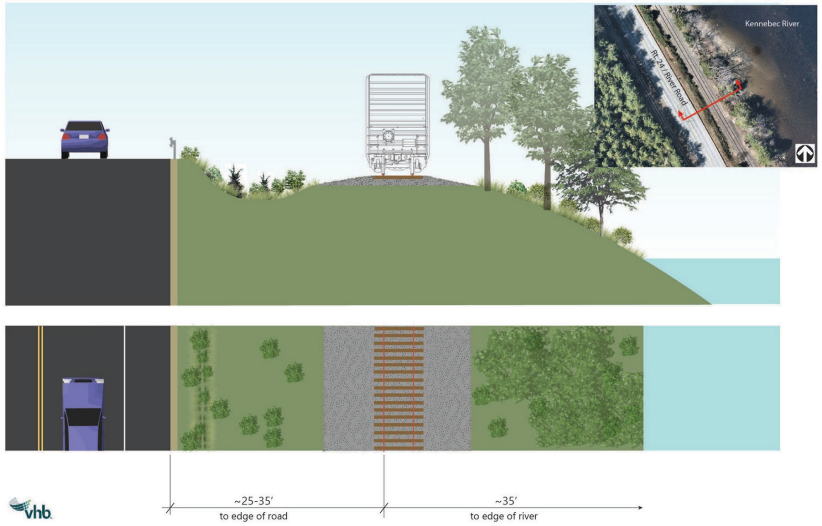


Figure 6: Lower Road Corridor Inset 1, Augusta-Hallowell-Farmingdale segment

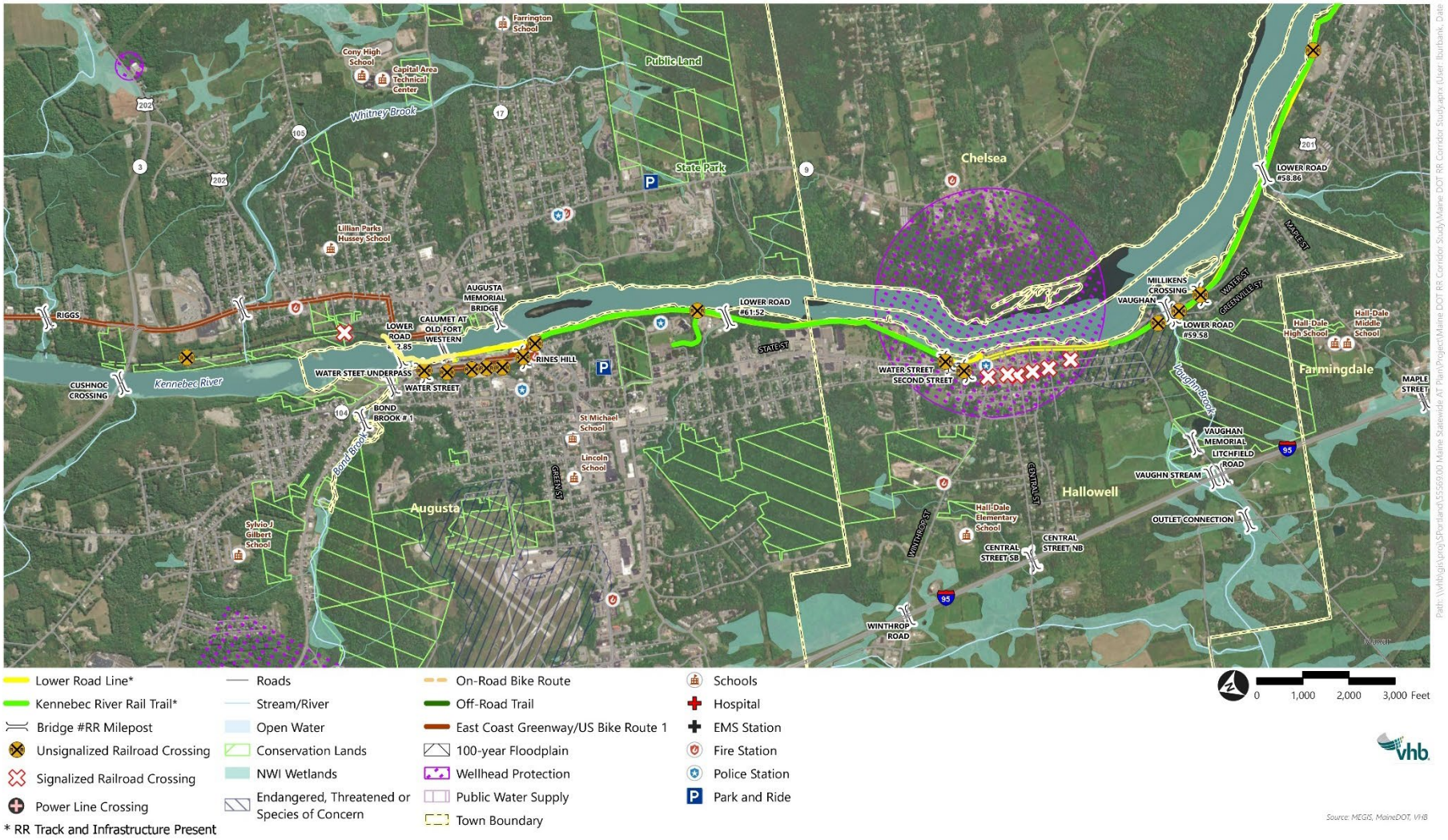


Figure 7: Lower Road Corridor Inset 2, Hallowell-Farmingdale-Gardiner segment

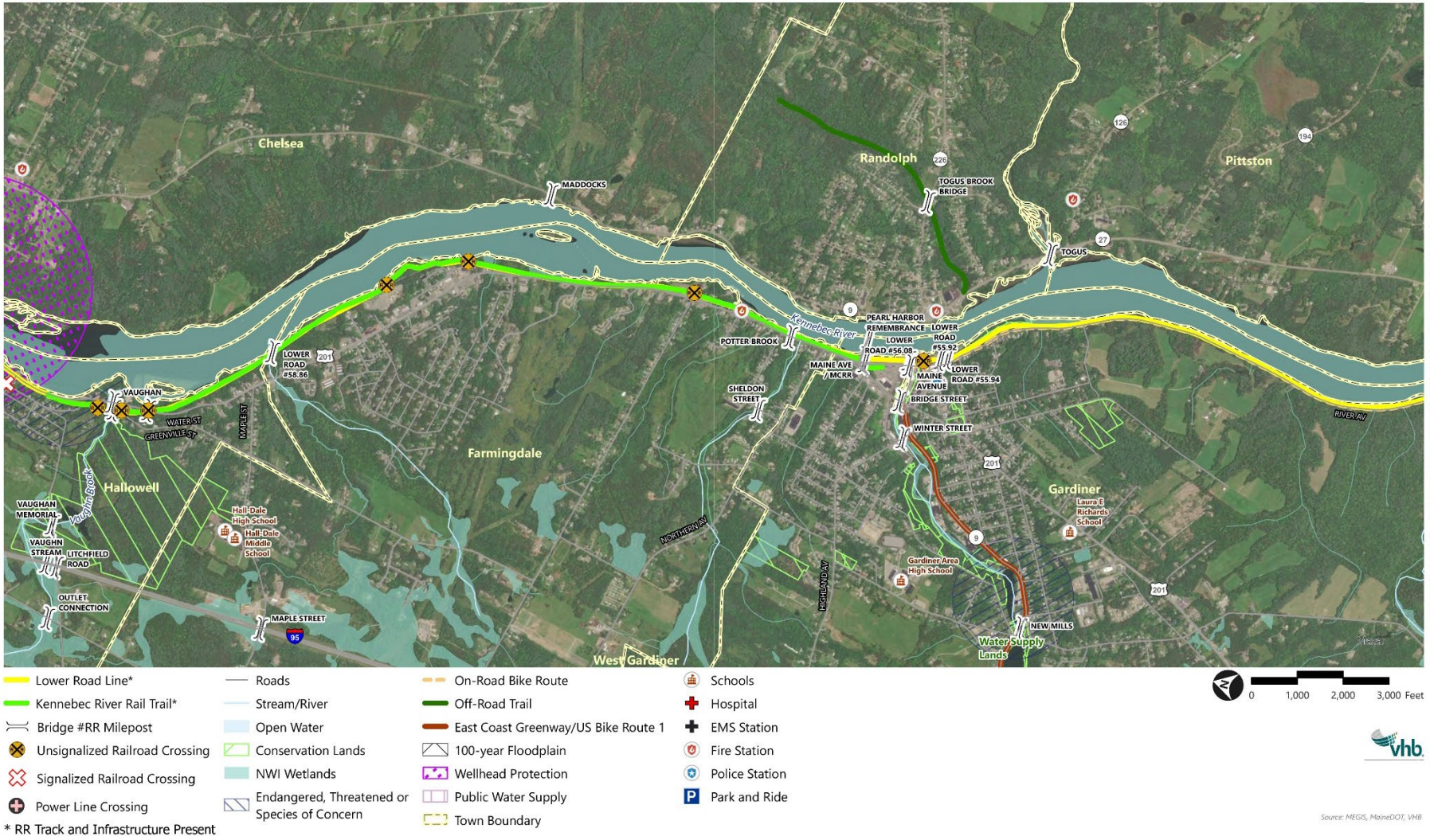


Figure 8: Lower Road Corridor Inset 3, Gardiner-Richmond segment

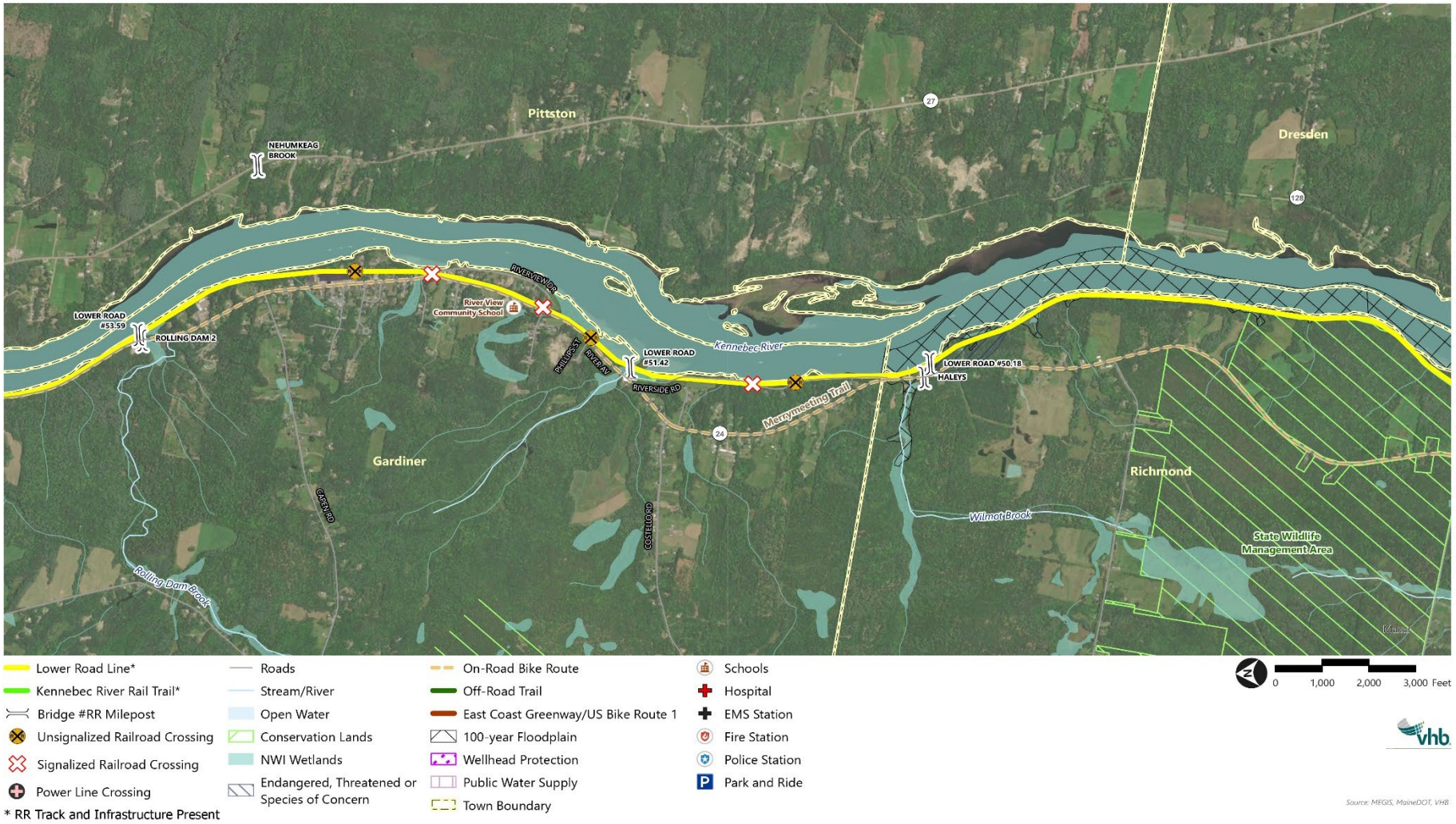


Figure 9: Lower Road Corridor Inset 4, Richmond-Bowdoinham segment

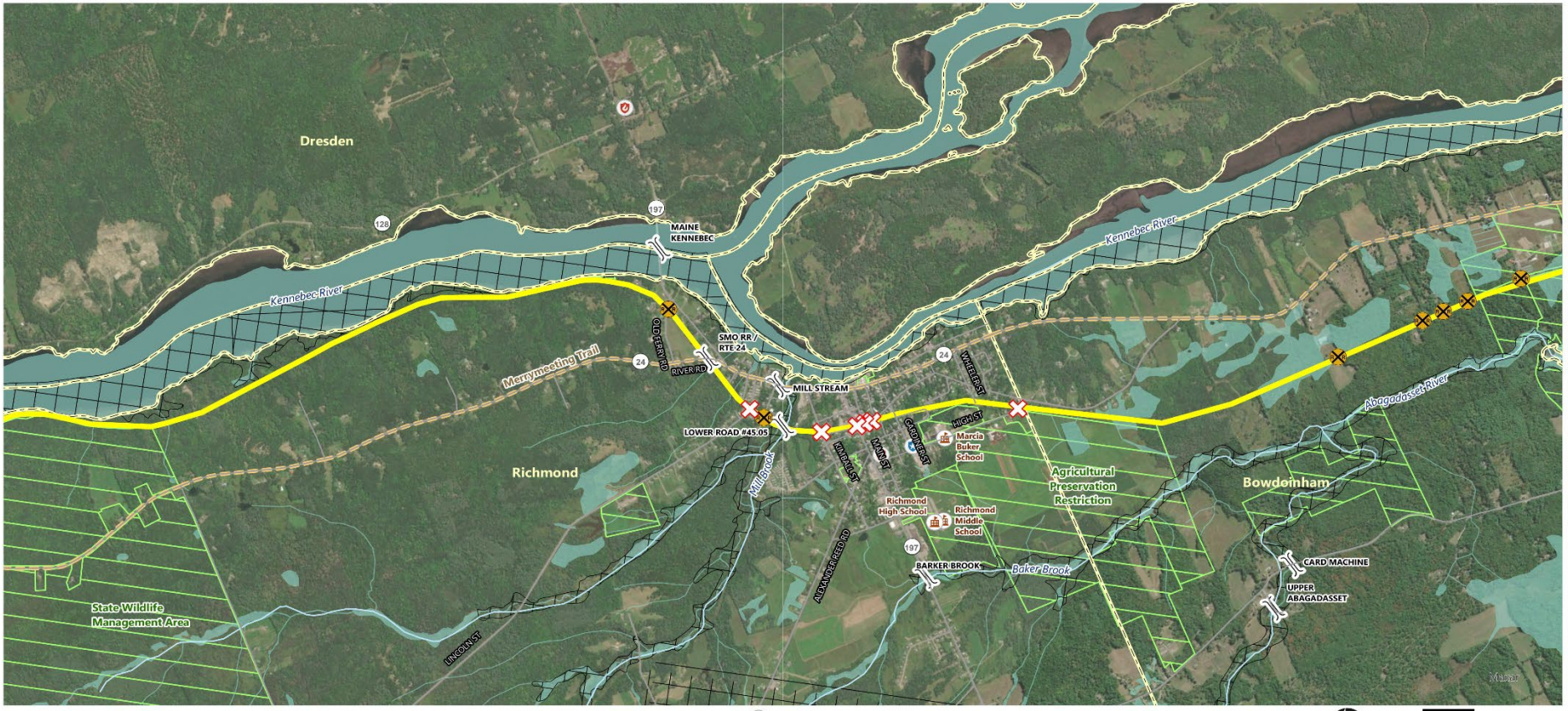


Figure 10: Lower Road Corridor Inset 5, Bowdoinham segment

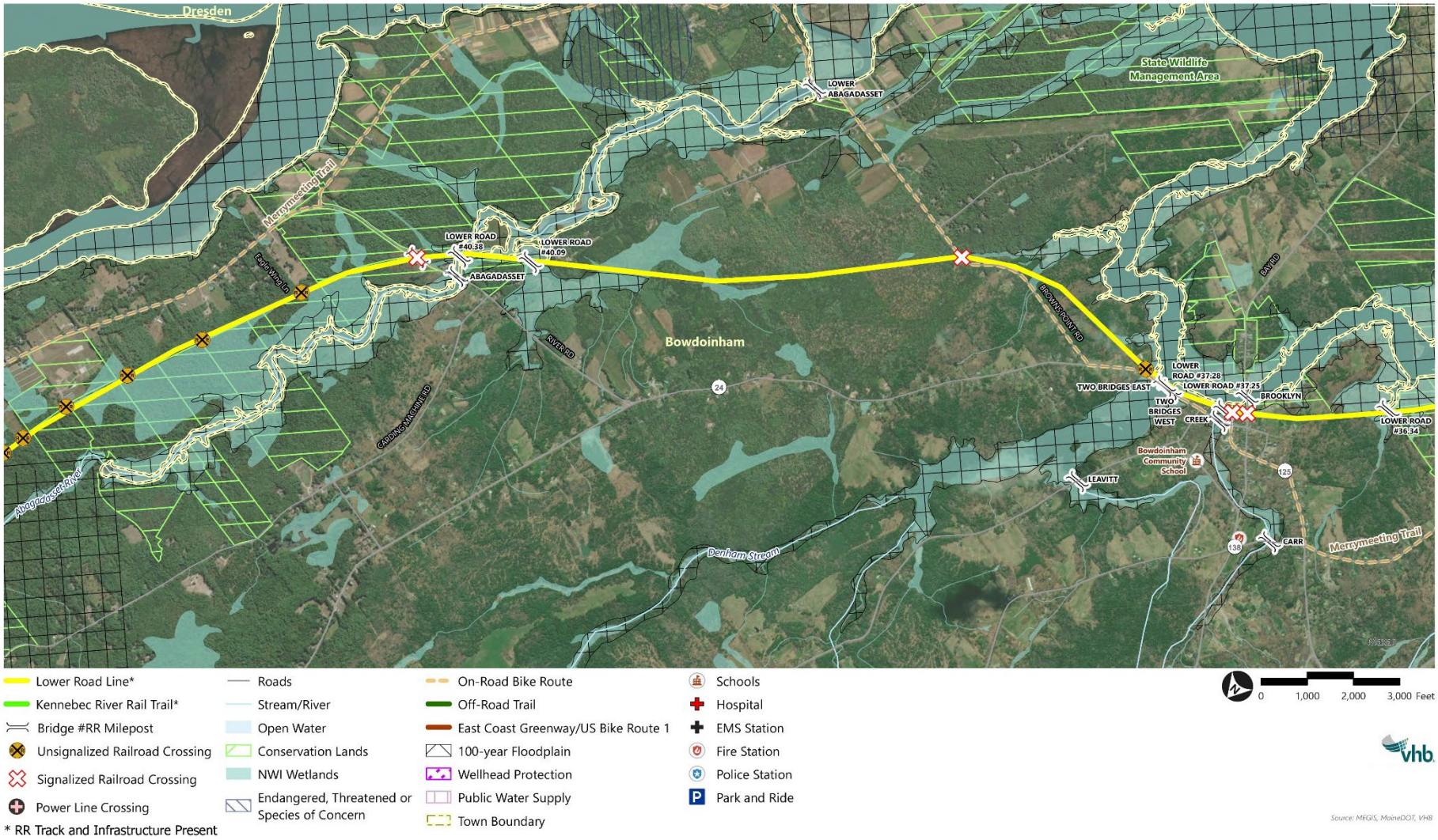


Figure 11: Lower Road Corridor Inset 6, Bowdoinham-Topsham segment

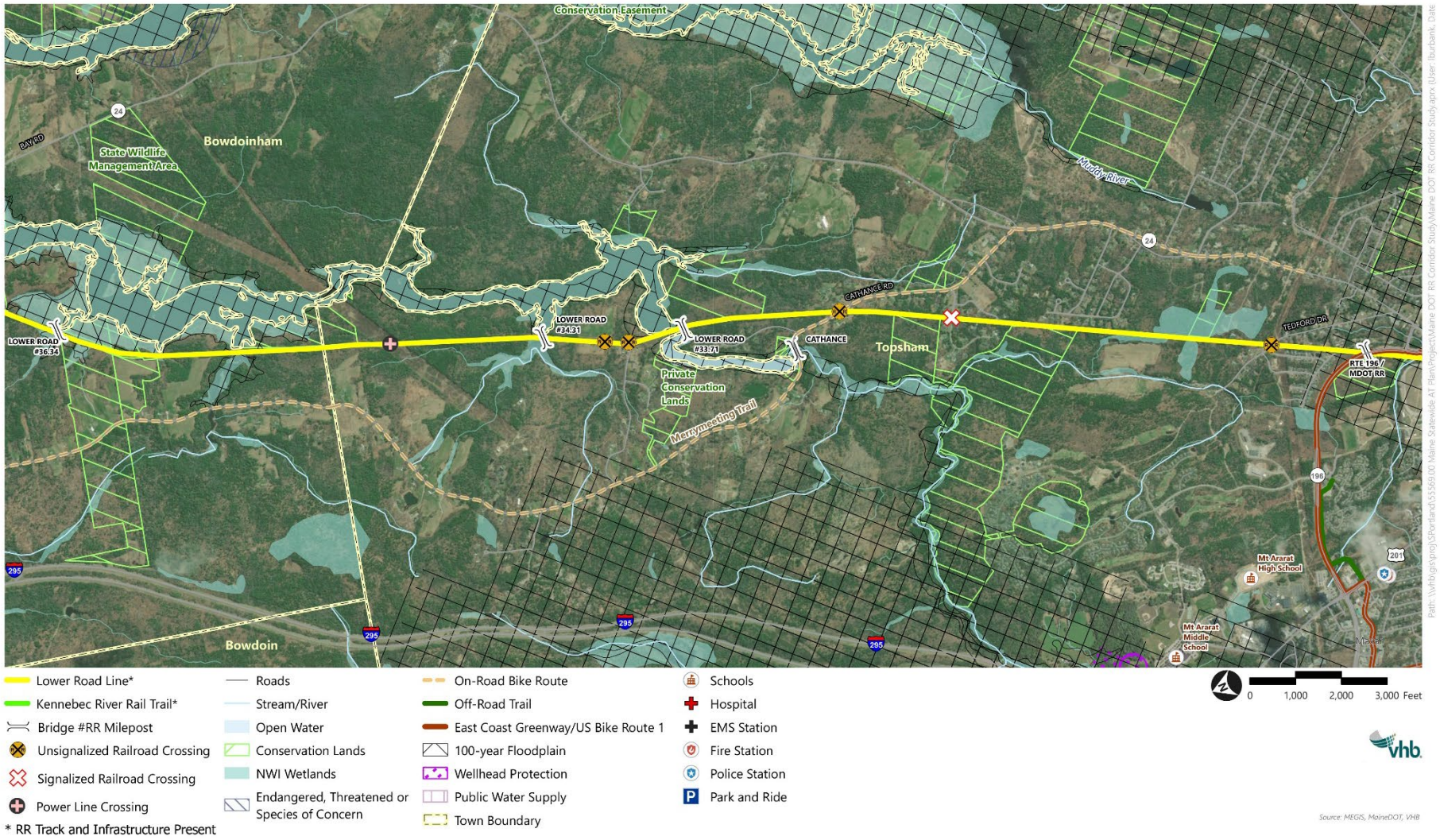
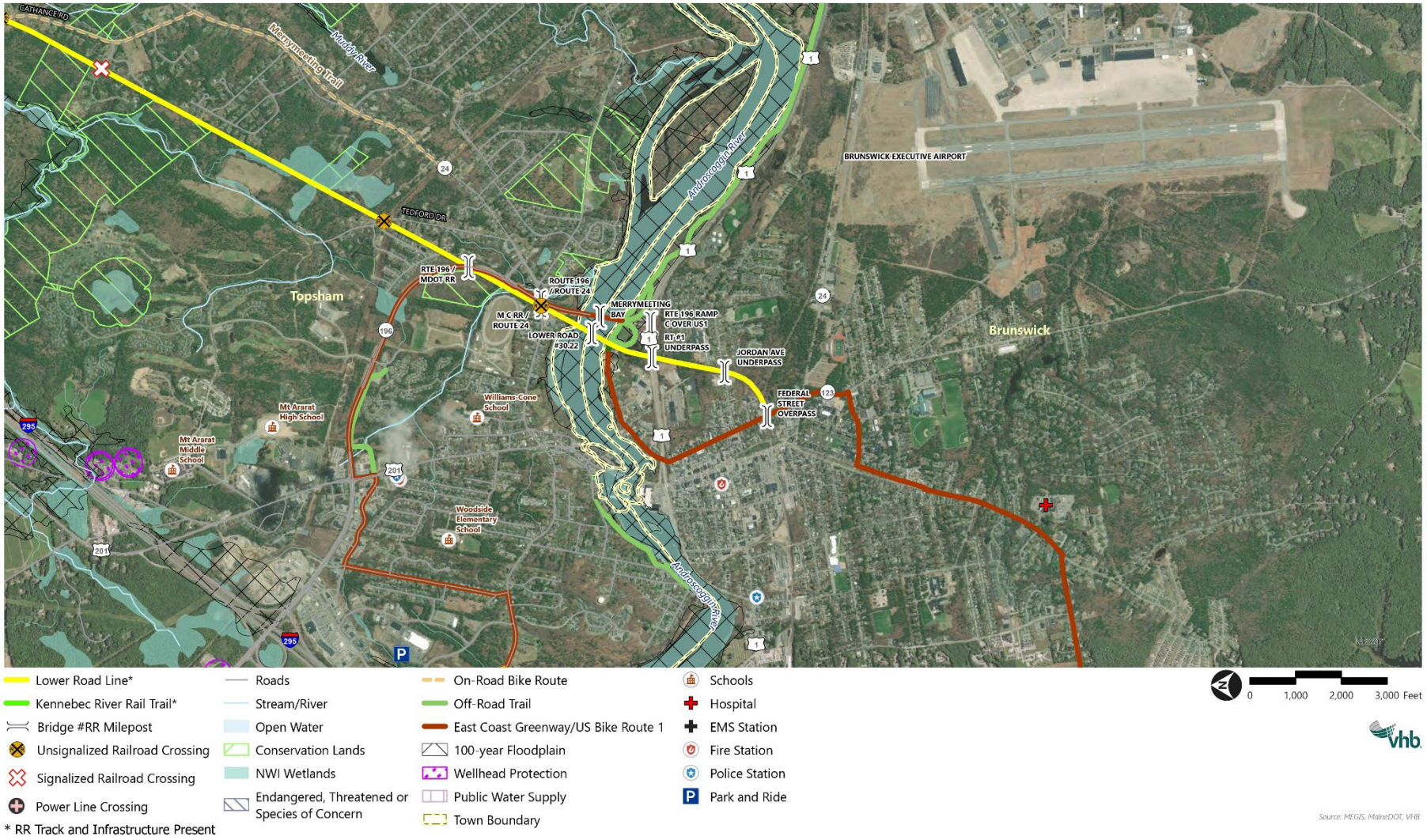


Figure 12: Lower Road Corridor Inset 7, Topsham-Brunswick segment



Assessment of Study Area Environmental Challenges

As part of the feasibility study, VHB conducted a desktop-level GIS analysis to identify any potential impacts to adjacent natural resources. Desktop data sources included: US Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) Mapping; Inland Waterfowl and Wading Bird Habitat (IWWH), Tidal Waterfowl and Wading Bird Habitat (TWWH), Endangered, Threatened and Concerned Wildlife Habitat, and Significant Vernal Pools as mapped by the Maine Department of Inland Fisheries and Wildlife (MDIFW) Beginning with Habitat web-based map viewer; and FEMA Flood Zone Layers (MEGIS & FEMA). Desktop-level GIS analyses are limited in nature due to the availability and quality of publicly available natural resource data and should not be used for permitting purposes. However, these data are a great tool that can be used to approximate resource areas and abundance, estimate potential impacts, and inform the evaluation of the feasibility of alternatives.

In the next chapter, the environmental analysis of the multiple alternatives for the Lower Road Rail Corridor is summarized, including the restoration of rail service, establishment of interim trail use, and permitting requirements related to wetlands and sensitive habitats.

1.3 Previous/Concurrent Planning Studies

The recently completed Bangor Transit Propensity Study (MaineDOT, with VHB as the consultant) was determined to be especially relevant for the analysis effort related to the Lower Road Rail Corridor. A summary of the study is below.

Bangor Transit Propensity Study (2023)

The Bangor Transit Propensity Study evaluated existing transportation options between Portland and Bangor, transit propensity and potential demand, passenger rail considerations including benefits, capital costs, ongoing operating costs, and estimated per passenger cost and ticket prices, enhancement of existing bus services, and climate and equity considerations. The Lower Road segment that is being evaluated under this RUAC study is a part of one of the potential routes that was considered to extend passenger rail service from the Portland area into Bangor.

The Study estimated that a new or improved transit service could serve between 56,000 - 80,000 trips per year, or about 153 to 219 trips per day in 2023, and between 62,250 - 87,650 trips per year, or about 171 to 240 trips per day, by 2040. The trips represent a potential shift from personal vehicles to transit; however, some of these existing trips are already using existing transit services. A trip is defined as any one-way travel anywhere within the corridor, meaning a single rider making a round trip on transit would count as two trips. For comparison, adjoining interstate highways carry a range of about 3.7 to 8.9 million vehicles per year, or about 10,220 to 24,260 per day depending on location. In 2019, Concord Coach and Greyhound buses accounted for 149,000 trips in the study area.

The costs associated with various routes and options that would extend passenger rail service to Bangor were estimated to range from $375 million and $902 million due to the length of the corridor and further evaluations necessary. These cost levels would rival the amount of capital funding from all sources from both federal and state that MaineDOT currently spends on highway and bridges statewide in a year. Additionally, to compete for federal funding the project must score high on specific criteria such as population density and land use, mobility improvements, and cost effectiveness.

To bring passenger rail to Bangor, the propensity study indicated that the State of Maine would also need to heavily subsidize ticket prices to keep prices low enough to attract passengers while also covering operational costs. The study provided a conceptual "order of magnitude" estimate of costs and MaineDOT considered potential subsidized and unsubsidized costs to passengers. MaineDOT estimates that if the state were to provide a 50% subsidy, which is consistent with the existing Amtrak Downeaster service, the cost of a one-way ticket between Bangor and Brunswick would be between $84 and $116. To be competitive with other transit options that average $30, the state would need to provide additional subsidies for each ticket between 83% and 87% of the total passenger cost.

Addressing environmental concerns and reducing greenhouse gas emissions is a top priority for the State of Maine and MaineDOT. However, the study indicated that greenhouse gas reductions from increased public transportation by rail would be relatively small given the low ridership demand. MaineDOT concluded that such reductions could be better addressed through enhanced bus service options rather than passenger rail.

Upon completion of the study, MaineDOT concluded that the most cost-effective, timely, equitable, and climate-friendly way to improve public transportation between Portland and Bangor is to work with the current intercity bus operators in the corridor to advance a pilot to provide additional round trips and/or adding additional stops or route deviations. This will provide more service to more customers in intermediate municipalities in the study corridor.

1.4 Summary of Findings

The consultant team developed conceptual cost estimates for the three corridor alternatives described earlier, running from downtown Brunswick to the east side of the Maine Central Railroad Bridge in Augusta. The alternatives included:

- **1: Restore Rail Service on Existing Corridor** – includes freight rail operations (along Class 1-2 track) and Passenger rail service (along Class 3 track)
- **2: Interim Trail** – removes existing track and associated infrastructure and constructs trail on existing rail bed (either gravel/stone dust or paved)
- **3: Rail with Trail (RWT)** – constructs trail adjacent to the existing tracks and within the current state-owned ROW (either gravel/stone dust or paved)

To help make the cost estimates more digestible to RUAC members and other readers of this report, the 33.5-mile corridor was broken down into five segments of varying lengths. For the trail alternatives, the segmentation could potentially outline a phasing strategy for implementation as well. (For the restoration of rail alternatives however, development of the entire corridor in a single phase would be all-but-required to provide efficient freight or passenger rail service.) The segments include:

1. From Mile Post (MP) 29.5 (the rail "Y" near Federal St. in downtown Brunswick) to MP 31.1 (Tedford Rd. in Topsham).
2. From MP 31.1 to MP 44.76 (Main Street in Richmond, including the Main St crossing).
3. From MP 44.76 to MP 56.29 (the start of the Kennebec River Rail Trail in Gardiner).
4. From MP 56.29 for rail estimates or MP 59.57 (end of first section of KRRT) for trail estimates to MP 60.8 (start of another section of KRRT).
5. From MP 60.8 for rail estimates or MP 62.34 (end of this section of KRRT) for trail to MP 63.0 (the east end of the MaineDOT rail bridge over the Kennebec River).

Table 1: Conceptual Cost Estimate Summary

Alternative	Segment	Cost Estimate
0: Maintain/Preserve Existing Corridor		
MaineDOT Patrol & Repairs	MP 29.45 to 63.04	*No additional cost beyond current maintenance*
1: Restore Rail Service on Existing Corridor		
1A: Freight Rail Service (Class 1)	MP 29.45 to 63.04	
Segment 1	1: MP 29.45 to 31.1	$3,000,000
Segment 2	2: MP 31.1 to 44.5	$14,000,000
Segment 3	3: MP 44.5 to 56.3	$18,000,000
Segment 4	4: MP 56.3 to 60.8	$10,000,000
Segment 5	5: MP 60.8 to 63.04	$10,000,000
1A: Freight Rail Service TOTAL		**$55,000,000**
Annual Maintenance Costs: $2,747,000		
1B: Passenger Rail Service (Class 3)	MP 29.45 to 63.04	
Segment 1	1: MP 29.45 to 31.1	$18,000,000
Segment 2	2: MP 31.1 to 44.5	$147,000,000
Segment 3	3: MP 44.5 to 56.3	$119,000,000
Segment 4	4: MP 56.3 to 60.8	$52,000,000
Segment 5	5: MP 60.8 to 63.04	$27,000,000
1B: Passenger Rail Service TOTAL		**$363,000,000**
Annual Maintenance Costs: $3,015,000		
2: Interim Trail		
2A: Gravel/Stone Dust Trail	MP 29.45 to 63.04	
Segment 1	1: MP 29.45 to 31.1	$2,600,000
Segment 2	2: MP 31.1 to 44.8	$15,300,000
Segment 3	3: MP 44.8 to 56.3	$13,000,000
Segment 4	4: MP 59.6 to 60.8	$1,900,000
Segment 5	5: MP 62.3 to 63.04	$1,500,000
2A TOTAL		**$34,300,000**
Annual Maintenance Costs: $93,800 - $147,400		

Table 1: Conceptual Cost Estimate Summary (Continued)

Alternative	Segment	Cost Estimate
2: Interim Trail (Continued)		
2B: Paved Trail	MP 29.45 to 63.04	
Segment 1	1: MP 29.45 to 31.1	$3,100,000
Segment 2	2: MP 31.1 to 44.8	$19,400,000
Segment 3	3: MP 44.8 to 56.3	$16,500,000
Segment 4	4: MP 59.6 to 60.8	$2,300,000
Segment 5	5: MP 62.3 to 63.04	$1,700,000
2B TOTAL		**$43,000,000**
Annual Maintenance Costs: $80,400 – $134,000		
3: Rail with Trail (RWT)		
3A: Gravel/Stone Dust Trail	MP 29.45 to 63.04	
Segment 1	1: MP 29.45 to 31.1	$26,100,000
Segment 2	2: MP 31.1 to 44.8	$55,800,000
Segment 3	3: MP 44.8 to 56.3	$47,300,000
Segment 4	4: MP 59.6 to 60.8	$8,800,000
Segment 5	5: MP 62.3 to 63.04	$8,300,000
3A TOTAL		**$146,300,000**
Annual Maintenance Costs: $93,800 - $147,400		
3B: Paved Trail	MP 29.45 to 63.04	
Segment 1	1: MP 29.45 to 31.1	$26,400,000
Segment 2	2: MP 31.1 to 44.8	$58,200,000
Segment 3	3: MP 44.8 to 56.3	$49,200,000
Segment 4	4: MP 59.6 to 60.8	$9,600,000
Segment 5	5: MP 62.3 to 63.04	$8,400,000
3B TOTAL		**$151,800,000**
Annual Maintenance Costs: $80,400 – $134,000		

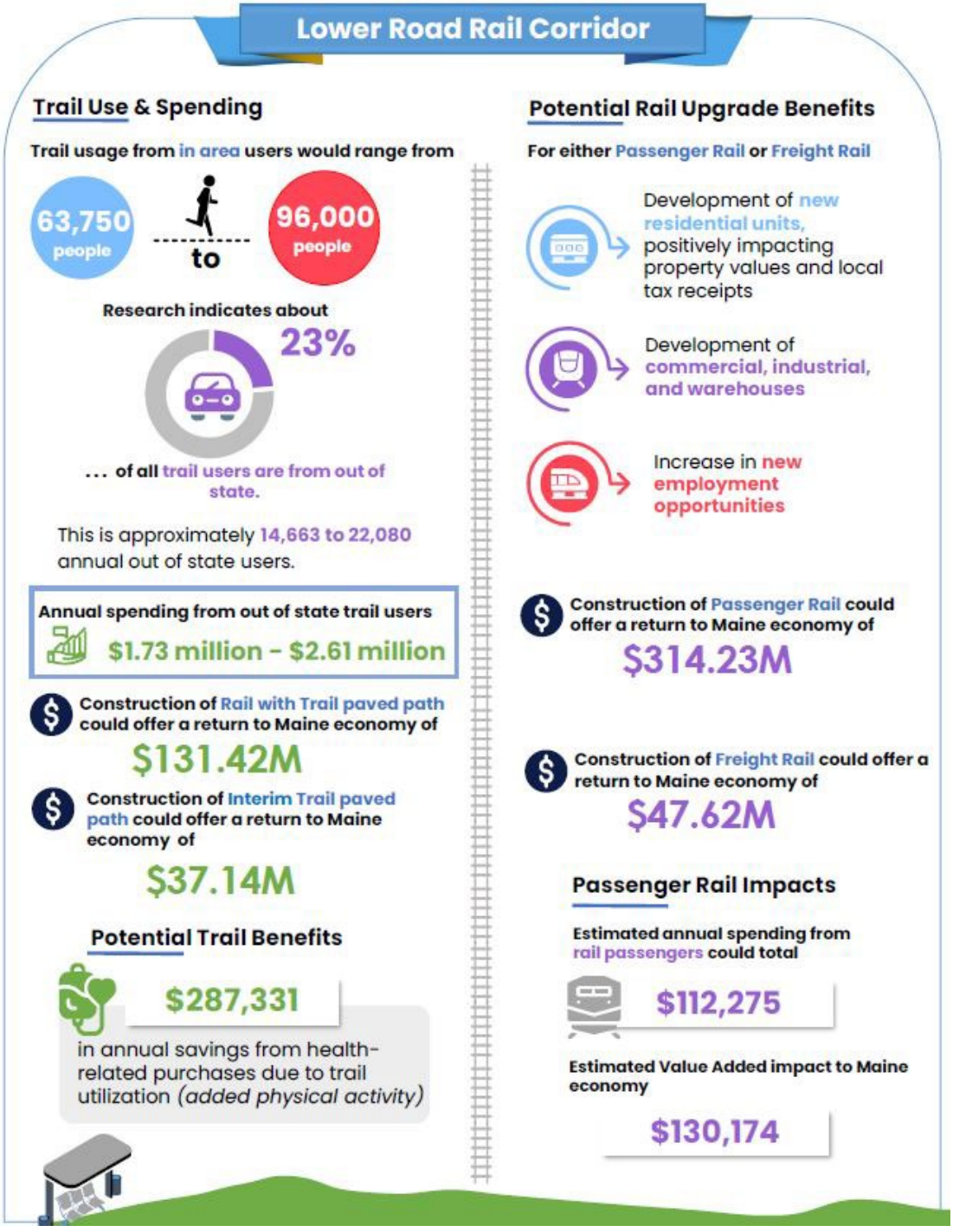
(See the next chapter for the assumptions used when determining estimated costs.)

Once the Lower Road Corridor RUAC selects the preferred option to recommend to the MaineDOT Commissioner, further study and analysis beyond the level of detail within this study will be required to determine, as applicable:

- more detailed cost estimates for all options
- level of interest in taking advantage of potential freight rail service from local businesses and/or regional industries
- potential operators for passenger rail service

› (Optional) More-detailed economic, environmental, and transportation impacts and benefits (see below for high level baseline of economic impacts)

This study included an economic impact analysis of the various options for the state-owned rail corridor. While more detail can be found in both Chapter 4 and the Appendix, a summary of selected economic, health and other related benefits of the Lower Road Rail Corridor, for both Interim Trail use and potential restoration of Passenger Rail or Freight Rail use, are highlighted below:



2

Evaluation of Corridor for Rail Use

This Section documents evaluation of the State of Maine-owned portion of the Lower Road corridor for potential future rail use, including an assessment of the existing conditions along the corridor as well as development of conceptual capital improvement programs that could be completed to support either reestablishment of freight rail service at varying levels or the implementation of a new passenger rail service on the line.

2.1 Maintain Corridor (Current Baseline Conditions)

Historically, the Maine Central Railroad (MEC) main line extended from Portland northeastward to Vanceboro (located on the US-Canadian border). The main line right-of-way was double tracked from Portland to Royal Junction in Yarmouth, where it split into two separate corridors: the "Lower Road" through Brunswick and Augusta and the "Back Road" through the Lewiston/Auburn area. The Lower Road and Back Road corridors converged to a single right-of-way in Waterville and the MEC main line corridor continued northeastward through Bangor and on into Canada.

The "Back Road" portion of the MEC running through Lewiston is now part of what is currently known as the CSX Freight Main Line and is used exclusively for the movement of freight. Through a series of acquisitions, the MEC lines were eventually acquired by Guilford Transportation Industries (GTI) in the early 1980's. GTI eventually decided to consolidate their operations and chose the "Back Road" as their primary route of moving freight through the region, divesting their interest in the "Lower Road" trackage between Brunswick and Augusta in the mid-1980's. GTI maintained their ownership interests in the portion of the Lower Road between Yarmouth and Brunswick (known as the Brunswick Branch Line) and between Augusta and Waterville (known as the East Augusta Industrial Track). GTI was eventually rebranded as Pan Am Railways (PAR) in 2006 and PAR was recently acquired by CSX in 2022.

The State of Maine acquired the portion of the former MEC Lower Road corridor between Brunswick and Augusta in 1991. The western extent of State ownership is located immediately east of the Church Road at-grade crossing in Brunswick near Mile Post 28.0 on the Brunswick Branch. Heading east, the Brunswick Branch runs through downtown Brunswick, passing the existing Amtrak Downeaster terminal station, and eventually splitting near Mile Post 29.45 (between the Park Row at-grade crossing

and the Federal Street overhead bridge, essentially creating a "Y" interchange. The southern leg of the "Y" is the Rockland Branch, also owned by the State of Maine and currently operated by Midcoast Railservice (a subsidiary of Finger Lakes Railway), which continues east to Rockland, Maine.

The track located on the northern leg of this "Y" is the subject of this RUAC study, and continues northward through the towns of Brunswick, Topsham, Bowdoinham, Richmond, Gardiner, Farmingdale, Hallowell, and Augusta (herein-after in this report referred to as "Lower Road"). The Lower Road extends approximately 33.5 miles, ending immediately after the bridge crossing the Kennebec River in Augusta (Mile Post 63.04 +/-).

Image of the "Y" in Brunswick looking back to Federal St. at MP 29.45

The State of Maine previously held agreements with railroad companies to operate the Lower Road, including Maine Coast Railroad (1990-2000) and Maine Eastern Railroad (2003-2015). The line has been predominantly out of service since that time, and MaineDOT assumed responsibility for track maintenance and inspection activities upon expiration of the Maine Eastern contract in 2015.

For the purposes of this RUAC study, the default baseline condition for the Lower Road corridor is assumed to maintain and preserve the state-owned corridor as MaineDOT currently does. It is acknowledged that there is a financial cost to MaineDOT associated with providing this service of maintaining this corridor such that the track infrastructure remains intact, but it can be presumed that these activities would continue to occur should neither reestablishment of rail service, construction of an interim recreational trail, or a combination thereof be initiated on this corridor.

2.2 Inventory of Existing Corridor

VHB had an opportunity to join MaineDOT during a hi-rail inspection of the Lower Road corridor on December 28, 2022 to evaluate the general conditions of the existing railroad infrastructure along the line. VHB also performed a visual assessment of the corridor through the City of Augusta from the Veterans Memorial overhead bridge to the Kennebec River bridge, where the tracks have been either removed or buried.

The subject Lower Road corridor extends from the turnout (switch) near Mile Post (MP) 29.45 in Brunswick to the northern end of the Kennebec River bridge at MP 63.04 in Augusta. The bridge structure over the Kennebec River is included in this study area. VHB personnel did not enter onto the Kennebec River bridge during the site visit.

Midcoast Railservice and CSX have rights to use roughly 0.8 mile of the Lower Road corridor beyond the switch in Brunswick to store and stage freight cars during switching operations. This area was clear of freight cars at the time of the hi-rail trip. The existing turnout (switch) was not inspected because the Brunswick and Rockland Branch tracks were active at the time of inspection.

Existing Track and Rail Infrastructure

The majority of the Lower Road corridor is a single-track main line with jointed rail (115-pound with AREMA standard-gauge) secured to wooden railroad ties and situated upon ballast stone. There are three locations where the track infrastructure has been removed: the bridge over River Road (MP 45.44) in Richmond, the Chestnut Street roadway at-grade crossing (MP 60.13) in Hallowell, and a segment from the existing end of track under Veterans Memorial Bridge (MP 62.34) to the bridge carrying the Lower Road tracks over Water Street (MP 62.84) in Augusta. The area in Augusta is currently utilized to support City Bus routes as well as for parking in the downtown area. A detailed inspection of undergrade and overhead bridges, including Kennebec River Bridge, was not performed as part of this study.

Several old freight sidings and spurs still exist along the ROW, but most of the switch components (or the switches in their entirety) to these tracks have been removed since there is no active service on the line. Several of the freight sidings have become overgrown and unusable.

End of the existing track under the Veteran's Memorial Bridge (looking south) at MP 62.34

Generally, the quality of the existing RR ties can be considered moderately to significantly degraded due to several years without the requisite maintenance to support rail service. Rail sections generally did not exhibit signs of significant wear or damage. Reportedly the existing 115# jointed rail was installed just prior to the State acquiring the line, which has not seen much train traffic since that time. Several locations along the corridor were observed to have fouled ballast due to poor drainage conditions. Localized areas of embankment washouts were observed along the ROW, but not to the extent that significant erosion has compromised the integrity of the tracks or ROW.

Grade Crossings

During the hi-rail inspection, VHB noted the condition of railroad crossing infrastructure including the crossing tracks, flangeway type, and Automated Highway Crossing Warning (AHCW) devices, as well as roadway element considerations such as visibility and roadway condition. Roadway surface conditions at the crossings varied throughout the corridor from extremely poor to excellent, as several crossing locations are either unpaved or are not equipped with flangeway protecting the rails through the roadway surface. Some of the crossing locations appear to have had the flangeways removed, likely due to poor or deteriorated roadway surface conditions at the crossing. Significant tree and brush overgrowth was observed along the ROW at several of the grade crossing locations, obscuring visibility of railroad tracks, signals, and/or signage.

AHCW Systems can be installed at roadway crossings to warn drivers and pedestrians that a train is approaching the grade crossing. AHCW systems include active warning and control devices including bells, flashing lights and/or gates in addition to passive warning elements such as pavement markings, crossbucks and/or stop signs. Approximately half of the thirty-nine (39) publicly accessible at-grade roadway crossings on the Corridor were equipped with AHCW devices, all of which are currently out of service (turned off). The condition of AHCW devices varied from relatively new to completely rusted and falling apart. In some instances, crossing locations that were equipped with automatic gates had arms and/or mechanisms that had been removed. Several of the private and passive crossings are only furnished with crossbucks while others have no signage at all.

Example of non-functioning AHCW System equipment on Main St in Bowdoinham at MP 36.98

Due to the relative old age of the crossings (some estimated to have been installed circa 1970's) and relatively recent development that has occurred in the region since the grade crossings were last improved, a Diagnostic Team Review (a joint inspection process conducted with representatives of the operating railroad, local and state officials, and railroad design engineers to review and evaluate the crossing location in the field) may be warranted should rail service ever be reestablished to ensure adequate protections are in place at each crossing location.

Signal System

The subject corridor was previously equipped with a wayside railroad signal system; however, the infrastructure has fallen severely out of service and beyond useful life. It is not clear exactly when the wayside signal system was taken out of service. Some equipment remains along the ROW, including signal cases, display towers, and other wayside elements, however most of the pole line that supplied power has long since been removed.

In lieu of an operating signal system, railroad movements can be managed by timetable and permissions from the Local Train Dispatcher. Based on the Maine Eastern Railroad Employee Timetable No. 2 as well as the conditions observed in the field, it was clear that the signal system was not active as of May 2013.

Undergrade Bridges & Culverts

There are twenty-five (25) undergrade bridge locations along this corridor, twelve (12) of which are ballasted deck bridges and twelve (12) of which are open timber deck bridges. As documented above, the bridge that carried the Lower Road tracks over River Road in Richmond (MP 45.44) has been completely removed. Additionally, there are eight (8) overhead bridges that pass over the tracks along this corridor. Condition inspection and load rating capacity analysis of bridges were outside the scope of this study.

Middlesex Rd. overpass in Topsham at MP 30.54

A comprehensive culvert location list was provided to VHB by MaineDOT for the entire corridor. During the hi-rail inspection, VHB looked for evidence of track and ROW embankment degradation but did not perform a detailed investigation of culvert conditions along the line.

2.3 Conceptual Improvement Programs for Rail Service

Track restoration options for the purposes of this study considered Class of Track conditions mandated by the Federal Railroad Administration (FRA) within the Code of Federal Regulations specific to track safety standards (Title 49, Part 213.9). Each FRA class has a corresponding maximum allowable operating speed, as shown in Table 2.1.

Table 2 Classes of Track and Operating Speed Limits

	Maximum Allowable Operating Speed in MPH	
Class of Track	**Freight Service**	**Passenger Service**
Excepted Track	10	N/A
Class 1 Track	10	10
Class 2 Track	25	30
Class 3 Track	40	60
Class 4 Track	60	80
Class 5 Track	80	90

Source: Code of Federal Regulations, Title 49 – Transportation, Part 213, Volume 4.

For the purposes of this study, VHB developed conceptual capital improvement programs to support the railroad infrastructure improvements for the envisioned service levels supporting freight or passenger rail service on the line. VHB recognizes that the extent of capital improvements that may be performed to support any of the rail service options contemplated may ultimately be dictated by the amount of funding available to support the project or the type of service that is implemented.

The estimates included herein were developed for conceptual planning purposes only and are generally consistent with the parameters assumed during other RUAC studies being conducted in the

State of Maine. Ultimately, the associated parameters for the capital infrastructure improvements would be further established, defined, and optimized should it be decided that any rail corridor improvement projects move forward.

Freight and Passenger rail program cost estimates were developed using historical data obtained from comparable railroad improvement projects completed within the State of Maine over the past ten (10) years. Additional details regarding this process are discussed in Section 2.6 of this report.

2.4 Reestablishment of Freight-Only Rail Service

VHB developed a conceptual estimate for infrastructure improvements envisioned for the support of reestablishment of Class 1 freight service on the Lower Road corridor. It was assumed that freight tracks would remain as a single main line, primarily utilizing the existing jointed rail that currently exists on the corridor today. The level of service envisioned for the corridor under this concept is for occasional freight traffic (less than one round trip per day). The costs associated with installation of new spur tracks to serve future customers were not included.

It was assumed that the entirety of the existing track along the corridor would be aligned and surfaced through the addition, regulation (spreading) and tamping of ballast stone beneath the tracks. The program includes a varying amount of deteriorated spot tie replacement (average of 813 ties/mile) as well as spot rail removal and replacement, as necessary. In addition, the program would include the installation of new track infrastructure in the areas where it has been removed (areas referenced above).

It should be noted that Sperry rail testing, used within the rail industry to detect track defects, has not been performed as part of the corridor evaluations to date. For the purposes of this freight-only concept a representative proportion (equating to roughly 4-miles) of curved track where rail wear is typically expected to occur more frequently was assumed for replacement to support this concept. Future Sperry testing could be performed to determine exactly where partial rail replacement would be needed should infrastructure improvements be programmed. Sperry testing results could alter the quantities of rail replacement assumed, however 4 track-miles of rail assumed for this concept considered to be conservative and should be sufficient to support Class 1 conditions on the line.

The freight-only alternative also envisions construction of a new run-around track, approximately 0.25-miles long. The runaround track would allow for temporary storage of railcars as well as provide operational flexibility for the freight service operator to allow a locomotive to change ends of a trainset. For the purposes of this study, it was assumed that the run-around track would be situated within the existing ROW in Gardiner (MP 55.48 to MP 55.72), where impacts are expected to be limited because there are existing out-of-service sidings in the area.

ROW expansion and/or the reconstruction of overhead bridges (i.e., bridges that carry roadways over the Lower Road ROW) would not be required to support this concept.

At a minimum, vegetation management, roadway stripping and warning signage installation would be performed at all grade crossing locations. Based on existing conditions, the conceptual estimate accounts for replacement of track panels at up to ten (10) public at-grade crossing locations to initialize freight service based on visual assessment of the existing conditions. Additional detailed inspection and testing would be needed to verify whether additional track panel replacement for freight trains to safely operate over the existing crossings prior to initializing service. The estimate also

excludes replacement of the existing wooden-planked decks at farm crossings.

Functioning AHCW system on Rt. 24 in Bowdoinham at MP 40.55

Based on a visual assessment, it was estimated that new AHCW systems would be installed at roughly half of the crossing locations (seventeen (17) of thirty-nine (39) locations) to support restoration of freight rail service and that the remainder might be rehabilitated through a maintenance and repair program. It should also be noted that new AHCW systems would be installed at the three locations where the rail trail crosses the tracks at-grade. The envisioned maintenance and repair program would support an average of $10K/location in labor to assess and troubleshoot the devices and an allowance of $260K for component replacement which would be performed as necessary to activate the remainder of the existing AHCW devices.

The proposed program also includes replacement of all existing wooden bridge ties on existing open deck bridges, as they have been exposed to a variety of weather conditions for decades since last supporting a train. Lastly, since detailed structural bridge inspection and load rating services were not performed in conjunction with this study, a $2.35M allowance to accommodate structural repair work on the twenty-four (24) undergrade bridges (approximately $95K per bridge) was included.

Table 3: Summary of Proposed Freight Rehabilitation

Component	**Class 1 or 2 Freight: MP 29.5 to 63.0**
	Freight Only – Low End
Tie Replacement	813 ties/mile
Rail Replacement	4 track miles
Double Track - Freight Service	0.25 miles (Gardiner)
XING Rehabilitation	$12.6M
Farm XING Decks	NONE
Culvert Rehab	10% (26 Locations)

Environmental and Permitting Considerations: Freight Rail Service

As part of this study, VHB evaluated the potential environmental impacts and permitting requirements needed to reestablish freight rail service along the existing Lower Road Corridor from the Brunswick Branch (MP 29.45) eastern abutment of the Kennebec River Bridge in Augusta (MP 63.04). Because this existing corridor is currently maintained by MaineDOT and was originally used for freight rail service, it can be assumed that no expansion of the corridor is required and therefore no new wetland impacts would be necessary with this alternative. A field delineation of wetland areas and more specific project information would be required to confirm this alternative meets this assumption.

The existing rail corridor crosses three major rivers, the Androscoggin River, Cathance River, and the Kennebec River. The corridor runs along the Kennebec River for most of its northern extent. The rail corridor also crosses 43 USGS-mapped perennial streams within the study area, including the West Branch Denham Stream, Wilmot Brook, Rolling Dam Brook, Cobbosseecontee Stream and Vaughn Brook. The current condition of the existing infrastructure associated with these crossings has been evaluated at a conceptual level as part of this feasibility study. Repair or replacement of these bridges and culverts may lead to wetland or waterways impacts; however, these impacts cannot be quantified at this time. Any proposed work associated with improving existing culverts or bridges may require permit approvals or agency consultations to determine if these activities may be considered exempt from regulation.

2.5 Implementation of Passenger Rail Service

There has been extensive study of possible passenger rail service between Portland and Lewiston-Auburn (L-A) area over the years, some of which have included use of portions of and/or the entire State-Owned portion of the Berlin subdivision between Portland and Danville Junction. In May 2019, VHB issued the Operating Plans and Corridor Assessments Report which summarized a comprehensive evaluation of what types of service could be provided to meet travel demand/patterns (including route alignment, service frequency, vehicle type, etc.), as well as the estimated costs to build and operate a passenger service. In 2023, VHB issued the Bangor Transit Propensity Study which evaluated two routes to provide rail transit to Bangor, one of which was the extension of existing Amtrak Downeaster service to Bangor from its current terminus in Brunswick as an option. While this study analyzed a roughly 150-mile corridor between Portland and Bangor, it includes a high-level conceptual estimate of the 33.5-mile Lower Road Corridor and has a great deal of information to help establish a baseline for this study. This Lower Road Corridor Study takes a deeper dive into evaluating the existing infrastructure and developing cost estimates specific to this corridor.

As part of this study, MaineDOT asked VHB to provide cost estimates associated with the capital improvements of the existing infrastructure envisioned to support passenger rail service. The following parameters were assumed to support the concept:

- Achieve a minimum of Class 3 Track Conditions, capable of supporting up to 60 mph passenger service.
- Replace all existing jointed rail with continuous welded rail (CWR) through the entire corridor.
- Install a new rail bridge over River Road (MP 45.44) in Richmond that would meet standard vertical clearance over the roadway.

- Install new track infrastructure where it has been removed or buried, including through the Chestnut Street roadway at-grade crossing area (MP 60.13) in Hallowell and from Veterans Memorial Bridge (MP 62.34) to Water Street (MP 62.84) in Augusta.
- Construct three (3) passing siding tracks (located approximately 10 miles apart, each approximately 2-miles long) to allow for operation of multiple train sets on the corridor.
- Install Positive Train Control including Cab Signaling System to govern all movements along the Line.
- Complete rehabilitation (new track, pavement, and modernized AHCW devices) at all public at-grade crossings as well as new roadway signage, stripping and vegetation clearing necessary to improve crossing visibility and conditions, including the three (3) trail locations that now cross the tracks at-grade.
- Replacement of timber decks at all twenty-one (21) of the farm crossings observed during site reconnaissance as well as new roadway signage, stripping and vegetation clearing.

Recently replaced timber farm crossing in Richmond at MP 47.50

- Replacement of all ties on existing open-deck bridges along with a $2.375M allowance to accommodate bridge repairs that might be identified during future evaluations (consistent with the freight rail concept above).
- Drainage system improvements, including ditching and rehabilitation work ranging from minor repair or to total replacement at 30% of the culvert locations (equating to 65 of the 260 documented culverts).

To maintain consistency with previous RUAC studies, it was assumed that traditional Commuter Rail would be the preferred mode for the passenger service for purposes of the estimate. Because this study is an evaluation of what is necessary to improve the existing state-owned infrastructure in the corridor, the additional costs for passenger station or layover facility construction and any improvements required to support rail service beyond the boundary of state ownership were not included in this RUAC study. The level of service envisioned for the corridor here would most likely be the occasional freight train coupled with a passenger service similar to the Amtrak Downeaster, which currently has five daily arrivals and five daily departures at Brunswick Station.

The following additional information should be noted relative to the infrastructure improvements envisioned to support this Lower Road passenger service concept:

- For this concept, the three (3) passing sidings, each approximately 2-miles long, would be located in Topsham (MP 30.90 to MP 32.95), Bowdoinham/Richmond (MP 42.09 to MP 44.42) and Gardiner (MP 51.45 to MP 53.44).
- The parameters associated with these passing sidings are consistent with other railroad territories where the Amtrak Downeaster currently operates. Further operational analysis would be warranted should the concept be further advanced to ensure the locations of double tracking would adequately support the level of service desired.

Location in Gardiner (MP 52.70) where space for a passing siding is available for potential future passenger rail service.

- The proposed track configuration would result in two-track at-grade crossings at five (5) public roadways (Tedford Road and Beechwood Drive in Topsham as well as Riverview Drive (Depot), Riverview Drive (Church) and Mill Street in Gardiner) as well as nine (9) private or farm crossing locations.
- There are no overhead or undergrade bridges located within proposed double-track territory that would require modification or replacement to accommodate the passenger service concept.
- Further review of permitting requirements necessary to support the proposed infrastructure improvements is needed as design advances, especially at undergrade bridge locations at wetland areas where structural modifications or repair work has yet to be completely defined.
- Should this project advance, additional research and/or negotiation may be warranted relative to property ownership and deeded rights for farm crossings locations to determine if any can be removed or otherwise modified to restrict access by the general public.
- The crossing locations that currently have active AHCW devices are equipped with pole-mounted display elements (bells, lights, and signage). In lieu of post-mounted elements, it is envisioned that cantilevered structures would be used to support AHCW devices over the roadway at thirteen (13, equating to 33%) of the at-grade crossing locations. VHB would not recommend installing cantilevered structures at every crossing location, rather consider their installation on a site-by-site basis where increased signal visibility might be needed due to local topography, roadway characteristics and the proposed double tracking to support the concept.
- Other than passenger station platforms, no obstructions and/or overhead bridge may be located within 9 feet of the track centerline. Vertical clearance at existing bridges would need to be maintained to existing conditions, while any new construction would be required to provide 22’-6” above top of rail.

Environmental and Permitting Considerations: Passenger Rail

VHB also evaluated the potential environmental impacts and permitting requirements needed to establish passenger rail service along the corridor. Redeveloping the rail corridor for passenger service would require expansion of the rail embankment for construction of new sections of siding that would allow for the passage of two trains at once. As such, this alternative would require disturbance of adjacent wetlands, unlike the Freight alternative. These impacts would occur along certain sections of the right-of-way, specifically where wetlands would be permanently filled to facilitate construction of new sidings. For the purposes of this study, it is anticipated that construction of new sidings would involve an estimated 10-foot expansion of the existing railroad embankment. A 10-foot expansion along linear sections requiring new sidings would result in a potential wetland impact totaling approximately 0.7 acres. Wetlands, waterbodies and other environmentally sensitive receptors would need to be further evaluated—and, in some cases, field delineated—if this alternative were to advance. Refinements to the embankment expansion design would need to be considered to limit or possibly avoid impacts to these areas.

Additionally, wetland and in-water impacts are anticipated where existing bridges and culverts will be repaired, replaced, or modified if necessary to accommodate double track sections. The extent and nature of these impacts is beyond the scope of this study, as bridge replacement design would need to be advanced further as the project progresses. Impacted wetland types would consist of freshwater forested, scrub shrub, emergent, riverine, and floodplain wetlands, as well as estuarine and intertidal wetlands. As NWI wetland mapping historically underrepresents wetlands, a field delineation for wetlands, waterways and vernal pools would be necessary to properly quantify the actual level of potential impacts associated with this alternative.

2.6 Summary of Conceptual Cost Estimates

As documented above, separate conceptual cost estimates were developed to support railroad infrastructure improvements that would be necessary for reestablishment of freight service as well as for the implementation of a passenger service on the Lower Road. The infrastructure improvements are limited to the area between the switch at Mile Post 29.45 in Brunswick to the eastern end of the rail bridge crossing the Kennebec River in Augusta at Mile Post 63.04.

Conceptual program cost estimates for the Lower Road Corridor infrastructure improvements described above were developed using historical data obtained from comparable railroad improvement projects completed within the State of Maine over the past ten (10) years. These projects were the same ones initially used to support cost estimates provided for support of the Lewiston-Auburn Passenger Rail Service Plan project by VHB and WSP in 2018. Unit costs of infrastructure improvements developed during the 2018 Lewiston-Auburn study were adjusted from 2018 dollars to 2nd quarter 2022 dollars using available heavy construction industry inflation factors derived by R. S. Means (x1.556 inflation factor). Costs include a 30% construction contingency, 10% design engineering, and 15% construction administration and engineering to advance and support the project.

The “freight rail service” option provides an estimate to bring the corridor up to Class 1 freight rail service. This includes the corridor from Mile Post 29.45 to Mile Post 63.04. The “passenger rail service” option provides an estimate to bring the corridor up to Class 3 passenger rail service, which also

includes the corridor from Mile Post 29.45 to Mile Post 63.04. The costs are summarized in the table below:

The estimated costs reported here are consistent with other studies conducted previously in the State of Maine and provide a high-level cost estimate associated with the restoration of rail service between Brunswick and Augusta.

Table 4: Cost Estimate for Potential Restoration of Rail Service

Alternative	Segment	Cost Estimate
1A: Freight Rail Service (Class 1) – MP 29.45 to 63.04		
Segment 1	1: MP 29.45 to 31.1	$3,000,000
Segment 2	2: MP 31.1 to 44.5	$14,000,000
Segment 3	3: MP 44.5 to 56.3	$18,000,000
Segment 4	4: MP 56.3 to 60.8	$10,000,000
Segment 5	5: MP 60.8 to 63.04	$10,000,000
1A: Freight Rail Service TOTAL		**$55,000,000**
	Annual Maintenance Costs: $2,747,000	
1B: Passenger Rail Service (Class 3) – MP 29.45 to 63.04		
Segment 1	1: MP 29.45 to 31.1	$18,000,000
Segment 2	2: MP 31.1 to 44.5	$147,000,000
Segment 3	3: MP 44.5 to 56.3	$119,000,000
Segment 4	4: MP 56.3 to 60.8	$52,000,000
Segment 5	5: MP 60.8 to 63.04	$27,000,000
1B: Passenger Rail Service TOTAL		**$363,000,000**
	Annual Maintenance Costs: $3,015,000	

3

Evaluation of Corridor for Trail Use

Recognizing public support for sometimes using inactive rail corridors for human-powered transportation and recreation, the study team considered opportunities to incorporate interim and permanent trail alternatives along the Lower Road corridor. To develop cost estimates for interim trail use, the team studied both the replacement of the current rail infrastructure for a trail, and the engineering requirements to develop a trail adjacent to the existing rail line.

3.1 Introduction

To understand the costs associated with the future development of a trail (aka shared-use path) along the rail corridor, the team looked at two options:

- **Interim Trail** – remove existing track and associated infrastructure, and construct multi-use trail on the existing rail bed (either gravel/stone dust or paved)
- **Rail with Trail (RWT)** – construct permanent multi-use trail running adjacent to the existing tracks and within the current state-owned ROW (either gravel/stone dust or paved)

The Interim Trail and/or RWT options, depending on context and community/political support, could be restricted to either non-motorized use only (with most e-bikes permitted), or allow motorized uses such as snowmobiles and possibly ATVs. In any of the scenarios, the potential for future rail service must be maintained by State Statute. Therefore, any interim trail could potentially be removed in the future to make way for rail service. State law via the State Railroad Preservation Act[1] (RPA) provides MaineDOT the right of first refusal to purchase a rail corridor if rail service has ceased or is proposed for abandonment. While any purchase by MaineDOT under the RPA is intended for rail transportation, through the RUAC process, interim trail use is permissible.

[1] For more information, see: https://legislature.maine.gov/legis/statutes/23/title23ch615sec0.html

3.2 Methodology and Assumptions

The conceptual project cost estimates for the Interim Trail and RWT alternatives were developed using construction costs from recent, similar trail projects. For each alternative, costs were determined for the trail construction, grade crossing upgrades and bridge improvements. Costs were estimated for both stone dust/gravel and paved wearing surfaces for both the Interim Trail and RWT configurations. Each alternative incudes 30% construction contingency, 10% design engineering and 15% construction administration and engineering. Potential additional costs for right of way impacts or environmental permitting were not included.

Because trail crossing improvements are required at all public grade crossings, for the purposes of this high-level study, the typical treatment at each crossing is based primarily on the speed of the roadway crossing the trail. In future phases of this project, the assignment of which approach has the right-of-way priority and other crossing improvement recommendations should be designed for site-specific traffic volumes, anticipated path volumes and roadway geometrics at each crossing. The assumed safety improvements at each crossing include:

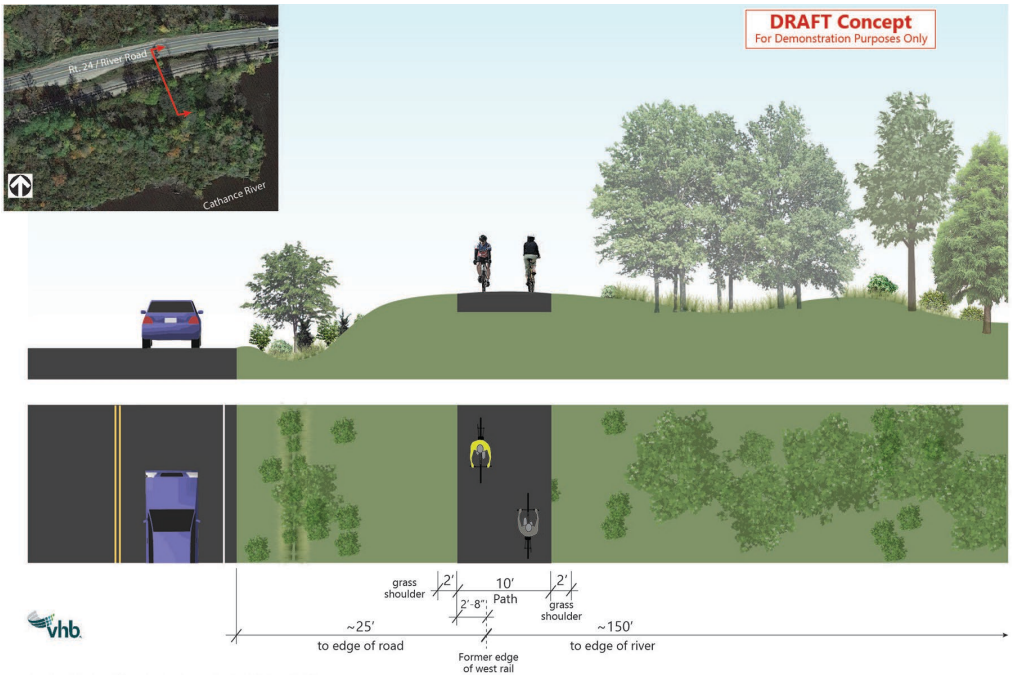
- At roadways with speed limits of 30 MPH or lower, the typical treatment includes a marked crosswalk and trail crossing warning sign assemblies on the roadway and roadway crossing warning signs on the trail.
- At roadways with speed limits of 35 MPH or 40 MPH, the typical treatment includes a marked crosswalk, and trail crossing warning sign assemblies on the roadway, roadway crossing warning signs on the trail and rectangular rapid flashing beacons (RRFB) on the roadway approaches.
- In accordance with MaineDOT policy, a marked crosswalk is not permitted on roadways with a speed limit of 45 MPH or greater unless the crossing is signalized. At roadways with speed limits of 45 MPH or greater, the typical treatment includes trail crossing warning sign assemblies at the crossing, advanced trail crossing warning sign assemblies and pavement markings (i.e. TRAIL XING) on the roadway approaches, advance roadway crossing warning signs and markings on the trail approaches and a STOP condition on the trail approaches.

Interim Trail Design Assumptions

- Replacement of existing rail line with interim trail use (see photo at right and graphic below).
- Estimated costs for the trail construction include:
  - removal of the existing track, railroad ties, and associated infrastructure;
  - surfacing and regrading of the existing ballast; and,
  - placement of either stone dust/gravel or pavement.

Example Interim Trail configuration (Down East Sunrise Trail)

- Estimated costs for the undergrade bridge improvements generally include construction of a new timber wearing surface and timber bridge rails.
- The trail will utilize the same alignment as the removed track and therefore modifications to the existing overhead bridges are not anticipated.
- Estimated costs do not include any potential parking facilities, information kiosks, or other elements associated with formal trailheads.

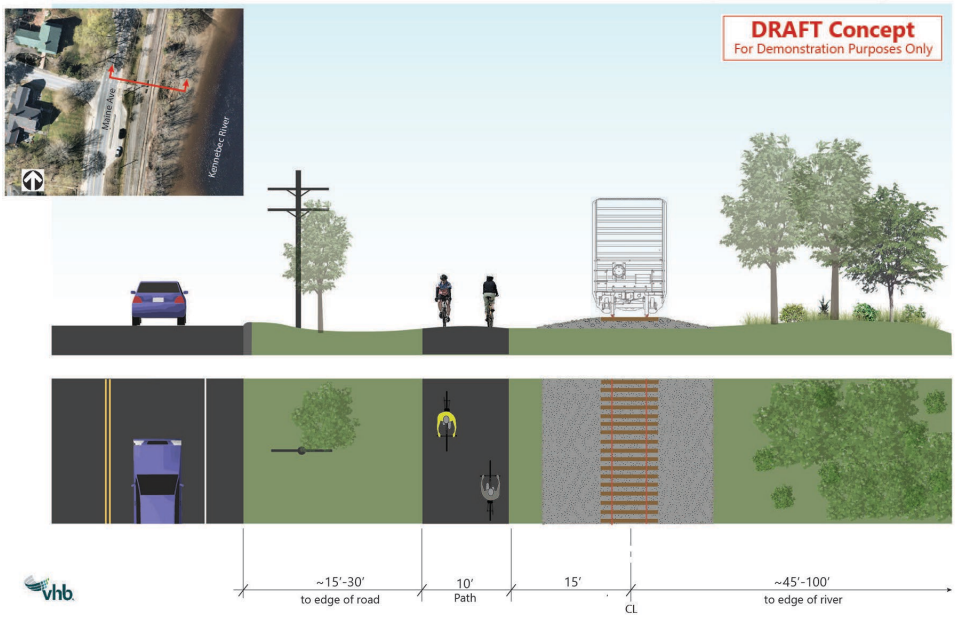


Example of a potential Interim Trail configuration along the Lower Road Corridor (trail segment adjacent to River Road in Bowdoinham)

Rail-with-Trail (RWT) Design Assumptions

Example Rail-with-Trail configuration (with MaineDOT-approved 10′-6″ offset and fence) in Ellsworth.

- Construction of a permanent trail adjacent to the existing rail line incorporating a minimum 15′ offset[2] from edge of trail to centerline of the tracks, consistent with MaineDOT guidelines (see photo at right and graphic below).
- Estimated costs for the trail construction include assumptions for 1) areas with no significant cut or fill, 2) areas with a modest amount of cut or fill, and 3) areas of significant cut or fill sections that may require retaining walls. For each section, costs include preparation of the subbase and placement of either stone dust/gravel or asphalt pavement.
- Retaining walls and other engineered elements will allow future rail-with-trail design to stay within the state-owned railroad ROW.[3]
- Estimated costs for undergrade bridge (i.e., bridge that carries the rail tracks) improvements generally include construction of new adjacent superstructures that carry the new trail. Based on the configuration of the existing bridges, the new superstructures can be supported by existing structure or supported on new substructure.[4]



Example Rail-with-Trail configuration: Kennebec River Rail Trail (KRRT) adjacent to Maine Avenue in Farmingdale

[2] Represents MaineDOT's standard recommended offset from existing rail lines. In constrained conditions, a reduced 10′-6″ offset is permitted with the provision of a security fence. Any subsequent feasibility study and/or design project would need to determine if the reduced offset would be appropriate. This may have an impact on the anticipated cost estimate.

[3] Any survey or verification of railroad ROW is not included within the Scope of Work. This assumption should be confirmed in subsequent design phases of a future project.

[4] In this context, "superstructure" refers to structural members of the bridge that sit above the supports, e.g., girders and trusses, and "substructure" refers to the piers and abutments that hold up the superstructure.

- Estimated costs for overhead bridges (i.e., bridges that carry roadways over the rail tracks) include constructing a new bridge that is wide enough to allow rail and trail where the existing bridge clearance is insufficient.
- Although not included in the cost estimate, a more-detailed feasibility study could assess opportunities for the trail to run off-corridor and use nearby, parallel roadways to accommodate pedestrians and bicyclists. This could be a significant cost savings in discrete locations such as at overhead bridges without sufficient clearance for rail-with-trail. *(Note: evaluation of off-corridor alternatives was beyond the scope of this study.)*
- Estimated costs also do not include any potential parking facilities, information kiosks, or other elements associated with formal trailheads.

3.3 Lower Road Corridor Cost Estimates

The cost estimates below include a stone dust/gravel surface and an asphalt paved surface options for both the interim trail and permanent RWT alternatives. In all cases, the various options run from MP 29.5 in downtown Brunswick to MP 63.0 at the east side of the Maine Central Railroad bridge. Similar to the estimates for restoration of freight and/or passenger rail service, no cost estimates are included north of the state-owned segment, i.e., beyond the east bank of the Kennebec River.

Table 5: Cost Estimate for Potential Trail Options

Alternative	Segment	Cost Estimate
2A: Interim Trail (Gravel/Stone Dust) – MP 29.45 to 63.04		
Segment 1	1: MP 29.45 to 31.1	$2,600,000
Segment 2	2: MP 31.1 to 44.5	$15,300,000
Segment 3	3: MP 44.5 to 56.3	$13,000,000
Segment 4	4: MP 56.3 to 60.8	$1,900,000
Segment 5	5: MP 60.8 to 63.04	$1,500,000
2A: Interim Trail (Gravel/Stone Dust) TOTAL		**$34,300,000**
Annual Maintenance Costs: $93,800 - $147,400		
2B: Interim Trail (Paved) – MP 29.45 to 63.04		
Segment 1	1: MP 29.45 to 31.1	$3,100,000
Segment 2	2: MP 31.1 to 44.5	$19,400,000
Segment 3	3: MP 44.5 to 56.3	$16,500,000
Segment 4	4: MP 56.3 to 60.8	$2,300,000
Segment 5	5: MP 60.8 to 63.04	$1,700,000
2B: Interim Trail (Paved) TOTAL		**$43,000,000**
Annual Maintenance Costs: $80,400 – $134,000		
3A: Rail with Trail (Gravel/Stone Dust) – MP 29.45 to 63.04		
Segment 1	1: MP 29.45 to 31.1	$26,100,000
Segment 2	2: MP 31.1 to 44.5	$55,800,000
Segment 3	3: MP 44.5 to 56.3	$47,300,000
Segment 4	4: MP 56.3 to 60.8	$8,800,000
Segment 5	5: MP 60.8 to 63.04	$8,300,000
3A: Interim Trail (Gravel/Stone Dust) TOTAL		**$146,300,000**
Annual Maintenance Costs: $93,800 - $147,400		
3B: Rail with Trail (Paved) – MP 29.45 to 63.04		
Segment 1	1: MP 29.45 to 31.1	$26,400,000
Segment 2	2: MP 31.1 to 44.5	$58,200,000
Segment 3	3: MP 44.5 to 56.3	$49,200,000
Segment 4	4: MP 56.3 to 60.8	$9,600,000
Segment 5	5: MP 60.8 to 63.04	$8,400,000
3B: Interim Trail (Paved) TOTAL		**$151,800,000**
Annual Maintenance Costs: $80,400 – $134,000		

3.4 Potential Trail Use Estimates

The Potential Trail Use Estimates task included the extraction and review of data from shared use paths and rail trails in similar contexts to the Lower Road corridor. The resulting data has been refined to calculate both high and low usage estimates for interim trail usage in the corridor during "peak month" of pedestrian and bicycle use (i.e., 30-day period in summer or early fall).

Methodology

VHB used existing data to establish the respective context, identifying the precedent trails' location, population, development patterns, mileage, and nearby destinations. Existing trail usage data includes non-motorized trail-user counts recorded before and during the first two years of the COVID-19 pandemic, during which time there were spikes in trail usage nationwide. Existing trails selected for this task include shared-use paths, rail-to-trail, and rail-with-trail examples.

Case study pedestrian and bicycle usage counts from three existing trails in Maine included:

- Maine's Kennebec River Rail Trail
- Maine's Eastern Trail in Scarborough
- Maine's Mountain Division Line (both the Fryeburg segment and the Windham segment)

Because available count data was collected during different months and for different durations (10-day counts, two-week counts, etc.), a thirty-day period called the "Peak Month" was extrapolated for each trail. The goal was to have Peak Month trail use for each trail that could be used as an "apples to apples" comparison between the case studies.

Trail Use Estimates

The three trails described above were selected as case study corridors based on three key trail characteristics that correlate with use by pedestrians and bicyclists:

- corridor length, in miles (33.5)
- population of towns along the trail corridor (71,000)
- number of destinations—state parks/forests/beaches and commercial districts—within ½ mile of the corridor center line (John Baxter State Forest, downtown Brunswick, downtown Augusta).

Averages for each of the three key characteristics were calculated and compared with current conditions along the Lower Road corridor. A multiplier was calculated after comparing data from the average of the three case study trails with the available data for the Lower Road. Finally, a 10% add-on was included with each corridor to account for mid-term growth in trail use based on modest population increase and increased demand for trail use that arose during the COVID-19 pandemic that is expected to continue.

Per the estimated Peak Month trail trips above, the planning team calculated Annual Trips, based on a multiplier for all 12 months relative to the Peak Month. The multiplier was estimated based on typical monthly temperature and precipitation levels, length of daylight hours, and seasonal recreational patterns. Therefore, relative to the Peak Months of June through September, the proportion of estimated trips for the other 8 months of the year include:

- 100% of peak in June through September

- 75% of peak in October and May
- 40% of peak in March, April, and November
- 25% of peak December through February (walking, bicycling, cross-country skiing, and snowshoeing).

By adding the proportions of above, the Peak Month, therefore, represents 13.3% of the annual total (i.e., the Peak Month is multiplied by 7.5 to arrive at the annual estimate). The low-use and high-use ranges in the tables below reflect a 20% margin of error on the resulting estimate.

Table 6: Estimated Trips for the Lower Road Corridor

Rail and/or trail corridor	Peak Month Count (existing trails only)	Low use estimate	High use estimate
Kennebec River Rail Trail (6.3 mi)	10,266		
Eastern Trail (28.9 mi)	23,166		
Mountain Division Trail (5.6 mi)	4,792		
Three trail average (13.6 mi)	12,741		
Lower Road Peak Month Use	na	16,700	25,100
Lower Road Annual Use	na	125,300	188,250

3.5 Environmental and Permitting Considerations

Interim Trail (using existing rail bed)

The Interim Trail alternative is designed to be built over the existing rail embankment. Construction of the multi-use trail is assumed to occur only within the existing rail bed and road crossings and no expansion of the rail corridor would be necessary. The existing railbed is considered upland for the purpose of the desktop review; therefore, it is assumed there would be no wetland impacts associated with this option. More detailed project information and field delineation of wetlands would be required to confirm this assumption during future design phases if this alternative progresses further. As previously discussed, the existing rail corridor crosses three major rivers, the Androscoggin River, Cathance River, and the Kennebec River. The corridor runs along the Kennebec River for the majority of its northern extent. The rail corridor also crosses 43 USGS-mapped perennial streams within the study area, including the West Branch Denham Stream, Wilmot Brook, Rolling Dam Brook, Cobbosseecontee Stream and Vaughn Brook. The current condition of the existing infrastructure associated with these crossings has been evaluated at a conceptual level as part of this feasibility study. Repair or replacement of these bridges and culverts may lead to wetland or waterway impacts; however, these impacts cannot be quantified at this time. Any proposed work associated with improving existing culverts or bridges may require permit approvals or agency consultations to determine if these activities may be considered exempt from regulation.

Rail with Trail (permanent trail adjacent to existing rail bed)

As a project baseline, each of the potential alternatives evaluated in this study are anticipated to be contained within the limits of the existing MaineDOT-owned portion of the Lower Road Corridor ROW. For the purpose of this assessment, it was assumed that an embankment expansion of approximately 25-feet in width would be required to construct the trail portion of a "Rail with Trail" (RWT) option. The extra width would include construction of the 10-foot-wide multi-use path as well as any fill and grade changes that may be necessary to expand the existing rail embankment within the existing ROW (estimated conservatively at 15 feet in width). **A potential 25-foot-wide corridor expansion would result in a wetland impact totaling approximately seven acres**.

As noted in the Passenger Rail section above, there are areas along the corridor where a second main line track may need to be constructed parallel to the existing line to support a future passenger rail service. In these instances, the width of embankment expansion would increase from 25-feet to 35-feet in areas where double-tracking would be performed, so that installation of the second track and a trail with fence could be accommodated. **A 35-foot-wide embankment expansion would result in approximately eight acres of total wetland impacts**.

As described previously, impacted wetland types would consist of freshwater forested, scrub shrub, emergent, riverine and floodplain wetlands. As NWI wetland mapping historically underrepresents the actual distribution of wetlands, a field delineation for wetlands, waterways, and vernal pools would be necessary to more accurately quantify the potential impacts associated with this alternative.

It is envisioned that any alternative evaluated within this study would be confined to the existing state-owned ROW, whether a 25-foot or 35-foot expansion is needed. As previously mentioned, this overview does not consider potential impacts posed by local conditions and/or temporary access easements or construction staging areas that may be required to accommodate construction. Should a RWT alternative be recommended for advancement, the proposed infrastructure alignment and corridor expansion may need to be further refined to demonstrate minimization of impacts to wetland areas and other sensitive environmental conditions.

Wetlands of Special Significance and Sensitive Habitats

All alternatives which involve expansion of the rail embankment, modification of bridges over water or other in-water work could involve impacts to State of Maine Natural Resource Protection Act (NRPA) designated Wetlands of Special Significance (WOSS). Confirmation of the presence of WOSS wetlands and impacts would be based on field data collection conducted as part of any future study or permitting effort.

The existing corridor passes through other mapped sensitive habitats, including the habitat of:

- One state listed threatened species (tidewater mucket, *Leptodea ochracea*);
- Three Inland Wading and Waterfowl Habitats;
- Four Tidal Wading and Waterfowl Habitats, and;
- Four Maine Natural Areas Program Rare Plants and Natural Communities areas (narrow-leaf arrowhead, *Sagittaria filiformis*; Longs bitter-cress, *Cardamine longii*; Parkers pipewort, *Ericaulon parkeri*; estuary bur-marigold, *Bidens hyperbola*).

Section 9 of the Endangered Species Act (ESA) prohibits taking (e.g., harm or harassment) of an ESA-

listed species. Further, Part 1.1.5 and Appendix D of the 2022 Maine Construction General Permit (MCGP) requires determination of eligibility regarding protection of threatened and endangered species, as well as designated critical habitat. Potential impacts to state- and federally-listed, endangered species would be assessed through consultation with MDIFW and USFWS and field surveys, as needed, to determine potential permitting conditions, such as construction timing or disturbance limitations. Although similar protections are not generally required for Species of Special Concern as associated habitat, their presence should be noted during future evaluations for all alternatives.

Permitting Requirements

The need for federal, state, and/or local permits and approvals depends on numerous factors, such as final location of facilities and project layout, land ownership, equipment used, construction methodology and the presence and proximity of protected natural resources. For all alternatives, consultation with regulatory agencies throughout the planning and development process, along with disclosures of anticipated impacts, will assist with identifying the required permits, approvals and authorizations that may be necessary as project details are advanced and finalized.

Neither the potential restoration of freight rail service nor the interim trail alternatives would require expansion of the existing rail corridor. These options would therefore result in minimal environmental impacts and less permitting effort compared with the potential restoration of passenger rail service or RWT alternatives which would require significant expansion of the existing rail corridor. However, due to the prevalence of wetlands and streams along the corridor, and the potential need for improvements to existing wetland and waterway crossings associated with all alternatives, some degree of wetland and waterway impacts that require permit applications and/or agency consultations should be anticipated for all alternatives.

Alternatives that directly impact (i.e., fill) wetlands or waterbodies would require NRPA and U.S. Army Corps of Engineers (Corps) authorizations. The amount and type of resources impacts would determine the level of NRPA (i.e., Tier level permit or Permit-By Rule) and Corps permitting (i.e., Self- Verification Notification Form, Pre-Construction Notification or Individual Permit) that would be required. Notification to and consultation with the Maine Historic Preservation Commission (MHPC) would be required for NRPA and Corps permits.

In addition, Corps approval would require compliance with the ESA and Section 106 of the National Historic Preservation Act (NHPA). Alternatives that require tree-clearing would require a USFWS Northern Long-Eared Bat consultation as part of Corps review. Any option that disturbs over one acre of soil would require Maine Construction General Permit (MCGP) approval and options that create over an acre of new impervious area would be subject to the requirements of Chapter 500, the Maine Stormwater Law. Due to the significant amount of wetland impact that would be anticipated for alternatives that expand the rail corridor, a significant degree of agency coordination, along with extensive wetland mitigation and compensation, would likely be required.

A State of Maine Site Location of Development (Site Law) Permit would be triggered by any alternative that occupies more than 20 acres; includes 3 or more acres to be graded, stripped, and not revegetated; or if the project site has an existing Site Law permit requiring amendment. Finally, some level of municipal coordination and local permitting may be required for any alternatives that impact natural resources and public amenities and to ensure compliance with applicable local land use ordinances, Shoreland Zoning, and other local zoning regulations.

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4

Economic Benefits

This chapter presents a summary assessment of the economic benefits and impacts of an interim trail and/or maintaining and preserving the existing rail corridor for possible restoration of rail services along the 33.5-mile Lower Road Rail Corridor from downtown Brunswick to the east side of the Maine Central Railroad bridge in Augusta. Both interim trail and potential rail use consider the construction-related economic impacts, ongoing maintenance costs, as well as post-construction benefits that could accrue from users. More detail can be found in RKG's Demographic & Economic Analysis report in Appendix B.

4.1 Economic Impacts from IMPLAN Modeling

To measure the economic impact of construction and on-going operations and maintenance of the Lower Road Rail corridor alternatives—interim trail, rail with trail, and the restoration of passenger or freight rail service—the planning team utilized the IMPLAN econometric model which, in brief, measures how an initial dollar injected into one sector of the economy is spent and recirculated throughout the Maine economy. These effects are categorized as direct, indirect and induced effects which encompass direct investment in economic activity, business-to-business spending, and household expenditures. Of note is the Value Added impact, which includes:

- The annual spending among trail users,
- Potential on-board passenger rail spending,
- The one-time costs for infrastructure/construction for each of the use alternatives considered in this analysis, and;
- Ongoing and annual maintenance costs associated with each alternative.

Estimates include construction costs (i.e., the initial capital investment), ongoing annual maintenance costs (e.g., replace/repair rail ties for rail, vegetation removal, etc.), and any other resulting economic activity, for these three alternatives:

- 1: Maintain and preserve existing rail corridor for potential restoration of:
  - Freight rail operations (along Class 1-2 track)
  - Passenger rail operations (along Class 3 track)
- 2: Interim Trail using existing rail bed
  - Interim Trail with gravel/stone dust surface
  - Interim Trail with paved surface
- 3: Permanent Trail adjacent to existing rail bed (Rail with Trail or "RWT")
  - RWT with gravel/stone dust surface
  - RWT with paved surface

Selected Summary of Trail Related Impacts

The Table below presents a summary of selected trail related impacts of the alternatives. These include the dollar amount of the initial (or ongoing) investment, the total Value Added to the State of Maine economy, wages and employment.

Table E1 – Selected Summary Trail Related Impacts – IMPLAN Modeling

Lower Road Rail Corridor - Selected Summary Impacts by Alternative	Input Dollars (1)	Total Value Added	Wages and Employment	
			Wages (2)	Employ (3)
Infrastructure/Construction Impacts (one-time)				
Interim Trail (stonedust/gravel)	$34,200,000	$29,609,167	$22,057,085	388
Interim Trail (paved)	$42,900,000	$37,141,323	$27,668,098	486
Ongoing and Annual Maintenance Impacts				
Interim Trail (stonedust/gravel)	$120,600	$93,468	$64,656	1.13
Interim Trail (paved)	$107,200	$83,083	$57,472	1.00
Infrastructure/Construction Impacts (one-time)				
Rail With Trail (stonedust/gravel)	$146,300,000	$126,661,435	$94,355,307	1,660
Rail With Trail (paved)	$151,800,000	$131,423,143	$97,902,499	1,722
Ongoing and Annual Maintenance Impacts				
Rail With Trail (stonedust/gravel)	$120,600	$93,468	$64,656	1.13
Rail With Trail (paved)	$107,200	$83,083	$57,472	1.00

Source: IMPLAN and RKG (2023)

(1) - direct user spending **(ongoing)** - capital construction **(one-time)** - annual maintenance **(ongoing)**

(2) - reflects sum of estimated Statewide **labor income** - direct, indirect and induced

(3) - reflects sum of estimated Statewide employment - direct, indirect and induced

NOTE - per VHB, annual maintenance costs for an interim trail with or without rail are the same

Upgrade for Potential Future Rail Use: Passenger Rail

The same selected summary impacts for a potential upgrade to Passenger Rail services are offered in the table below:

Table E2 – Selected Summary Impacts for Passenger Rail Upgrade – IMPLAN Modeling

Lower Road Rail Corridor - Selected Summary Impacts by Alternative	Input Dollars (1)	Total Value Added	Wages and Employment	
			Wages (2)	Employ (3)
Passenger Rail Upgrade				
Infrastructure/Construction Impacts (one-time)	$363,000,000	$314,272,732	$234,114,671	4,118
Ongoing and Annual Maintenance Impacts	$3,015,000	$2,336,701	$1,616,400	29

Source: IMPLAN and RKG (2023)

(1) - direct user spending **(ongoing)** - capital construction **(one-time)** - annual maintenance **(ongoing)**

(2) - reflects sum of estimated Statewide **labor income** - direct, indirect and induced

(3) - reflects sum of estimated Statewide employment - direct, indirect and induced

Upgrade for Potential Future Rail Use: Freight Rail

The same selected summary impacts for a potential upgrade to Freight Rail services are offered in the table below:

Table E3 – Selected Summary Impacts for Freight Rail Upgrade – IMPLAN Modeling

Lower Road Rail Corridor - Selected Summary Impacts by Alternative	Input Dollars (1)	Total Value Added	Wages and Employment	
			Wages (2)	Employ (3)
Freight Rail Upgrade				
Infrastructure/Construction Impacts (one-time)	$55,000,000	$47,617,081	$35,471,920	624
Ongoing and Annual Maintenance Impacts	$2,747,000	$2,128,994	$1,472,720	26

Source: IMPLAN and RKG (2023)

(1) - direct user spending **(ongoing)** - capital construction **(one-time)** - annual maintenance **(ongoing)**

(2) - reflects sum of estimated Statewide **labor income** - direct, indirect and induced

(3) - reflects sum of estimated Statewide employment - direct, indirect and induced

4.2 Other Financial/Social Impacts – Interim Trail

Trail Use and User Spending

The estimated annual trail use (trips) from the local population ranges from 63,750 to 96,000 annually.[5] Annual out-of-state users (at 23%) ranges from 14,663 persons to 22,080 persons (user trips). These out-of-state trail users form the basis for estimating trail use spending[6] impacts and are projected to spend between $1.7M and $2.6M per year. While it is possible that these levels of spending may support new commercial development activity, at a minimum they represent additional consumer spending available to existing businesses in the vicinity of the trail.

[5] Estimates per the Maine State Active Transportation Plan (March 2023), Table 13, p. 60.

[6] The underlying assumption is that in-state trail user spending is already occurring in the local economy and may not necessarily represent new spending activity.

Potential Health Benefits

If a trail is available to residents along the Lower Road Rail Corridor, it is anticipated that physical activity will increase with trail utilization. This added physical activity could translate to an annual savings of $287,331 from reduced spending on health-related expenditures from those identified as inactive or insufficiently active with respect to their levels of physical activity. This spending (savings) could become available for other household purchases (expenditures) which are not health related.

Potential Benefits to Single-Family Residential Homes

Area realtors[7] (interviewed by RKG) typically indicated that proximity to a trail, as a locational amenity, could shorten the average number of days-on-market (DOM) if, and when, a house is placed on the market. While there is generally less consensus on a measured dollar impact on sales values, assuming a conservative 2.5% to 5% increase could result in a sales price increase from $7,153 to $14,307 (on average) for those homes within the Lower Road Rail Corridor.

4.3 Other Financial/Social Impacts – Rail Service

Potential Passenger Rail Benefits

Although unquantified in this analysis, studies[8] have indicated that commuter rail provides a number of fiscal/economic and quality-of-life benefits, particularly for communities in less urbanized areas. With respect to the former, these include, but may not be limited to, opportunities for associated transit-oriented development (TOD) which could offer compact, mixed-use and walkable neighborhoods typically located within a half-mile radius of a transit station.

Based on current ridership and the overall length of the Amtrak Downeaster service (130 miles), VHB conducted a high-level, proportional estimate of ridership along the Lower Road corridor. The resulting 75,190 trip estimate promotes increased mobility options and improved access to employment, education, and essential services for residents of the region. Passenger service could also lead to a reduction in motor vehicle traffic and associated emissions along the I-295 corridor.

Potential Health Benefits

Although unquantified in this analysis, if Passenger Rail service were available to the communities along the Corridor, it is possible that there may be some modest improvement in public health as some passengers may, on occasion, opt to walk or bicycle to a transit station (if developed and within a reasonable proximity) and presuming there is proper sidewalk and/or bike path connectivity.

Potential On-board Spending for Passenger Rail

If a Passenger Rail option is pursued for this Corridor, there is the potential for riders to spend money on tickets, food, and beverages while riding the train. Based on VHB's annual rail ridership estimates of 75,190 trips for the line and typical on-board passenger spending metrics, RKG estimates spending

[7] These include Sprague & Curtis Real Estate, McAllister Real Estate and Sandy River Realty, all active in the Augusta region and knowledgeable of the existing Kennebec River Rail Trail.

[8] Source: US Government Accountability Office - www.gao.gov/products/gao-21-355r

could total $112,275 per year (constant FY 2022 dollars). This could render a total Value Added impact of $130,174 to the Maine economy and result in 2.23 jobs with total labor income of $91,904. While it is possible that passengers could purchase goods and services at businesses near a potential new station/platform, these are not quantified in this analysis and difficult to distinguish from what would otherwise be normal work-day purchases at other businesses along a commuter's route.

Potential Freight Rail Benefits

With the potential restoration of Freight Rail service, it is possible that further economic impacts could be realized if the Lower Road Rail Corridor were a designated Free Trade Zone (FTZ). RKG notes that while quantifying any cost savings or other economic benefits to companies resulting from a potential FTZ are beyond the scope of this analysis, it is reasonable to assume such impacts could represent cost-savings to area businesses and companies. Additionally, it may also be possible that increased FTZ utilization by area businesses could foster increased demand for development of proximate warehousing and distribution facilities and thereby further potential local fiscal and economic impacts.

Summary of Value-Added Impacts

The following Table presents a comparative summary of the Value-added Impacts across the State of Maine economy, for each of the alternatives under consideration in this analysis. These are discussed in greater detail in RKG's full report found in Appendix B.

Table E4 – Comparative Summary of the Value Added Impacts – Lower Road Rail Corridor

Lower Road Rail Corridor - Selected Summary Impacts by Alternative - Valued Added (constant 2022 $)	Infrastructure Construction Impacts (1)	Annual Maintenance Impacts (2)	Other Financial Impacts			
			Trail User Expenditures (2)	On-Board Passenger Spending (2)	Potential Health Benefits (3)	Potential Impact on SFDU Sales Value (4)
Interim Trail (stonedust/gravel)	$29,609,167	$93,468	$1,960,338	*na*	$287,331	$10,730
Interim Trail (paved)	$37,141,323	$83,083	$1,960,338	*na*	$287,331	$10,730
Rail With Trail (stonedust/gravel)	$126,661,435	$93,468	$1,960,338	*na*	$287,331	$10,730
Rail With Trail (paved)	$131,423,143	$83,083	$1,960,338	*na*	$287,331	$10,730
Passenger Rail Upgrade	$314,272,732	$2,336,701	*na*	$249,698	*na*	*na*
Freight Rail Upgrade	$47,617,081	$2,128,994	*na*	*na*	*na*	*na*

Source: IMPLAN and RKG (2023)

(1) - one-time and reflects sum of direct, indirect and induced Value Added impacts.

(2) - annual and ongoing and reflects sum of direct, indirect and induced Value Added

(3) - annual and ongoing absolute and ***not Value Added impacts***.

(4) - estimated average of potential dollar increase in sales price - all communities.

na - not applicable or otherwise unquantified in this analysis.

5

Community Input

Public engagement was an important part of the Lower Road Rail Corridor Study process. Comments were solicited in a variety of channels between December 2022 and July 2023, including 8 virtual RUAC meetings, one public meeting and through email comments, via direct email to MaineDOT and submissions through the MaineDOT website contact form. The public comments were reviewed, and specific opinions regarding the project were tabulated and categorized.

5.1 Key Findings

Nearly 200 public comments were received by MaineDOT via e-mail in an eight-month period from December 2022 through July 2023. Additionally, 53 individuals testified at the June 22 public meeting held online, and 37 were made at the 8 RUAC meetings. VHB reviewed all comments and determined whether the comment was 1) supportive of trail use—either interim trail or rail-with-trail—along the corridor, 2) supportive of the restoration of rail service along the corridor, or 3) presented either a neutral stance, or simply asked a question(s) as part of their comments to MaineDOT. To more thoroughly understand what motivated the responders' interests in their position, VHB categorized and tabulated the more nuanced reasons why people felt as they did to track any trends that could inform the RUAC recommendations and subsequently the MaineDOT Commissioner's decision related to the Lower Road corridor. While the detailed table can be found in Appendix E, the summary table of comments is below.

Table 7: Summary Table of Community Input

	Supports Trail (interim or otherwise)	Supports Rail with Trail	Supports Restoration of Rail Service	Neutral/ Other	Total
Public comments made at RUAC meetings	21	2	12	2	37
Public comments at 6/22 public meeting	32	6	11	4	53
Public comments made via e-mail	149	7	29	3	188
Total (including repeat comments)	202	15	52	9	278
Repeat comments	32	4	27	1	64
Net Total (excludes repeat comments)	**170** (79%)	**11** (5%)	**25** (12%)	**8** (4%)	**214**

5.2 Responses Supporting Trail

Approximately 79% of the public comments indicated support for a trail, which included comments specifying "rail to trail conversion", "interim trail", and/or "trail until rail". An additional 5% specifically supported a rail with trail configuration. Of the comments reviewed, reasons and concerns cited for the strong support of the interim trail included:

- Health benefits and outdoor recreation benefits
- Economic benefits and trails being an asset for the community
- Traffic safety concerns
- Alternative transportation benefits
- Environmental concerns and benefits
- Social benefits and community cohesion
- Improved livability and quality of life

Health was a significant category of benefits referenced throughout the comments, with 20% of respondents indicating the trail could provide health benefits generally, with mental health, physical health, and/or general wellness. 24% felt that it could encourage recreation and outdoor recreation, 6% such as the benefits of nature exposure, noted also as beneficial for mental health. Another 13% specified the health benefits of encouraging more exercise, generally, with the trail.

Economic benefits and tourism was another top category of benefits referenced, with 22% seeing the potential for general economic benefits due to the trail, such as inducing economic development and downtown revitalization.

19% noted that the trail could induce tourism to the area, and that small businesses would benefit from increased foot traffic. Several respondents noted the trail would create new access to otherwise inaccessible unique natural areas such as Merrymeeting Bay. 13% of respondents cited the potential

for such an amenity and asset to add value to the community, with potential for increased property values, and saw it as an investment in the future. Many respondents noted the potential for the trail to also influence new residents of varying ages to move to the area. A few commenters noted the opportunity to highlight heritage and cultural preservation through informational signage along trails to educate visitors about local history.

An economic concern was highlighted in an official position statement from a representative of the Bicycle Coalition of Maine (BCM), which opposed the rail with trail option. The BCM rep cited the high expense of rail with trail would mean it would take too many years to implement, if it were implemented at all. Several other commenters felt the interim trail would be a better use of funds in the short term and more cost effective and viable than the rail with trail or passenger rail alone.

Traffic safety was another category of concern. 15% of comments primarily noted a strong desire for safe separation from vehicles, and that most roads felt increasingly unsafe to walk and bike on, noting speeding drivers and the increase in aggressive driver behavior (3%). Another 9% of respondents shared that their neighborhood lacked any safe place to walk or bike, with several referencing high-speed roadways with either no shoulder or a shoulder too narrow for walking or biking. 12% noted that this trail would be ideal for children, and that it would be perhaps the only safe active transportation option for children and families. Many of these respondents stated a strong desire to use the trail on a frequent basis if it were constructed.

19% of comments cited **alternative transportation benefits**, with an interest in using a trail for trips including commuting, errands, shopping and dining, and visiting friends and family. Additionally, by connecting towns with the trail, many thought it would be useful for discovering new businesses and destinations, exploring surrounding towns, and small local adventures. There was a sentiment of not just wanting to complete necessary errands, but also to travel on the trail to shop and dine for fun.

Environmental concerns comprised of a total of 12% of responses. Several noted preserving the nature along the trail that a new train would disrupt, minimally impacting the surrounding forested areas, and protecting forest animals and flora. Many of these commenters also noted the environmental benefits of emission reductions through less driving, cutting down on motor vehicle dependency.

Social benefits were noted in 9% of the comments and referenced concepts such as the potential source of civic pride for the towns to have the trail, as well as pride for the beauty of Maine, in the natural landscape and lifestyle that a trail would align with and support. Themes also included improved community cohesion, foster a sense of belonging, neighborhood engagement, creating more opportunities for local residents to interact with one another. Other commenters noted equity benefits of the trail for low-income residents as a free and accessible resource for physical activity.

Improved livability, desirability of community, and improved quality of life were some of the themes encompassed in 6% of the comments, with several comments noting that retirees wish to use such a trail.

Other notes on preferences: Motorized vs. Non-Motorized Trail Use

While 4% of commenters specifically indicated preference for non-motorized trail usage, 8% of respondents also voiced their preference for a motorized multi-use trail. Specifically mentioned was a desire for vehicles such as snowmobiles and all-terrain vehicles, referencing examples of other trails throughout Maine where this is currently practiced. Comments also noted potential economic benefits

tied to the tourism generated for this use, and for the purchasing of permits for these motorized uses, potential for additional funding toward such a trail. In general, this group of respondents feel that expanding the modes allowed on the trail would increase activity and use of the facility and take advantage of the winter snow trail conditions.

Several respondents also supported the use of the trail by horses.

Groups Providing Comments in Support of a Trail

Various groups had representatives speak in support of an interim trail using the variety of methods, including:

- Bicycle Coalition of Maine
- Maine Trails Coalition
- Kennebec Estuary Land Trust (KELT)
- Gardiner Main Street
- Bowdoinham Comprehensive Planning Committee
- IAMAW Local Lodge S6 – Women's Committee
- Maine Health
- Access Health
- Get Active Southern Mid Coast
- Bowdoin Farmer's Market
- Healthy Communities of the Capital Area (Special Projects Mgr.)
- Maine ATV Coalition (President)
- ATV Maine (President)
- Topsham Trail Rider ATV Club (President)
- Topsham Trailrider ATV Club (President – Jenny Little)
- East Coast Greenway Alliance
- Friends of the Kennebec Rail Trail (Board Member)
- Eastern Trail (Employee)

Notes on abutters

Of the respondents supporting the trail, two respondents stated they lived close to the rail line, and 8 specifically abutted the rail right of way.

Some respondents noted which community they reside in, which included:

- Augusta
- Bowdoinham
- Brunswick
- Dresden
- Freeport
- Gardiner

- Hallowell
- New Gloucester
- Richmond
- Standish
- Topsham

5.3 Responses Supporting Restoration of Rail Service

12% of the public comments indicated support for restoring passenger rail service, including several supporting the rail with trail option. This group of respondents generally felt strongly that the restoration of passenger rail service would bring great benefit to the region and serve a greater cross section of the area's population than active transportation alone. They were concerned that removal of the rail infrastructure would be a disservice to the community. Many respondents noted that demand for rail is high, and since Maine is moving to increase rail, this corridor should be part of that trend. This sentiment was also cited to rebut the point that the rail lines have been unused for 40 years.

Of the comments, reasons and concerns cited for their support of the restoration of rail service included the following areas:

- Environmental benefits/climate issues
- Economic benefits
- Alternative transportation benefits & creating affordable transit options

Environmental benefits and fighting climate change were a top commenting category for this group of respondents, referenced in that the rail could provide more alternate transportation options (28%). 8% of comments noted that a passenger rail option could reduce overall vehicle traffic and congestion, along with a reduction in shipping/trucking methods using fossil fuels.

Economic benefits were noted, citing benefits both in terms of rail adding to the regional economy, spurring economic development, and supporting tourism through linking to other scenic rails (20%). Respondents also noted rail could support the development of affordable housing options (4%).

Alternative transportation benefits were also a priority for this group of respondents, that the restoration of rail service would provide more alternative transportation options (4%). These benefits were also cited in terms of providing year-round affordable transit options to residents, some without cars, (20% of comments), and that it would help a wider range of constituents with transportation access or mobility challenges, for example, residents who may not be willing or able to utilize active transportation (walking, biking, rolling) as their mode of transportation (4%). One respondent noted rail as an ideal option in case gas prices increase further. Another respondent felt that rail is a superior alternative transportation mode, as the potential length of a trail would not be a realistic transportation corridor considering most bicycle trips are under three miles in length. An additional suggestion was made to consider the use of rail bikes as they allow rails to remain but bicyclists to use the corridor.

Groups Providing Comments in Support of a Rail Service

Various groups had representatives speak on their behalf in support of the restoration of passenger rail, including:

- Maine Rail Group
- Mid-Maine Chamber of Commerce
- Rail User's Network (Richard Rudolph)
- Maine Rail Transit Coalition (Anthony Donovan)
- TrainRiders Northeast/RailRiders Northeast (Bruce Sleeper)
- Rail Explorers Rail Bike Service* (Interested in providing service on rails)

Note: Ed Hanscom, a representative from the Maine Rail Group, submitted the names of 611 individuals (roughly 80% residing in Maine) who expressed support for the "Petition in Support of Bringing Passenger Rail to Bangor". Signatures were gathered after at the 2023 Maine Transportation Conference, denoting support for passenger rail service in the region, specifically "from Brunswick, ME to Bangor, ME over the state-owned 'Lower Road' to Augusta and then on CSX's rail line to Waterville and Bangor." The group's representative also included a point-by-point rebuttal to claims about the benefits of a trail over rail in "Adopted Trail Support Resolution" from the Lower Road RUAC website.

Notes on respondents

Of the respondents supporting the restoration of rail, only one respondent stated they lived close to the rail line.

Some respondents noted which community they reside in, which included:

- Augusta
- Bangor
- Brunswick
- Chelsea
- Harrington
- Hiram
- Hope Harbor
- Orono
- Portland
- Waterville

Some commenters in support of rail service noted a concern with potential RUAC bias against the rail option and toward trail, along with concern with the process in terms of lack of representation from Waterville and Bangor on the Council. Another comment related to the desire for bike infrastructure improvements within towns, not necessarily on the rail corridor itself.

Other Responses

4% of the public comments deviated from "Supports Trail" or "Supports Restoration of Rail Service" and were categorized as "Other". These responses did not specify support or opposition to the project,

and consisted primarily of questions about the project, such as rail service ridership, operating costs, bus service; rail station siting; analysis sources/citations; set back requirements, and potential trail impacts to conservation lands and wildlife crossings.

One individual living near the rail corridor cited concern regarding a lack of public restroom facilities along the potential trail corridor, and whether that might apply pressure on nearby homes to provide such services. Another was concerned with safety and privacy of living near the potential trail, and some were concerned with safety and the potential for crime along a remote and rural trail.

Of the respondents in this category, two respondents stated that their property abutted the rail right of way.

APPENDICES

Appendix A:
Cost Estimate Back-up Sheets

A1: Rail Cost Estimates (Freight and Passenger)

A2: Trail Cost Estimates

Appendix B:

Draft Lower Road Rail Corridor Demographic & Economic Analysis (RKG report, May 2023)

Appendix C:
Summary of Trail User Estimates

Appendix D:
Lower Road Track Chart

Appendix E:
Summary Table of Public Comments

Appendix F:
Lower Road History