



November 2021

Massachusetts Department of Transportation

North Adams Adventure Trail Feasibility Study Protection Avenue to River Street

North Adams, Massachusetts

Acknowledgements

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Background

The North Adams Adventure Trail (NAAT) is an envisioned east-west, primarily off-road, shared-use path connecting Williamstown to North Adams along a similar alignment as the existing State Route 2, active freight rail corridor, and the Hoosic River. As shown in Figure 1, the future trail is divided into three distinct sections in various stages of planning and design. The first section is the 2.5-mile Mohawk Bicycle/Pedestrian Trail—a MassDOT-funded project scheduled to begin construction in 2021. The second section is a 1.3-mile section from the Williamstown border to Protection Avenue in North Adams. At the writing of this document, the City of North Adams is working with a private developer to advance this section through design and into construction. The City refers to this section as the North Adams Adventure Trail (NAAT) Phase I, which will connect to the Mohawk Trail at the Williamstown Line. The remaining approximately 2 miles is the focus of this feasibility study, stretching from Protection Avenue to River Street and eventually to the grounds of the Massachusetts Museum of Contemporary Art (MASS MoCA). This section is referred to as the NAAT Phase II. This east-west corridor has been identified as a high priority for the Commonwealth's trail and greenway system in numerous initiatives and statewide planning documents, including Massachusetts Department of Transportation's (MassDOT) Statewide Bike and Pedestrian Plans, Department of Conservation & Recreation's (DCR) Commonwealth Connections, and various local and regional plans.

The trail is envisioned to be a significant regional draw for both recreation and active transportation, while linking two major cultural institutions—the Clark Art Institute and MASS MoCA. Ultimately, the completion of this trail would further the goal of a future connection with the popular Ashuwillticook Rail Trail to the south, creating a completely off-road network of nearly 30 miles through the Berkshires, linking Williamstown, North Adams, and Pittsfield. The north-south Ashuwillticook Trail between Lanesboro and Adams is a great success, but was almost entirely a rail-to-trail conversion. The rail lines in North Adams and Williamstown are still active however, and thus an alternate alignment for the trail is required.

MassDOT understands that promoting a healthy and vibrant community requires creating attractive, safe, and purposeful places for people to walk, bike, exercise, and travel. Phase 1 is a critical first step to providing connectivity from the Mohawk Trail terminus in Williamstown to downtown North Adams via MASS MoCA and eventually connecting to the Ashuwillticook Rail Trail in the south. It also provides a new direct connection to the Appalachian Trail. The previous Mohawk Trail alignment in North Adams had challenges, including opposition from residential neighborhoods and concerns with the number of trail crossings along State Route 2. The Adventure Trail provides an alternative alignments that capitalize on the picturesque summit of Mount Williams to the south and the vista of Pine Cobble Mountain to the north. North Adams' standing as an important cultural and economic center in the Berkshires will be further enhanced with the construction of this trail by growing its bicycle and pedestrian network and providing an alternative means of transportation from Williams College to downtown North Adams and points between.

Study Purpose

The MassDOT Office of Transportation Planning (OTP) initiated efforts to conduct a feasibility study to complete the construction of a section of the NAAT as part of an off-road shared-use path from Williamstown to North Adams. This feasibility study focuses on the eastern segment of the overall trail, located entirely in North Adams, primarily between Protection Avenue and MASS MoCA, also referred to as Phase II of the NAAT.

Due to the unique nature of determining a suitable right-of-way for the future trail, an appropriate order of magnitude impact and cost assessment has been considered in this feasibility study. Property acquisition costs are not included in the cost assessments. This study focuses on three different alignment concepts (see Figure 2) connecting the path between the approximate trailhead of Section 2 at the western edge of Protection Avenue to River Street and eventually MASS MoCA. While each alignment presents a distinct route to connect these points, a final preferred route may be a hybrid of two or three of the alignments.

Figure 1—North Adams Adventure Trail Overview

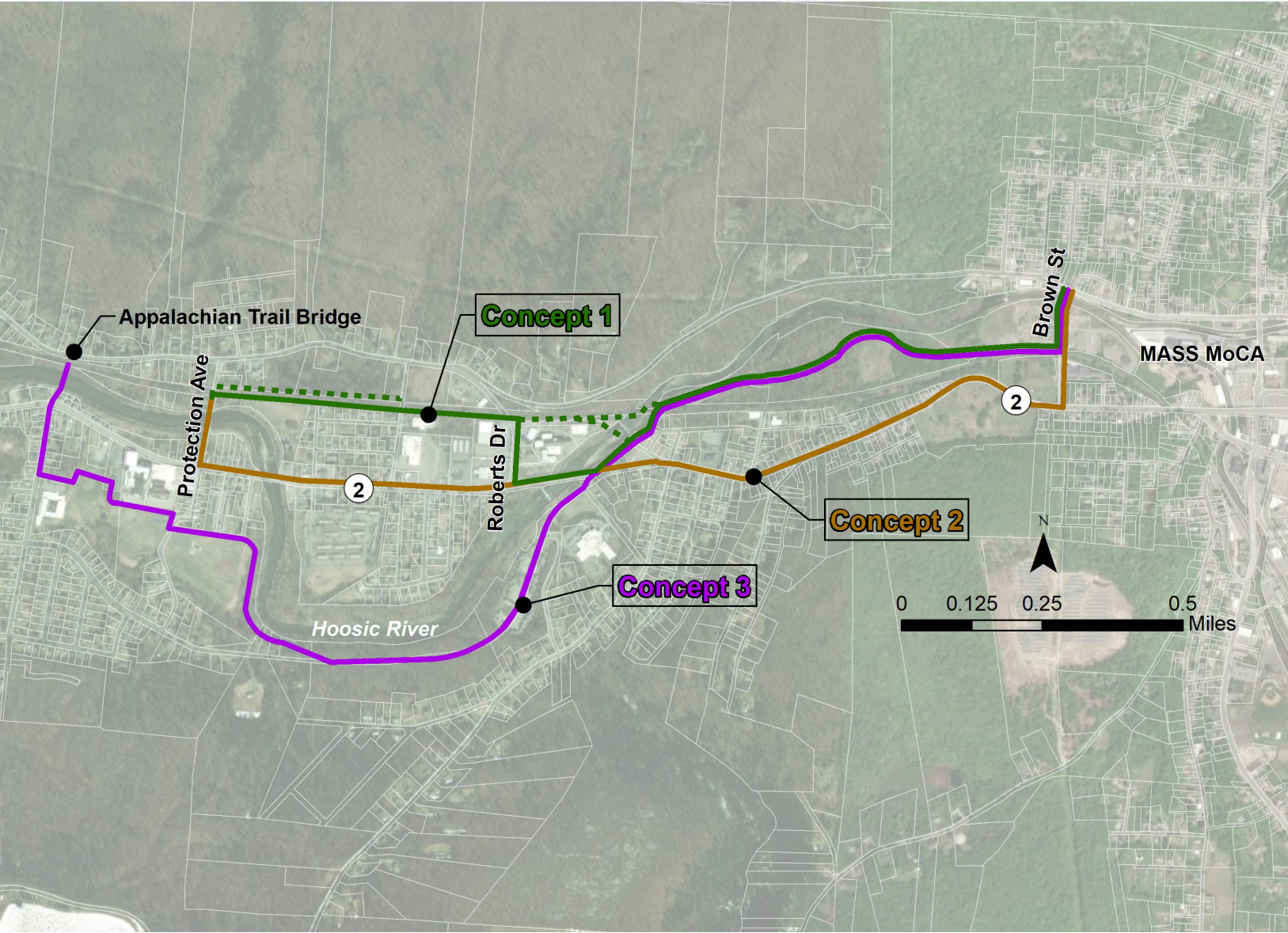


Study Tasks

MassDOT determined that the logical and appropriate first step for this feasibility study would be to complete the following tasks:

- » Conduct a desktop analysis of existing conditions to inform site visit
- » Map and analyze the alignment identified by recent planning efforts, known as *The Vision*
- » Conduct a field assessment of the project area at critical locations to verify the record information
- » Identify alternate trail routes, including the State Route 2 corridor
- » Identify potential impacts of the selected alignment concepts

Figure 2—Three concepts analyzed in this study



Note Concept 3 overlaps with Phase I of the NAAT between the Appalachian Trail bridge and Protection Avenue. Coordination between the two projects is necessary.

Project Location and Limits

The current thinking for this section of the NAAT alignment begins at or near Protection Avenue and continues east for approximately 2 miles to the grounds of MASS MoCA. However, one of the concepts does analyze the potential to connect directly with the Appalachian Trail. The flat terrain of the Hoosic River Valley is ideal for cycling and walking, and this study will focus on a trail along the river where it makes sense, some portions which have already been diverted into designated culverts/underpasses. A recent independent planning report presented an alignment concept, referred to as *The Vision*, that will be analyzed as part of Concept 1 in this study. That alignment includes a portion of rail-with-trail along the active freight rail corridor which will be evaluated as well as alternative alignments that were identified in certain segments. The study indicates ROW requirements needed from freight operator as appropriate for each concept.

Numerous challenges to trail construction along the riverbank are expected. Therefore, the State Route 2 highway layout—which is under MassDOT jurisdiction west of Notch Street—will also be evaluated for a side path facility. After meeting with City officials, MassDOT agreed to develop and analyze a third alignment that more closely follows the oxbow of the Hoosic River, connects numerous community facilities, and includes a segment that follows an existing off-road path within a right-of-way (ROW) for a portion of a road that was never constructed.

- » **Concept 1** is the northernmost alignment analyzed that follows *The Vision* alignment as developed in previous planning efforts but presents a few alternatives to that alignment in certain locations. This alignment generally follows the active freight rail ROW before diverting into the former fairgrounds parcel towards Brown Street.
- » **Concept 2** follows the State Route 2 corridor from Protection Avenue to Brown Street as a separated bike facility sharing the existing roadway ROW.
- » **Concept 3** carries the NAAT adjacent to the south bank of the Hoosic River over off-road paths, including a stretch through wooded terrain along an existing trail on a municipal ROW.

Each concept is broken down further into segments with a general description of existing conditions, potential trail options, and a rating of difficulty of implementation from low to high. A summary matrix is included.

Concept 1

Summary of Proposed NAAT Alignment and Alternate Segments

Concept 1 begins at the Trailhead of NAAT section 2 at Protection Avenue and generally follows the alignment proposed as part of The Vision, but presents alternative alignments in segments for areas that were deemed excessively challenging to implement. The initial segments follow the rail corridor between Protection Avenue and Roberts Drive and will require the path to be bench cut into the existing earthen berm between the rail and private property to the south. Final location along the railroad ROW and potential impact will be established as part of a later phase of the project. The alignment then continues as a side path along Roberts Drive and along the State Route 2 bridge over the Hoosic River. Once across the river the path returns off-road, crossing under the railroad ROW and through the fairgrounds parcel to Brown Street where it parallels the roadway to River Street. The following section provides more detail on each segment of Concept 1. Resource maps for Concept 1 can be found starting on page 8.

Figure 3—Concept 1

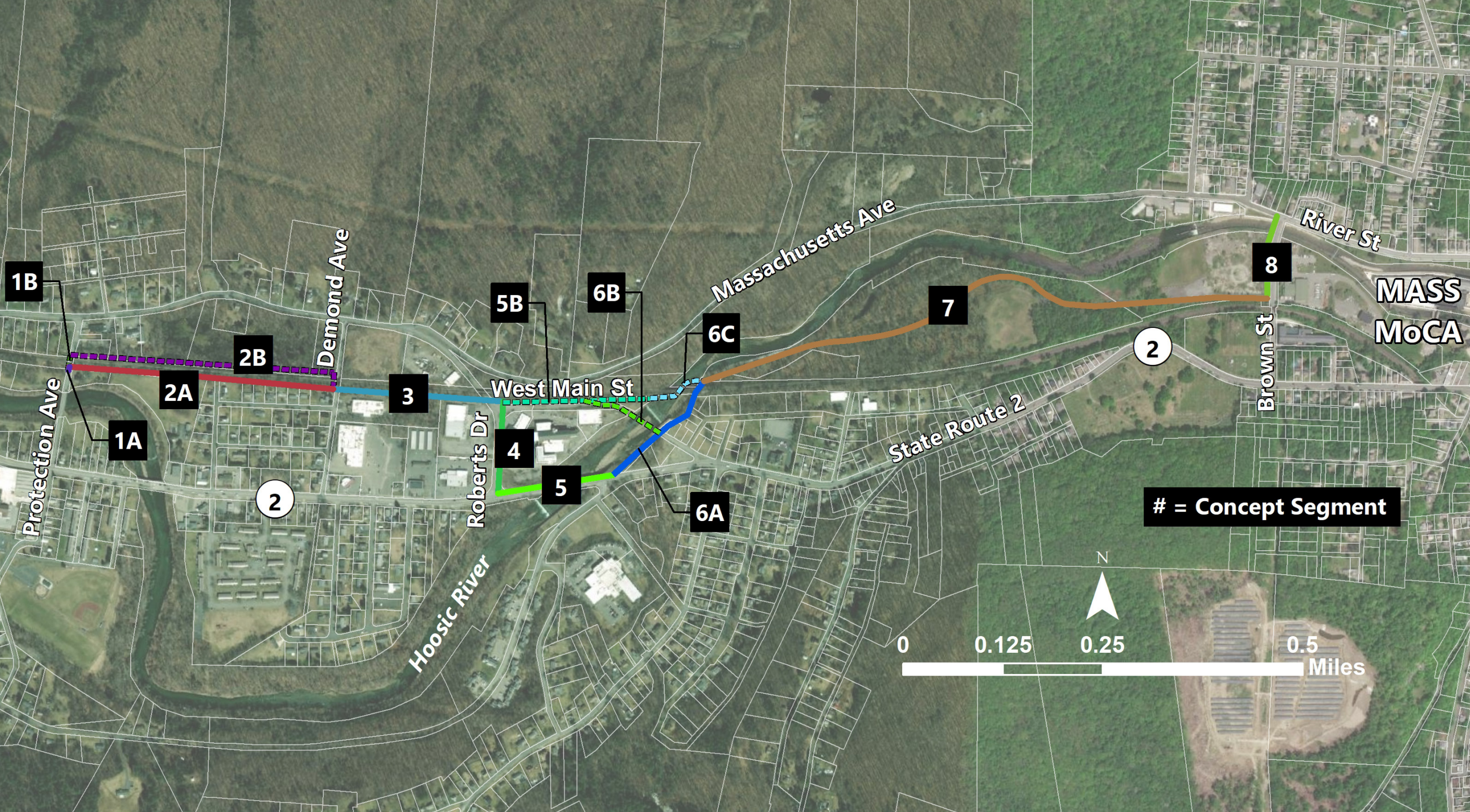
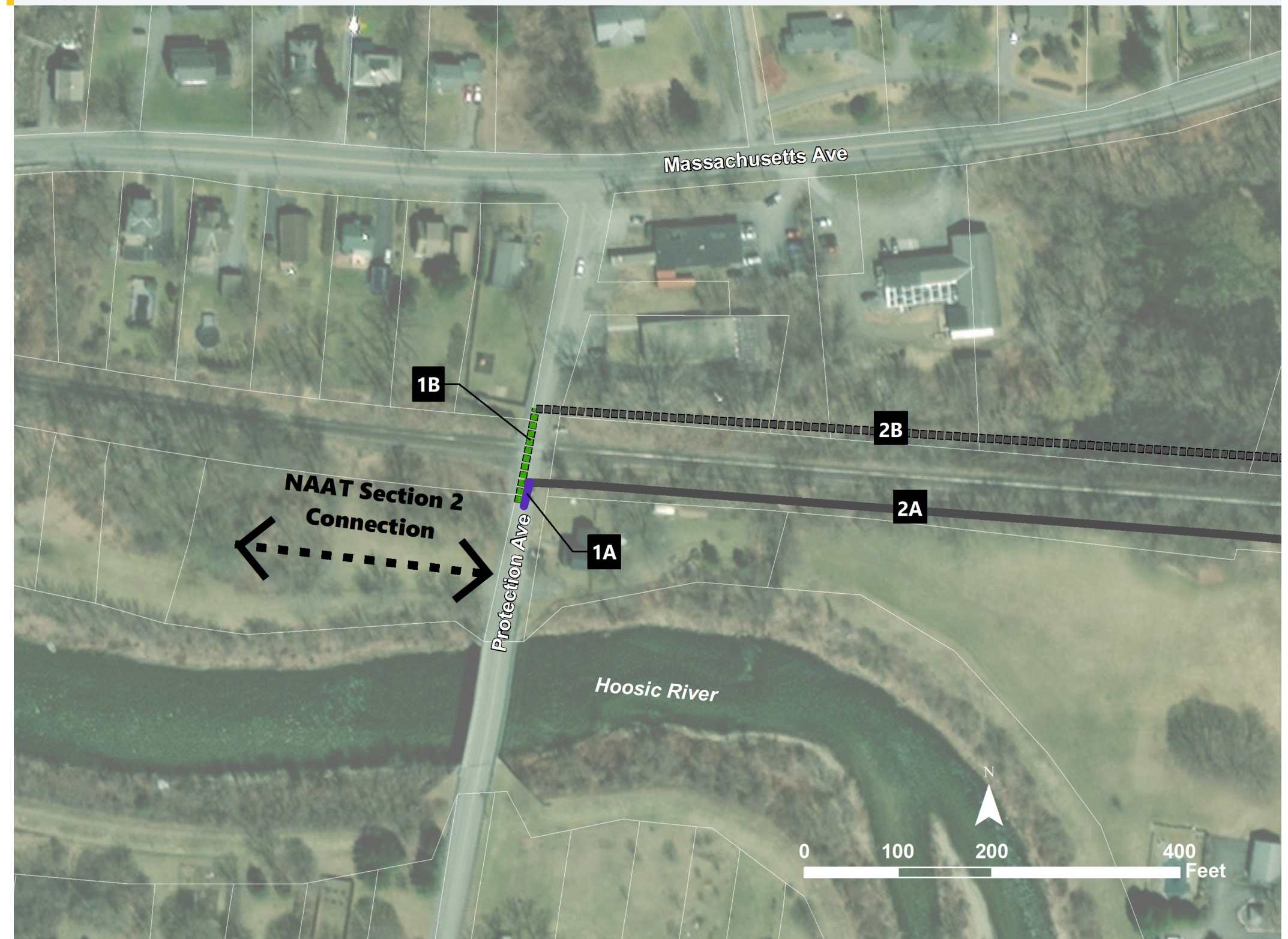


Figure 4—Concept 1, Segment 1



Concept 1 Segment 1

On-road connection with Section 2 of North Adams Adventure Trail at Protection Avenue trailhead

Segment 1 The NAAT begins where the central section ends, at Protection Avenue (see Figure 5). Protection Avenue is a low-volume low-speed local roadway with 40 feet of total ROW with approximately 30 feet of pavement with two 12-foot travel lanes and 3-foot shoulders (variable) with no sidewalk (see Figure 6).

The length of Segment 1 is dependent on the final alignment and trailhead location of the central section of the overall North Adams Adventure Trail and whether Segment 2 (heading east) runs along the northern or southern edge of the rail corridor.

Segment 1a The preferred path alignment would run along Protection Avenue to the southern edge of the rail corridor. This would be accommodated through pavement widening along the western edge of Protection Avenue for approximately 50 feet where the path would cross Protection Avenue and enter the railroad ROW. This could be accommodated through striping and signage of the existing pavement width or expanding the pavement to accommodate the shared-use path and associated buffer along the western edge. Maintaining the existing roadway cross-section and adding the shared-use path and buffer along the western edge would likely encroach on a private parcel.

Segment 1b The alternate alignment would run along Protection Avenue to the northern limit of the rail corridor for approximately 125 feet and would require an at-grade rail crossing, including required crossing equipment. It is possible that the project will be required to have an approved fully active crossing design, including gates, signal, and other measures. Though Protection Avenue currently crosses the active rail line at-grade, incorporation of a shared-use path crossing will require approval from the Department of Public Utilities, or other appropriate authorities having jurisdiction.

Enhanced signage and markings at roadway crossings will be needed for either alternative. Additionally, coordination with the operating railroad will be necessary for either alternative.

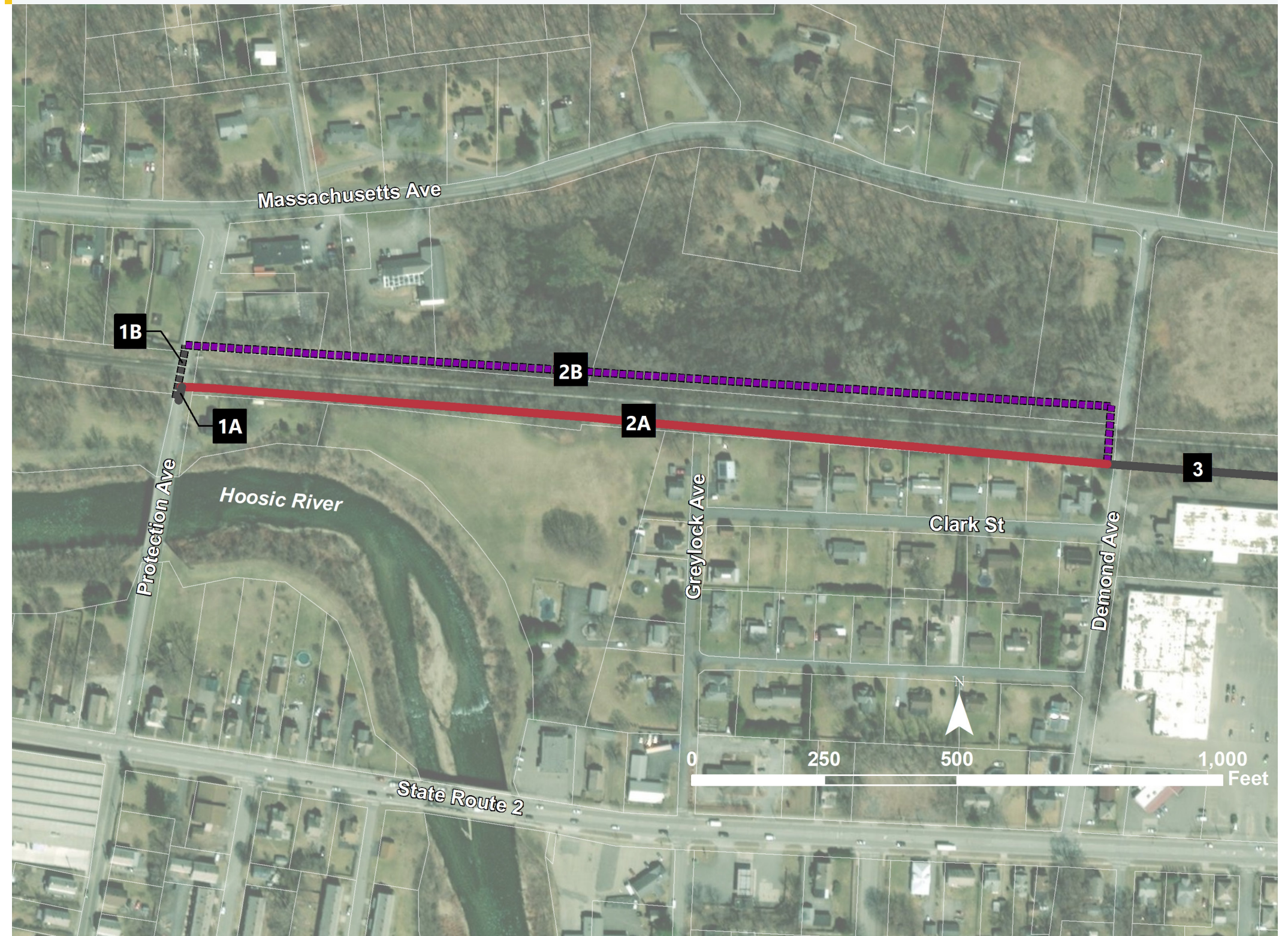
Figure 5—Looking west from Protection Avenue at proposed trailhead area



Figure 6—Looking north along Protection Avenue towards railroad crossing



Figure 7—Concept 1, Segment 2



Concept 1 Segment 2

Adjacent to rail alignment along the rail corridor between Protection Avenue and Demond Avenue

Segment 2 The NAAT takes the trail off-road along the railroad ROW. The rail corridor runs along an embankment through this section bordered to the north by a GIS-mapped wetland area and commercial property and to the south by residential property along Clark Street.

Segment 2a The preferred corridor alignment continues east along the south side of the approximately 80-foot-wide rail ROW. With a minimum of 40 feet between the centerline of the tracks and the adjacent property line, the 10-foot-wide, paved path will run along the side of the approximate 15-foot tall embankment. To accommodate the grade change, the path will run within a bench cut roughly half-way between the edge of tracks and the property line. A retaining wall between the path and the railroad embankment top-of-slope is anticipated in the steepest portions of the embankment. The final wall size and location will be determined after additional structural analysis. The ROW between the path and the property line will be heavily planted to mitigate the loss of trees and shrubs close to the adjacent residential properties.

As the NAAT corridor approaches Demond Avenue, the path's bench cut will slope at a 5% grade to meet the roadway grade. The path alignment will veer slightly south to improve the sight lines for southbound motor vehicles passing through the existing tunnel. A flat landing on each side of Demond Avenue provides space for trail users to pause before crossing the roadway.

Segment 2b The alternate NAAT corridor alignment continues east along the north side of the approximately 80-foot-wide rail ROW. Although roughly 40 feet of space lies between the centerline of the tracks and the adjacent property line, the 10-foot-wide shared-use path may require a property easement to the north to avoid sensitive wetlands at the toe of the embankment (see Figure 9). With or without the easement, the path will require approximately 1,000 feet of boardwalk to bridge wetlands and other sensitive environmental constraints (wetland verification and delineation will be required in the field).

As the NAAT corridor approaches Demond Avenue, the path's boardwalk segments will return to *terra firma* to meet the roadway grade. A paved portion of the path will make a 90-degree turn and merge with the adjacent 20-foot-wide roadway. This short stretch merges with the Demond Avenue segment through the existing narrow tunnel (see Figure 11) and requires pedestrians, bicyclists, and motor vehicles to share the roadway. Ideally the tunnel would be widened, but at least enhanced signage and markings at road crossings would be needed in advance of the tunnel on both approaches. Another option for this segment would be to dead-end Demond Street to eliminate two-way traffic minimizing potential conflict. Additional coordination with the City of North Adams would be necessary for this.

Figure 8—Looking east down rail corridor from Protection Avenue towards Demond Avenue



Figure 9—View of wetland at embankment



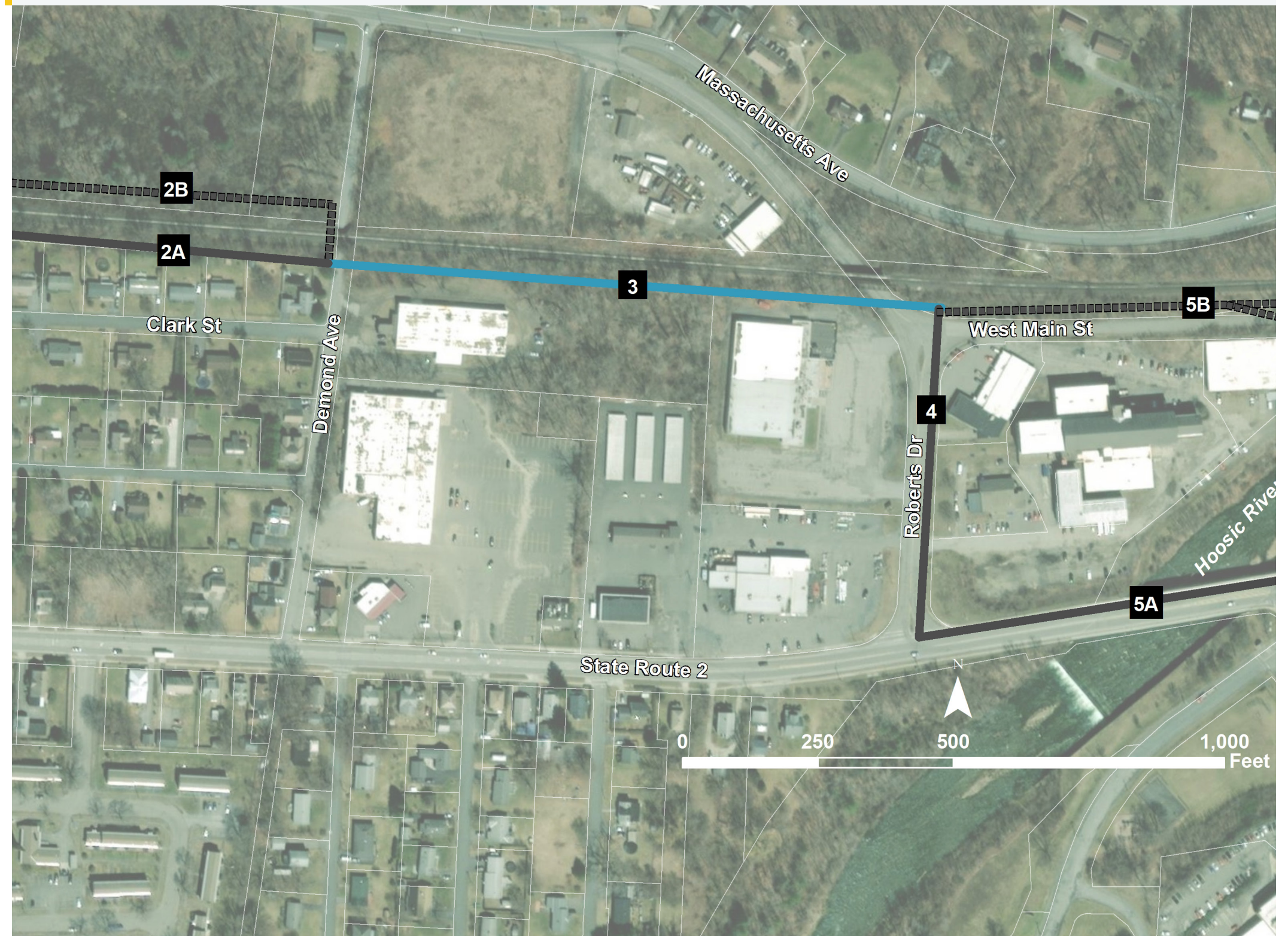
Figure 10—View of residential property south of rail corridor



Figure 11—Looking south from Demond Avenue underpass



Figure 12—Concept 1, Segment 3



Concept 1 Segment 3

Adjacent to rail alignment along the rail corridor between Demond Avenue up to and crossing Roberts Drive

Segment 3 The NAAT continues along the south side of the rail ROW from the Demond Avenue crosswalk (with associated signage and striping) to Roberts Drive. Similar to Segment 2, the railroad ROW is 80 feet wide, offering adequate space between the centerline of the tracks and the adjacent property line to the south. The 10-foot-wide, paved path will run along the side of the approximately 15-foot tall embankment within a bench cut, avoiding the utility poles and powerlines on the south edge of the ROW (see Figure 13). A retaining wall between the path and tracks is anticipated in the steepest portions of the embankment. The final wall size and location will be determined after additional structural analysis. Because adjacent land uses are commercial and industrial, additional landscape buffering will not be required.

As the NAAT corridor approaches Roberts Drive, the path's bench cut will slope at a 5% grade to meet the roadway grade and bend to the south to improve visibility of the crosswalk and for an improved geometry for roadway crossing. Enhanced pavement markings and signage will be installed at the roadway crossing. A flat landing on each side of Roberts Drive provides the space for trail users to pause prior to crossing the roadway.

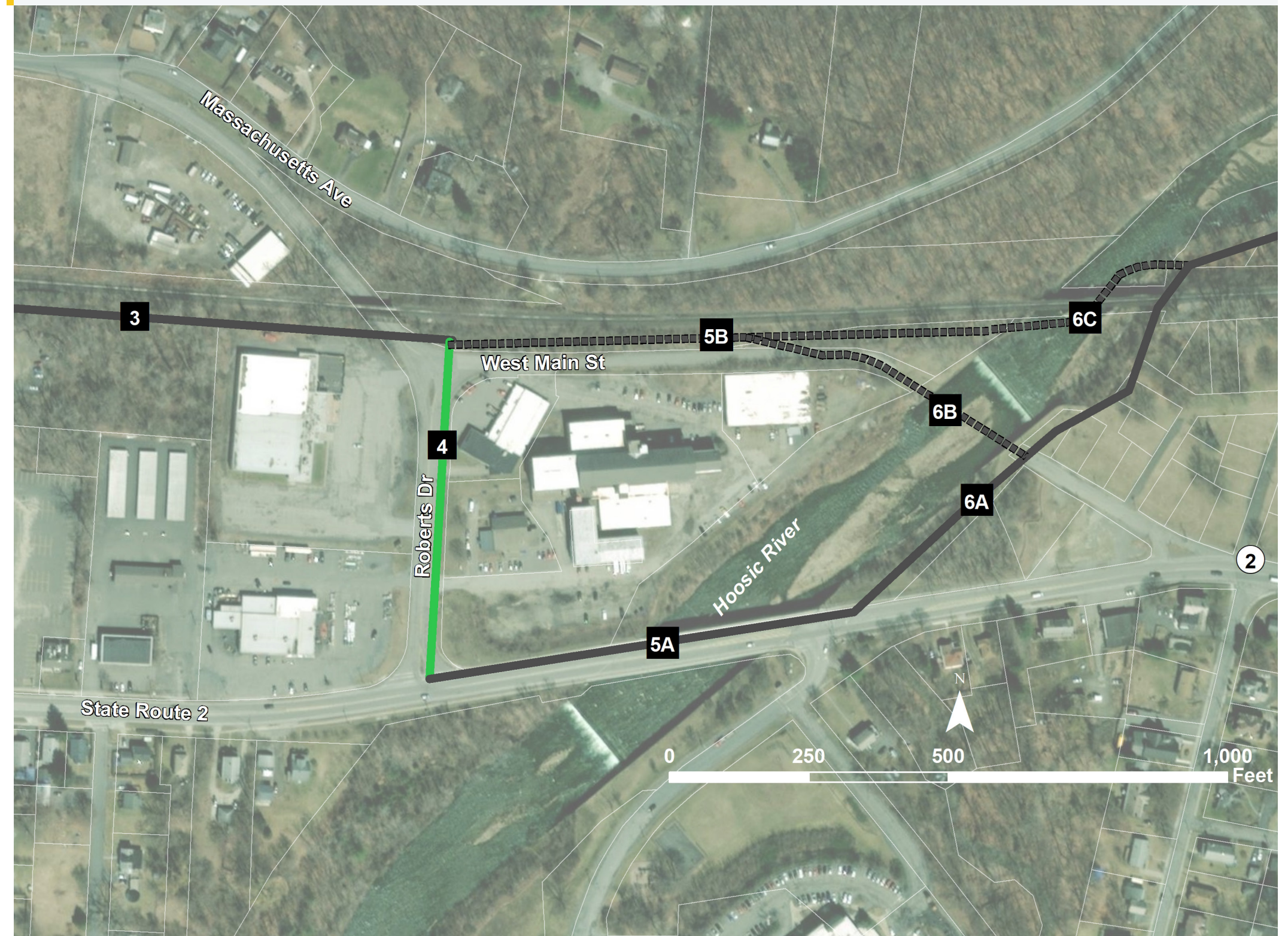
Figure 13—Looking east from Demond Avenue towards Roberts Drive



Figure 14—Looking north towards rail bridge at proposed location of Roberts Drive crossing



Figure 15—Concept 1, Segment 4



Concept 1 Segment 4

On-road separated path along Roberts Drive

Segment 4 The preferred path alignment would cross West Main Street just east of the intersection with Roberts Drive. From the south side of West Main Street to State Route 2, the NAAT will be a 10-foot-wide side path along the east side of the 58-foot-wide Roberts Drive ROW. Along this nearly 1,000-foot-long block, Roberts Drive contains two 20-foot-wide travel lanes, a marked centerline but no marked shoulders, and a 5-foot-wide sidewalk separated from the roadway by a 6-foot-wide grass strip (see Figure 16). Four utility poles lie within the grass strip and will be unaffected by the sidepath, which will occupy the current sidewalk location plus five extra feet away from the roadway (see Figure 17). A marked roadway crossing and trail crossing signage is expected at two wide driveway crossing locations along the segment.

Several buildings within the complex at the intersection of Roberts Drive and West Main Street are of historic significance, but no impacts are anticipated as part of this project. Starting at about the intersection of Roberts Drive/Route 2 and east towards the bridge, the path and roadway are within the FEMA 100 year floodplain boundary.

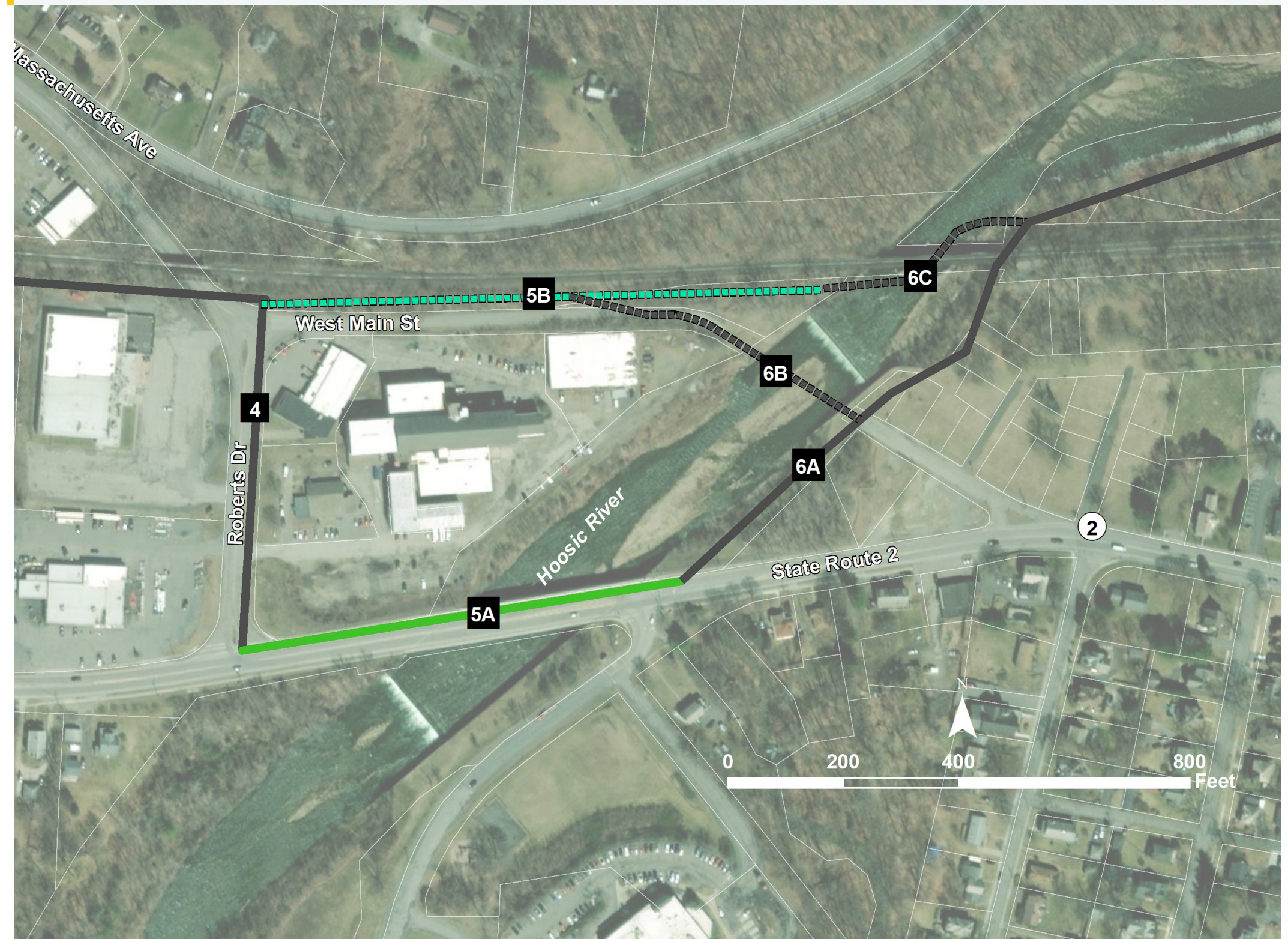
Figure 16—Looking south down Roberts Drive



Figure 17—Looking north along Roberts Drive towards West Main Street



Figure 18—Concept 1, Segment 5



Concept 1 Segment 5

On-road shared-use path along Route 2, including bridge over Hoosic River

Segment 5a The north-south side path turns east at the south end of Roberts Drive, and the preferred alignment continues as a side path along the north side of State Route 2. Although 10 feet-wide at the Robert Drive intersection, the side path tapers to approximately 8 feet in width to meet the existing sidewalk on the north side of the Route 2 bridge over the Hoosic River. One utility pole would need to be relocated to the north side of the existing guard rail to accommodate the 8-foot path between the guardrail and existing granite curb (see Figure 20). Providing a 5 foot separation from the roadway would require widening of the Route 2 bridge which is not practical or feasible due to ROW and environmental impacts. A concrete barrier between the path and roadway edge would provide positive separation without having to widen the Route 2 bridge. A similar application was recently installed on Route 122 in Rhode Island (see Figure 19). Structural analysis and modification of the bridge joints are required to accommodate the NAAT on the bridge. Approximately 100 feet east of the bridge, a break will be needed in the guardrail to provide space for the NAAT corridor to veer to the north along the east bank of the Hoosic River. This segment will coordinate with improvements proposed in the Brayton Elementary School Safe Routes to School project.

Segment 5b The alternate alignment for the NAAT continues as an off-road path along the south side of the rail ROW from Roberts Drive to, and beyond, the east end of the West Main Street ROW. The railroad ROW is 80 feet-wide, offering adequate space between the centerline of the tracks and the West Main Street roadway to the south. The 10-foot-wide paved path will run along the side of the modest embankment potentially requiring a bench cut with small retaining wall or cheek wall between the path and the tracks. Travelling east from the Roberts Street bridge, the rail corridor declines in elevation until it is at-grade with West Main Street approximately 380 feet from the bridge. West Main Street historically continued approximately 900 feet to a bridge over the Hoosic River, but the bridge was removed and the roadway was dead-ended with a security gate approximately 600 feet from Roberts Drive. Today the street provides a secondary access point to a business plaza located at the corner of West Main Street and Roberts Drive and carries very little vehicular traffic. There are a series of utility poles that run parallel with this alignment as well as multiple culverts under the rail bed that would need to be addressed (see Figure 21). At the east end of the dead-end road, the path could continue following closely to the railroad tracks or it may diverge to the southeast. Both options provide the opportunity to cross the Hoosic River on a new trail bridge described in Sections 6B and 6C. Continuing along the rail corridor would require additional property research as the railroad property line shifts north as the West Main Street ROW veers southeast leaving a privately owned parcel in between that would likely be impacted by the NAAT alignment approach to the Hoosic River crossing.

Figure 19—Bidirectional shared-use path recently installed on a Route 122 bridge in Cumberland, Rhode Island



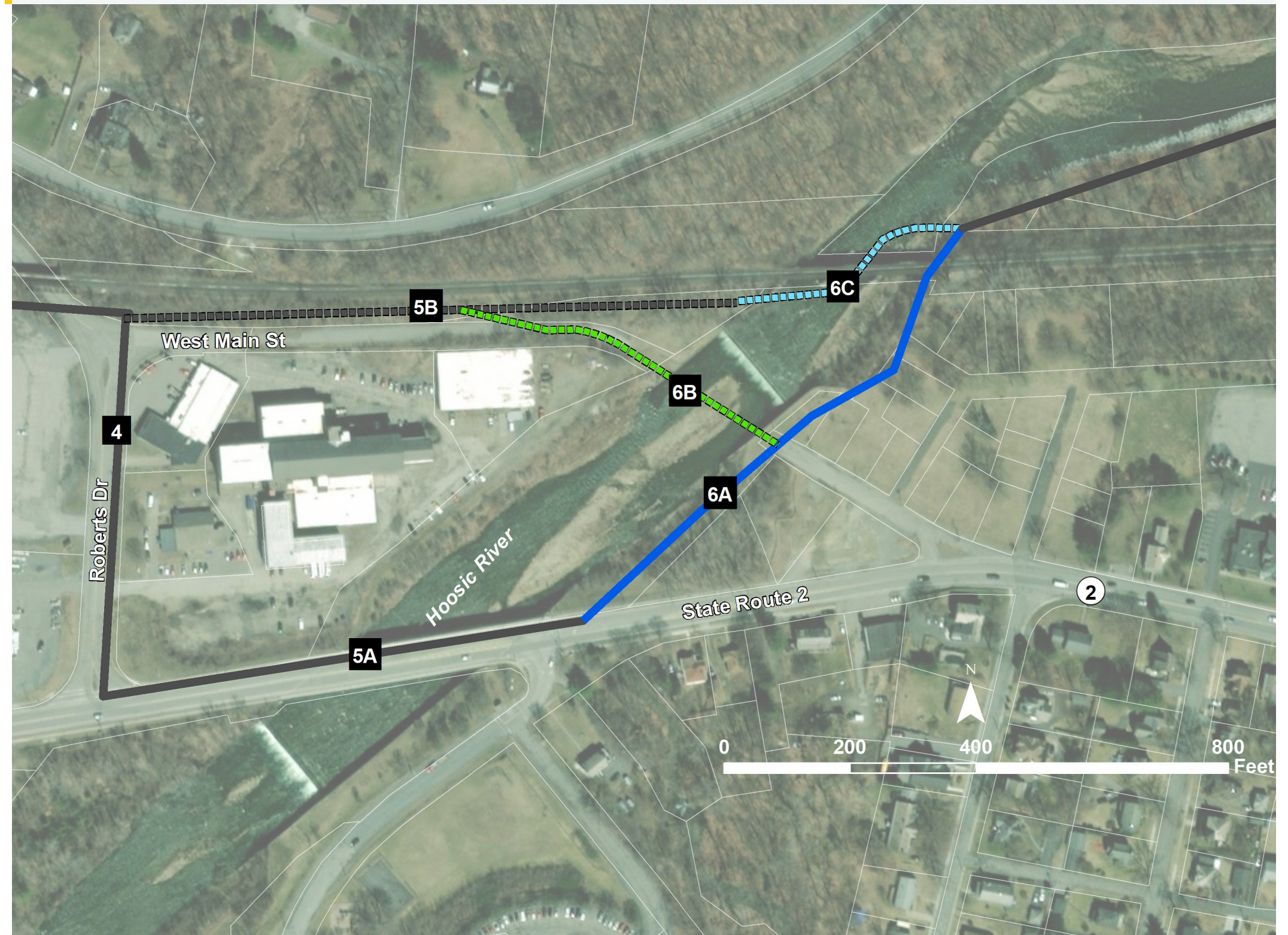
Figure 20—Looking east down Route 2 at Roberts Drive



Figure 21—Looking east between rail corridor and West Main Street



Figure 22—Concept 1, Segment 6



Concept 1 Segment 6

At-grade path adjacent and parallel to Hoosic River from Route 2 to the rail ROW

Segment 6a The preferred NAAT alignment runs along the riverbank from Route 2 to the railroad corridor (see Figure 23). Property ownership varies between public and private adjacent to the river and will need to be confirmed in next stages of planning and design. It is likely an easement for the path will be required along some portions of this section, especially north of the old West Main Street dead-end stub.

The approach to the rail corridor requires felling a number of trees to provide space for the 10-foot path and required offsets. Because of the height of the rail corridor embankment, a path crossing under the rail corridor may be the preferred option. The preference is that the NAAT can stay on a consistent level and will not be required to dip below grade when passing under the tracks. Similar to the new Norwottuck Rail Trail underpass in Northampton or the Blackstone River Greenway in Blackstone, the intent is for a pre-cast concrete or metal culvert or tunnel to be installed below the tracks with minimal disruption to rail service above (see Figure 24).

Segment 6b As another alternative to using the existing Route 2 bridge, the NAAT alignment could cross the Hoosic River on a new trail bridge that runs along the old West Main Street alignment (see Figure 25). This option could possibly take advantage of the existing foundations and abutments of the former roadway bridge over the river. A structural analysis of the abutments on each riverbank will be required to understand if reuse is possible. A potentially more feasible approach would be to build new bridge abutments behind the walls and span the floodwalls and river. Because this option crosses the river at a close-to-perpendicular angle, it has a higher potential to cross the river in a single span with minimal disruption to the riparian environment. A single span bridge would also minimize impacts to the river hydraulics and US Army Corps of Engineers (USACE) facilities. After crossing the river, the NAAT would incorporate a similar alignment and travel along the river and cross under the railroad tracks, as described in Section 6A above. This segment would provide a landmark bridge opportunity and should be considered as a future project if not included in the initial preferred alignment.

Segment 6c As an alternative to using the existing Route 2 bridge to cross the Hoosic River, the NAAT alignment could cross the river on a new trail bridge. This option crosses the river adjacent to, and directly below, the existing rail bridge. The NAAT bridge would cross the river at an angle and immediately turn to the north-east at the abutment on the south bank of the river. The path would cross under the bridge—potentially on piles or piers in the river—until reaching a stable area where the path could veer into the wooded property between the rail line and the river. This work constitutes filling of the river floodway and floodplain and would most likely impact the river hydraulics and USACE flood facilities and present maintenance challenges. It is unlikely that this alternative would be eligible for approval from USACE as the least environmentally damaging practical alternative. This alignment may not be able to meet required vertical clearances under the railroad bridge. Additional analysis would be necessary.

Figure 23—Looking southwest towards Route 2 along south riverbank with West Main Street stub in foreground



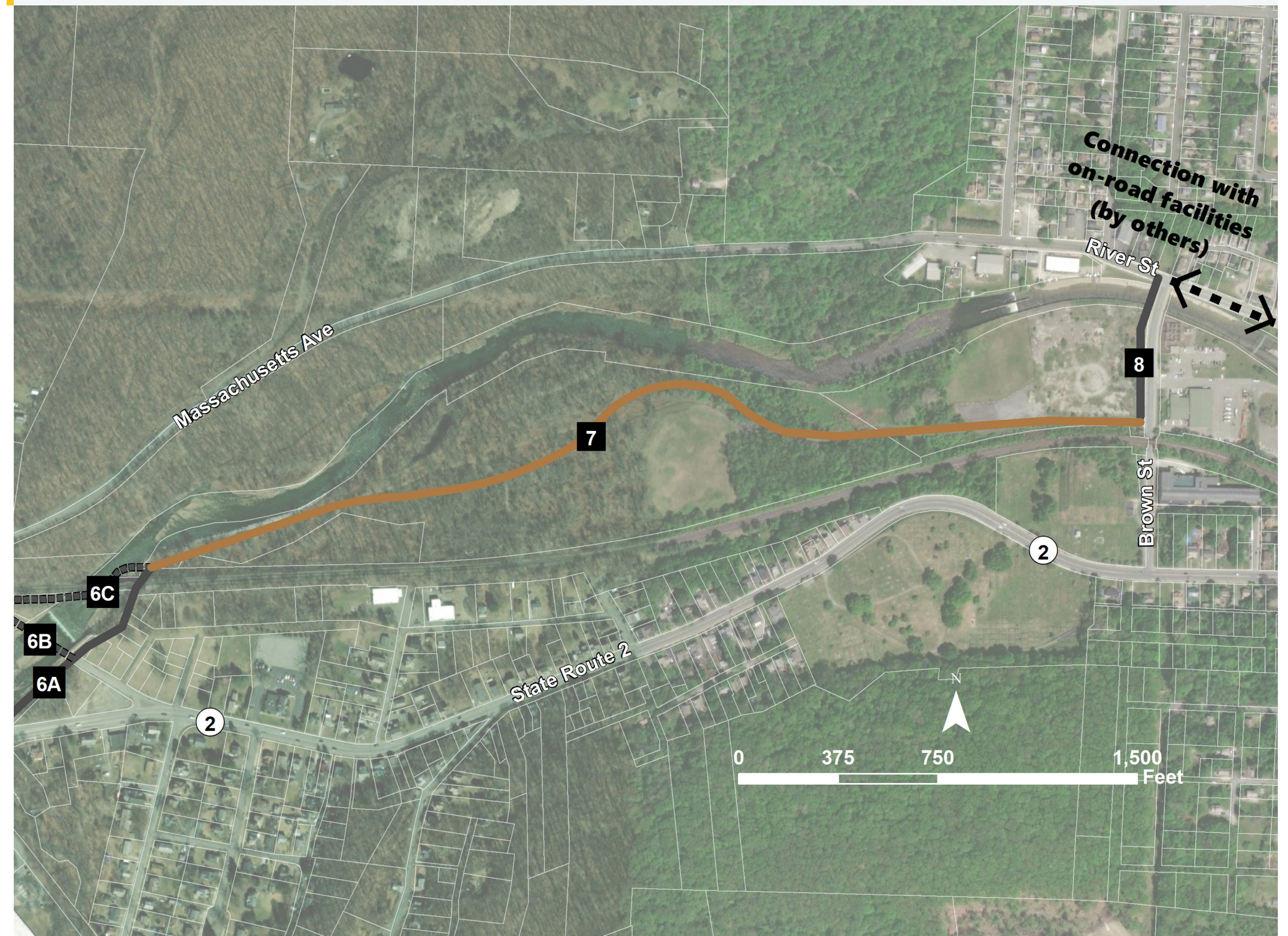
Figure 24—Blackstone River Greenway Underpass



Figure 25—View looking from West Main Street corridor at north bank of river



Figure 26—Concept 1, Segment 7



Concept 1 Segment 7

At-grade path along fairgrounds parcel to Brown Street adjacent to Hoosic River

Segment 7 After crossing the river and the rail corridor, the NAAT continues east through the fairgrounds property, utilizing an existing path where possible (see Figure 27). Wetlands exist in the area and verification and/or delineation of the wetlands as well as other regulated buffer areas will be necessary within this segment of the path. As the final alignment is identified, coordination with the City of North Adams Conservation Commission regarding potential work within the riverfront area and/or buffer zone will also be necessary. The fairgrounds parcel is currently under private ownership and coordination with the owner will be necessary. Historically, there has been use of hazardous materials on the property, so further investigation will be required to ensure minimal disruption and/or mitigation requirements and determine if coordination with DEP and development of a soil management plan or best management practices during construction in accordance with MassDEP's guidance on developing rail trails will be required. There appears to be active monitoring throughout the fairgrounds parcel and the surrounding parcels, as there are a number of well-worn paths and paved driveway access for about 1,500 feet from Brown Street (see Figure 28).

On the approach to Brown Street, the NAAT alignment could either remain closer to the edge of the river while minimizing impact to the riverfront area or run along the active paved driveway between Brown Street and the fairgrounds. The latter reduces the likelihood of disturbing contaminated soils on the former industrial site closer to the Hoosic River.

Figure 27—Existing path through fairgrounds parcel



Figure 28—Existing path through fairgrounds intersecting with paved driveway





Concept 1 Segment 8

On-road shared-use path along western edge of Brown Street

Segment 8 At Brown Street, the NAAT corridor turns north and runs along the west side of the roadway to River Street. Currently, the 50-foot-wide ROW contains 7-foot sidewalks on each side with an approximately 34-foot roadway that contains two wide travel lanes (see Figure 30). As Brown Street crosses the Hoosic River, the roadway widens slightly to 36 feet, flanked by 7-foot sidewalks to form a 50-foot-wide bridge. Retrofitting the roadway for trail use requires narrowing the curb-to-curb width of the roadway to 30 feet—two 11-foot travel lanes with 4-foot shoulders—and widening the west sidewalk to 12 feet including a crash barrier/guard rail (If adequate 5-foot separation/buffer cannot be provided without significant impacts to widen the roadway or bridge.) adjacent to the curb (10-foot clear). At the intersection with River Street, coordination with the proposed bicycle facilities on River Street is required to ensure an effective transition. At the very least, enhanced pedestrian crossing signs and pavement markings are recommended across Brown Street to better connect pedestrians from the west side path to the south sidewalk on River Street.

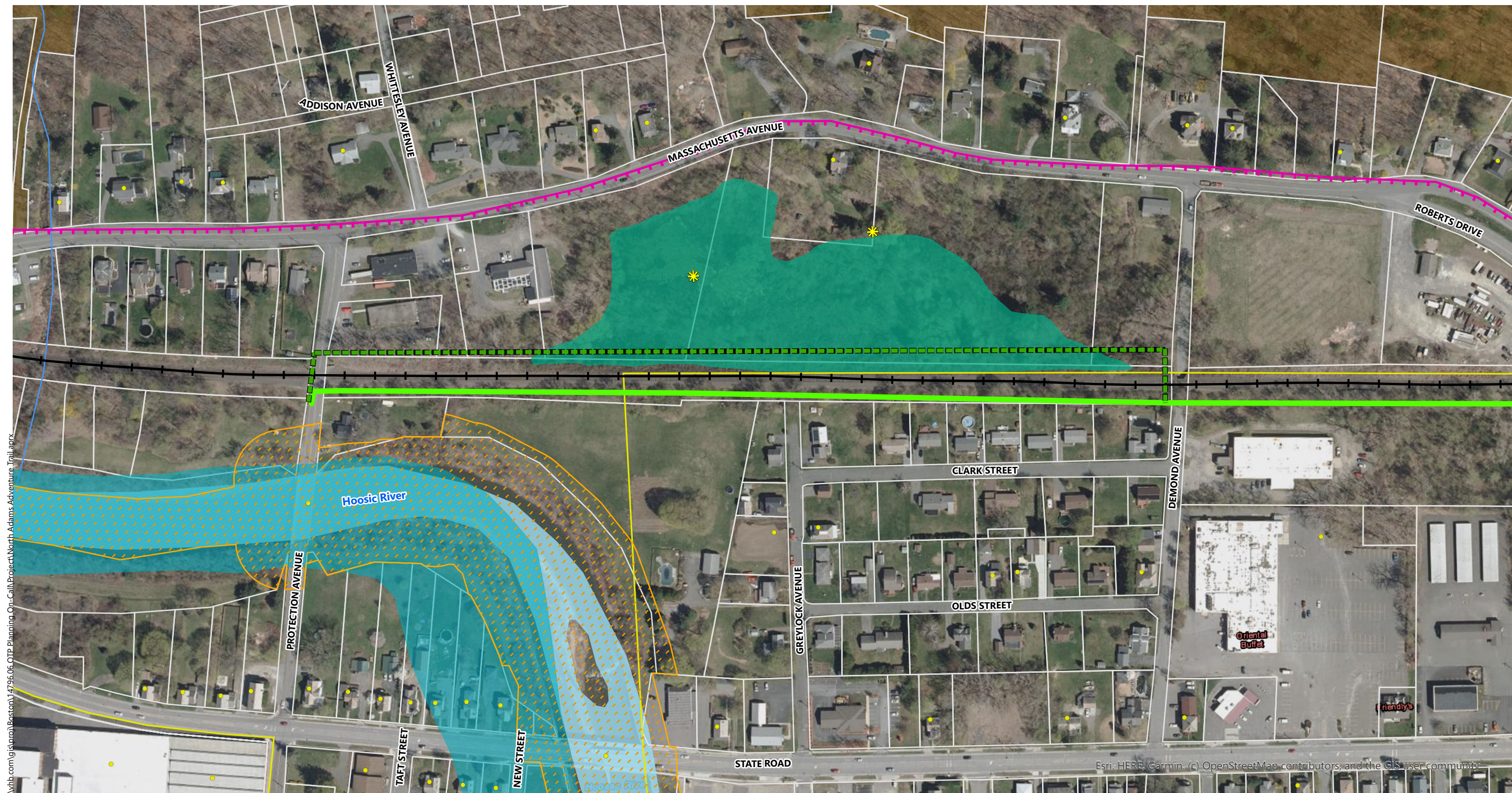
Note The centerline shift of 2 feet to the east may trigger the need for a mill and resurfacing effort to adjust the roadway crown and will need to be further analyzed. Additionally, structural analysis of the Brown Street bridge and modification of the bridge joints will be required to accommodate the wider concrete sidewalk and crash barrier.

Figure 30—Looking north along Brown Street towards River Street



Figure 31—Looking north at west side of Brown Street bridge





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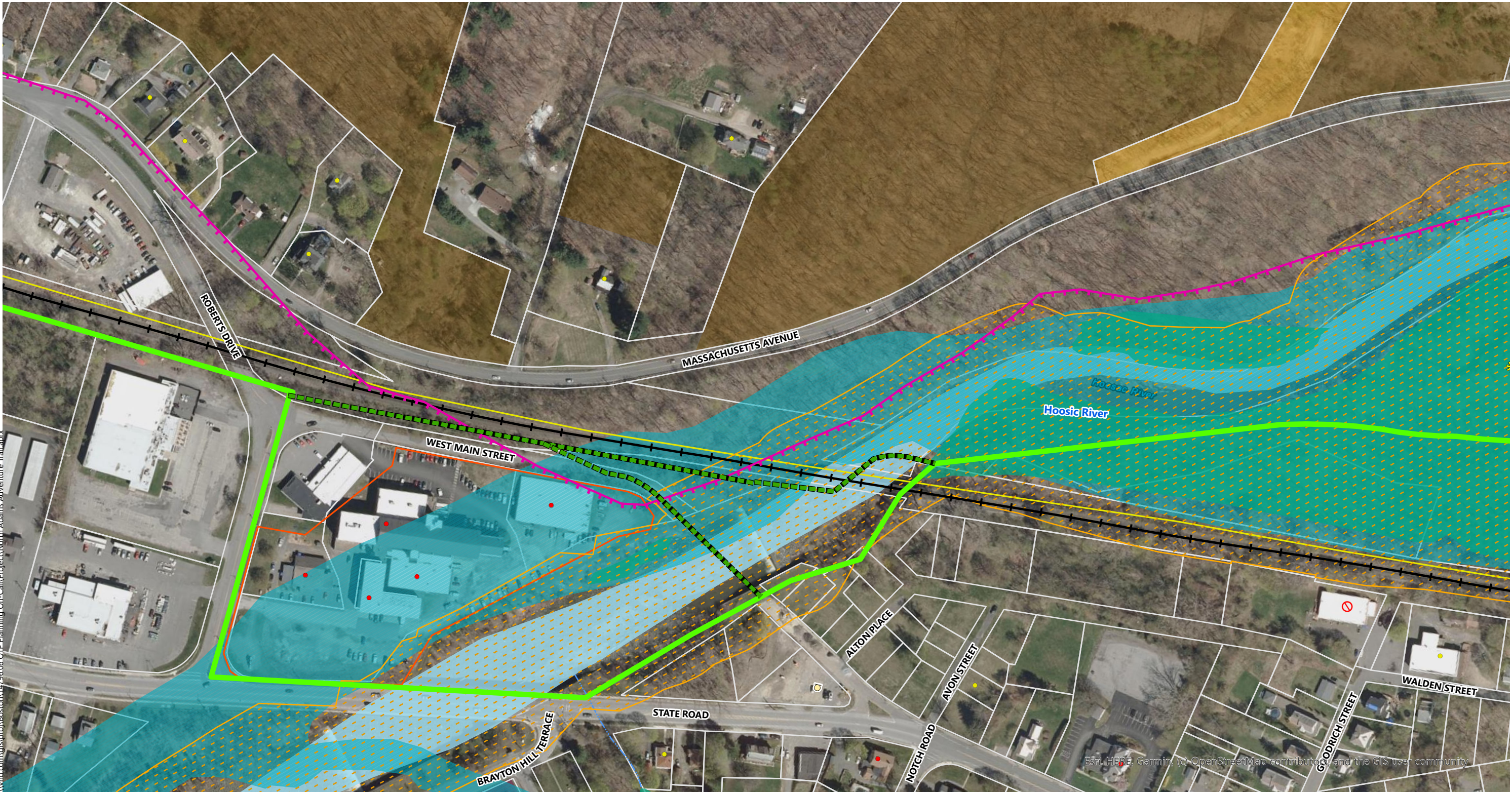
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| — Preferred Adventure Trail Concept 1 | Underground Storage Tanks | MA-Regulated Hazardous Waste | Nat'l Register of Historic Places | NHESP Potential Vernal Pool | FEMA 100 Year Floodplain | OpenSpace
DCR-State Parks & Recreation
Municipal
Private |
| - - - Optional Alignments | Hazardous Materials Site | Nat'l Register of Historic Places | Inventoried Area | NHESP Priority Habitat | Perennial Stream | |
| Railroad | EPA/RCRA-Regulated Hazardous Waste | Inventoried Property | Approved Wellhead Protection Areas (Zone II) | MassDEP Wetlands | Intermittent Stream | |

North Adams Adventure Trail

North Adams, Massachusetts

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Source: MassDOT, MassGIS, VHB



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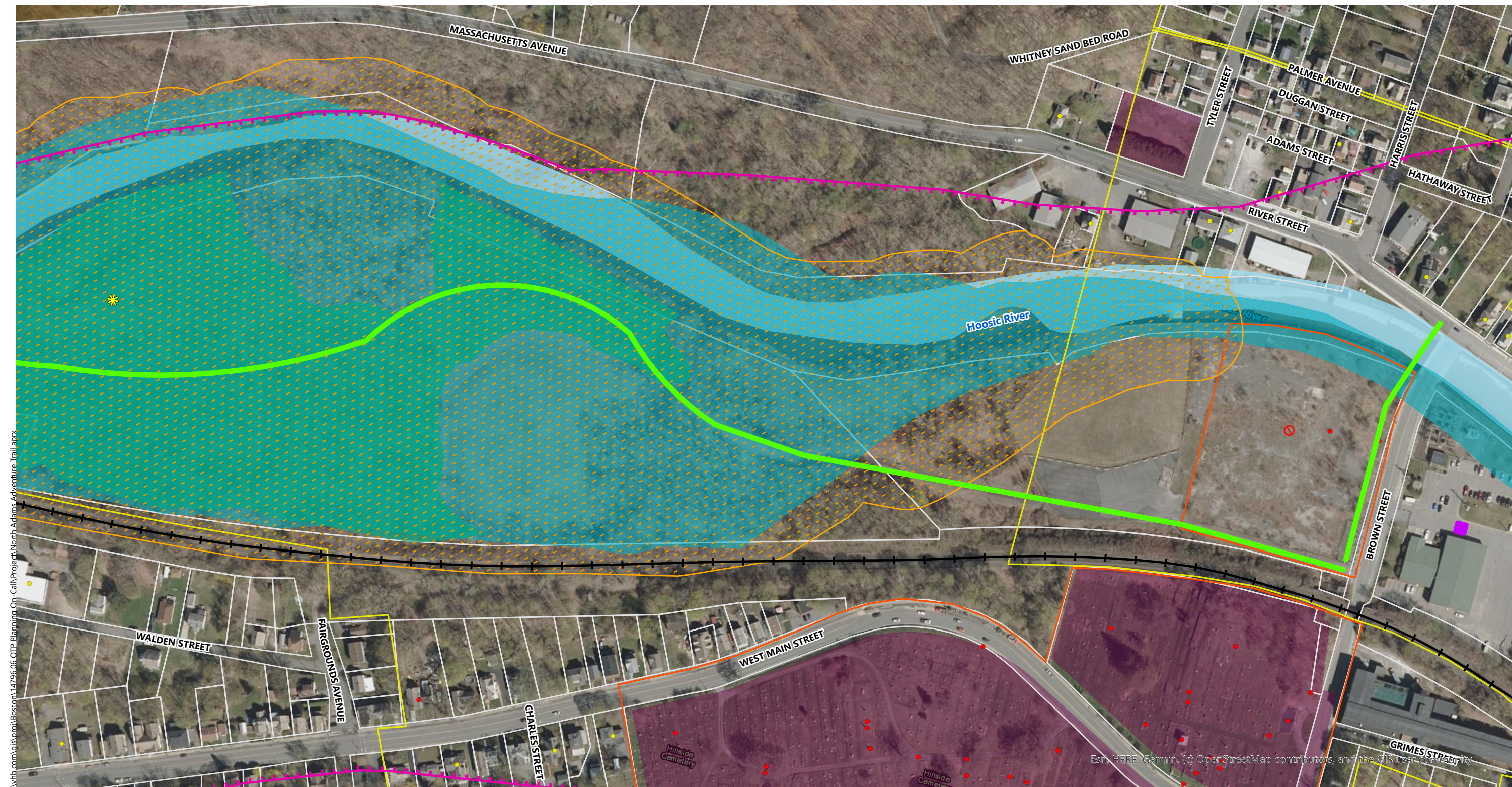
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North Adams Adventure Trail

North Adams, Massachusetts

**Adventure Trail Concept 1
Resource Map
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Source: MassDOT, MassGIS, VHB



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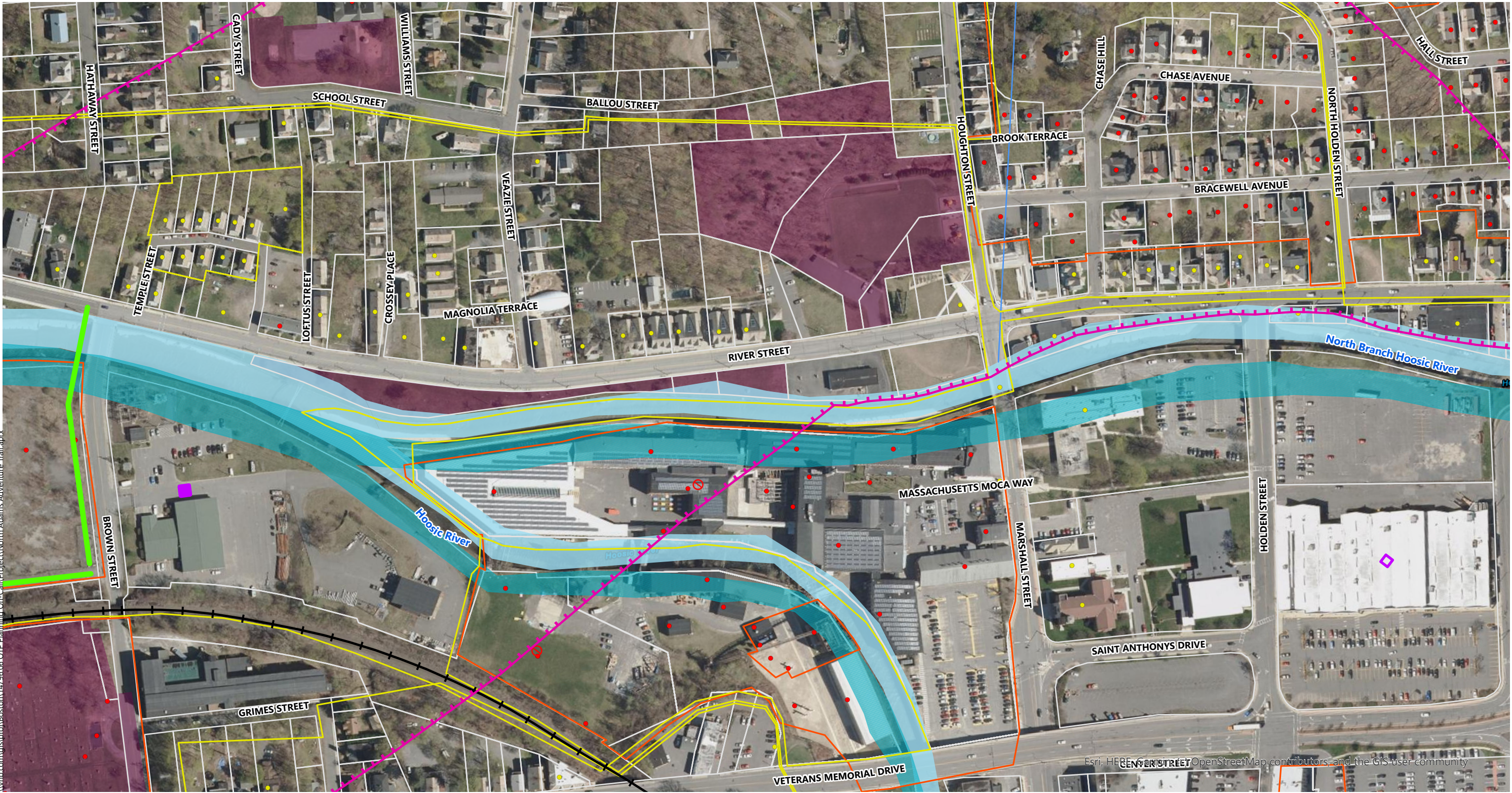


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North Adams Adventure Trail

North Adams, Massachusetts

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North Adams Adventure Trail

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North Adams, Massachusetts

**Adventure Trail Concept 1
Resource Map**
Page 4 of 4

Source: MassDOT, MassGIS, VHB

Concept 1

	Limits	Length	Type	Right-of-Way Actions	Active Railroad Right-of-Way	Roadway Crossings	Railroad Crossings	FEMA Floodplain	Wetlands	Habitat	Comments	Difficulty
1a	NAAT Section 2 Trailhead to Southern Edge of Railroad ROW	25 feet	On-road	Possible strip taken adjacent to road	No	1					Property would be impacted by NAAT Section 2 as well, potentially easing process	Low
1b	NAAT Section 2 Trailhead to Northern Edge of Railroad ROW	125 feet	On-road	Possible strip taken adjacent to road	No	1	1				Property would be impacted by NAAT Section 2 as well; would require at-grade crossing of railroad	Low
2a	Protection Avenue to Demond Avenue	1,750 feet	Off-road	Possible impact to parcels south of path; could be avoided	Yes	1					Would require benchcut in rail berm and provision of trees and shrubs for privacy for residents	Moderate
2b	Protection Avenue to Demond Avenue	1,175 feet	Off-road	Possible impact to parcels north of path; could be avoided	Yes	1			Approximately 1,000 linear feet of potential wetlands impact		Wetlands area adjacent to rail berm would require elevated boardwalk; railroad utility poles would need to be removed; requires on-road shared section along Demond Avenue under bridge (~20 feet roadway)	High
3	Demond Avenue to Roberts Drive	1,135 feet	Off-road	Possible impact to parcels south of path; could be avoided	Yes	1					Would require benchcut in rail berm and crossing Roberts Drive	Moderate
4	West Main Street to Route 2	625 feet	On-road separated path		No			Path located in 100-year floodplain			May have utility impacts (utility poles and/or hydrant); Several historic properties located adjacent to the roadway, but no impact anticipated	Low
5a	Roberts Drive to Brayton Hill Terrace	770 feet	On-road		No			Path located in 100-year floodplain		Path along Route 2 located in GIS-mapped priority habitat associated with the Hoosic River	Bidirectional path along Route 2 will require concrete barrier; structural analysis of bridge necessary; may impact utility pole	Low
5b	Roberts Drive to Hoosic River	975 feet	Off-road		Yes			Path located in 100-year floodplain		Path travels through GIS-mapped priority habitat associated with the Hoosic River	May have utility impacts (utility poles and/or culverts)	Low
6a	Route 2 to Railroad ROW	880 feet	Off-road	Mix of public/private ownership, some private impact likely; crosses under the railroad ROW	Yes		1			Path travels through GIS-mapped priority habitat associated with the Hoosic River	Runs adjacent to headwall for Hoosic River, may require coordination with ACOE; includes crossing under railroad ROW; both public and private property ownership	Low
6b	Hoosic River Crossing	750 feet	Off-road river crossing	Crosses under the railroad ROW	Yes		1	Path located in 100-year floodplain		Path travels through GIS-mapped priority habitat associated with the Hoosic River	Need to verify condition of existing structural elements; will likely require ACOE coordination; includes crossing under railroad ROW; USACE Flood Protection Project Coordination could be required	Moderate
6c	Hoosic River Crossing	500 feet	Off-road river crossing	Crosses under the railroad bridge	Yes		1	Path located in 100-year floodplain	Touchdown point on east bank of river will likely impact wetlands	Path travels through GIS-mapped priority habitat associated with the Hoosic River	Will require significant coordination with USACE and with operating railroad for allowance under the bridge; USACE Flood Protection Project Coordination could be required	High
7	Hoosic River to Brown Street	4,075 feet	Off-road	Entire segment is within private property	No			Path located in 100-year floodplain	Approximately 2,400 linear feet of potential wetlands impact	Path travels through GIS-mapped priority habitat associated with the Hoosic River	Potential hazardous materials concerns throughout this site; wetland locations should be field verified	Moderate
8	Brown Street to River Street	545 feet	Off-road		No	1					Plenty of ROW, but curb and utility adjustments may be necessary; structural analysis of bridge necessary	Low

Concept 1—Potential Construction Cost Estimate

	Description	Length	Type	Approximate Cost/Feet	Potential Construction Cost	Notes
1a	Protection Avenue Crossing	25 feet	Roadway/Shared Use Path	\$900.00	\$22,500.00	Transition from off-road to on-road and provide bicycle accommodations on roadway.
1b	Protection Avenue Crossing*	125 feet	Roadway/Shared Use Path	\$900.00	\$142,500.00	Transition from off-road to on-road and provide bicycle accommodations on roadway. Add warning flashers for trains, ideally solar powered and alternative train detection outside railroad ROW so an annual agreement with railroad company is not needed. Say +\$30,000 for flashers.
2a	Benchcut Path in Rail Berm	1,750 feet	Benchcut Path	\$700.00	\$1,225,000.00	Benchcut path along rail berm gradually sloping down to meet grade at Demond Avenue. Assumes a wall along the entire stretch (\$500/foot for wall, \$200/foot for path).
2b	Elevated Boardwalk (Not Typical)*	1,175 feet	Boardwalk Elevated	\$1,200.00	\$2,130,000.00	Boardwalk that elevates to cross railroad at-grade just before Demon Avenue bridge. Assume boardwalk to gradually elevate to reach railroad elevation. All through wetlands. If new railroad crossing is not allowed, consider signaling narrow roadway under bridge with trail to alternate bike-auto traffic.
3	Demond Avenue to Roberts Drive Benchcut Path	1,135 feet	Benchcut Path	\$700.00	\$794,500.00	Benchcut path between rail berm and industrial property. Assumes a wall along the entire stretch (\$500/foot for wall, \$200/foot for path).
4	Roberts Drive Side Path	625 feet	Path	\$1,200.00	\$750,000.00	Roadway improvement to account for trail. Possibly roadway improvements for converting existing sidewalks to shared use path on Roberts Drive.
5a	On-Road (Route 2) Separated Path	770 feet	Path	\$900.00	\$763,000.00	Bi-directional path along Route 2 will require +/-350-foot length concete barrier along bridge. Assume \$200/foot for concrete barrier = \$70,000
5b	Path to Hoosic River*	975 feet	Path	\$200.00	\$545,000.00	At-grade path adjacent to railroad and West Main Street. Potential utility pole impacts and relocations +\$200,000. Assume 300 feet of retaining wall (\$500/foot for wall = +\$150,000).
6a	Path to Railroad ROW from Route 2, including Tunnel Under	880 feet	Path/Tunnel	\$200.00	\$736,000.00	At-grade path and tunnel under railroad. Assume 40-foot culvert at \$14,000/linear foot = \$560,000
6b	Hoosic River Crossing*	350 feet	Pre-Fab Bridge Truss	\$5,500.00	\$2,125,000.00	Determine if feasible and what is needed to permit and construct, think ice dams, flood elevations, etc. Priced as bridge.
6c	Hoosic River Crossing*	200 feet	Pre-Fab Bridge Truss	\$5,500.00	\$1,660,000.00	Need analysis to determine condition of existing abutments. Determine span length based on and if they are usable, or if they part of the flood barrier and off limits). Alternative includes tunnel under railroad. Assume 40-foot culvert at \$14,000/linear foot = \$560,000
7	Path in Fairgrounds to Brown Street	1,675 feet	Boardwalk/Path	\$200.00	\$3,215,000.00	Segments of boardwalk likely necessary based on GIS wetlands mapping, need field verification. Assuming 2,400 feet of boardwalk and 1,675 feet of path for estimate purposes (boardwalk = \$1,200/foot).
8	Brown Street	545 feet	Roadway/Shared Use Path	\$900.00	\$490,500.00	Roadway improvement to account for trail, no new bridge on Brown Street. Possibly bridge modifications and roadway improvements for converting existing sidewalks to shared use path.

This estimate has been prepared with the following assumptions and is for planning purposes only:

- » Survey, geotechnical evaluations, design, and permitting has not been completed.
- » Concept plans included as part of the North Adams Adventure Trail Feasibility Study (Phase II—MassDOT Planning Phase) dated 10/04/2021 were developed using MassGIS information and simple line work on an aerial to depict existing and proposed conditions.
- » Linear foot construction costs are based on other projects that are in various design stages, including the Ashuwillticook Rail Trail in Adams/North Adams (25%), Williamsburg Greenway/Route 9 Williamsburg (25%), North Adams Adventure Trail (NAAT) Feasibility Study Phase 1 (Concept), and a review of various bid prices from recent MassDOT TIP projects.
- » ROW actions such as acquisitions or temporary/permanent easements have not been conducted.
- » A desktop concept design contingency was added.

Linear Feet—14,135 feet Miles—2.68	\$7,996,500.00	
Desktop Concept Design Contingency For Unknowns—15%	\$1,199,475.00	15%
Landscaping, Hardscaping, Wayfinding, Lookouts, Furnishings, etc	\$200,000.00	Allowance for landscaping items along the path includes: benches, bike racks, repair stations, and trash receptacles.
Traffic Management—1%	\$79,965.00	
Mobilization—3%	\$239,895.00	
Police Details—3%	\$239,895.00	MassDOT Standard Contingencies.
MassDOT Construction Engineering—10%	\$799,650.00	
Construction Contingency—10%	\$799,650.00	
Subtotal	\$11,555,030.00	
Inflation (3% per year over 7 years)	\$2,656,199.41	MassDOT Typical Inflation for TIP Projects to project out to future funding year. 3–4%.
Total Easterly Section	\$14,211,229.41	
SAY	\$14,300,000.00	

- Additional Notes
- » Assume 10-foot path for trail with 2-foot shoulders to minimize wetland impacts and disturbance in riverfront and flood plain areas.
 - » Easements for path with railroad ROW will require approval from railroad ROW and approval from Public Utilities Commission.
 - » ROW acquisitions, easements, etc. must follow the ROW process as per the MassDOT Right of Way Bureau under Massachusetts General Laws Chapter 79.
 - » 5,000 SF of direct wetland impacts will require a Variance through DEP, could be challenging to get approvals.
 - » Other than impacts noted above, utility impacts anticipated to be negligible.
 - » From a ROW, design and permitting perspective, the path through MassMoCA should not be included as part of the MassDOT design process.
 - » No Path/Street Lighting are included.
 - » Bridges and boardwalks have been assumed to be H-20 Loading for emergency vehicles, a typical requirement for MassDOT projects.
 - » Cost for RR flagging not included.

Concept 2

Summary of Proposed NAAT Alignment and Alternate Segments

Concept 2 primarily follows the State Route 2 corridor from Protection Avenue to Brown Street as a separated bike facility sharing the existing roadway ROW. Between Protection Avenue and Roberts Drive, the roadway consists mostly of one travel lane in each direction, a center-turning lane, shoulders, grass strips, and sidewalks on both sides. East of Notch Road, Route 2 is no longer under MassDOT jurisdiction and converts to one travel lane in each direction, wide shoulders that can accommodate parking, and sidewalks on both sides.

Figure 32—Concept 2





Concept 2 Segment 1

On-road shared use path along western edge of Protection Avenue (10 feet wide along roadway; 8 feet on the bridge segment)

Segment 1 As the future NAAT intersects Protection Avenue from the west, the path turns south and runs along the west side of the roadway to Route 2. Currently, the approximately 40-foot-wide ROW contains a 6-foot-wide sidewalk on the west side with a 24–28-foot roadway that includes two wide travel lanes (see Figure 34). Some segments feature a 3–4-foot wide shoulder, primarily on the bridge across the Hoosic River. Retrofitting the roadway for the NAAT requires extending the existing west sidewalk north to reach the future trailhead and narrowing the roadway width to a consistent 24 feet from end to end. This affords the opportunity for a consistent 10-foot-wide sidewalk/path from the trailhead to Route 2, except for the portion along the bridge which will be narrowed to 8 feet. At approximately 125 feet north of Route 2, a tree and a utility pole create a bottleneck (see Figure 35). The tree may need to be removed to ensure a consistent path width of 8 feet minimum. A structural analysis and modification of the bridge joints are required to accommodate the NAAT on the bridge.

Figure 34—Looking south along Protection Avenue towards Route 2



Figure 35—Looking north at Protection Ave intersection with Route 2





Concept 2 Segment 2

On-road shared-use path along the northern edge of Route 2 between Protection Avenue and Roberts Drive (10 feet wide along roadway; 8 feet on the bridge segment)

Segment 2 The north-south-running sidepath turns east at the south end of Protection Avenue and continues as a 10-foot-wide sidepath along the north side of State Route 2 to Roberts Drive. Currently, Route 2's 68-foot–70-foot wide ROW features an approximately 40-foot roadway flanked by 5-foot sidewalks with 7-foot–8-foot wide grass strip that contains signs and, on the north side, utility poles (see Figure 37). The roadway includes 11-foot travel lanes in each direction, a 14-foot two-way left turn median, and approximately 2-foot shoulders on each side. From Greylock Avenue west to the Hoosic River bridge, the cross-section changes to accommodate a retaining wall approaching the bridge and then for the bridge abutments (see Figure 38). This section will need to be analyzed closer in the next phase of design to identify the best way to adjust the cross-section to accommodate the path as well as utility poles and hydrant within and adjacent to the sidewalk.

The preferred design for the NAAT includes the removal of the north side grass strip, widening the existing sidewalk to 10 feet (asphalt or concrete) and adding a 3-foot bricked paver zone adjacent to the roadway to host a crash barrier and for relocated utility poles. At numerous locations along Route 2, wide commercial curb cuts disrupt the continuity of the sidewalks. At these locations, access management strategies are to be used to consolidate and/or narrow the curb cuts. Green pavement markings should be added to highlight the conflict zones.

Due to the metal trusses on a portion of the bridge over the Hoosic River, the NAAT alignment will include a constrained width of 7–8 feet using the existing sidewalk adjacent to the truss (see Figure 39). However, MassDOT has identified this bridge for replacement and the design is underway. If this section of path is determined to be part of the preferred alignment, MassDOT OTP will coordinate with the MassDOT bridge project team to identify opportunities to accommodate the path within the future bridge cross-section.

Figure 37—Looking west along Route 2 between Demond Avenue and Greylock Avenue

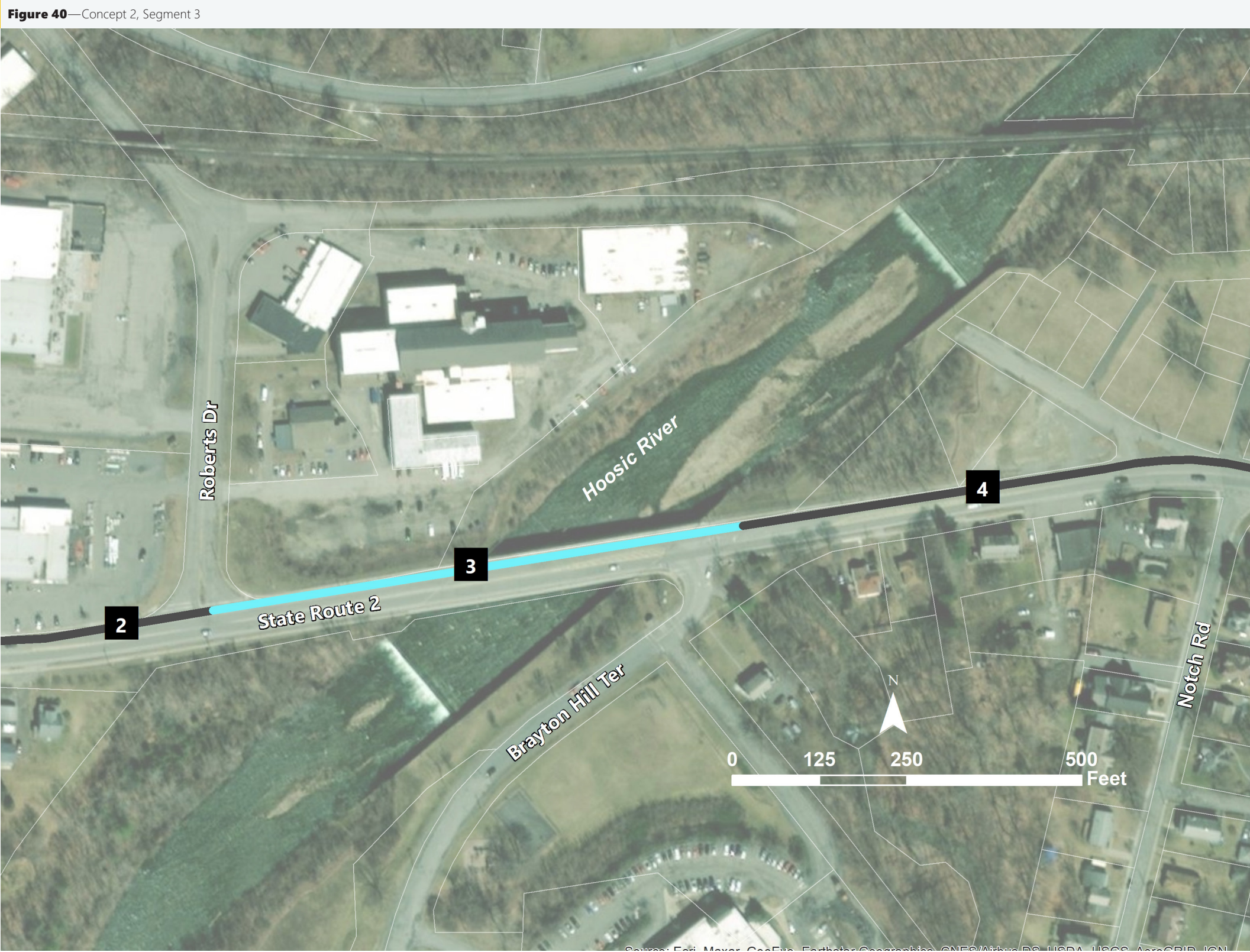


Figure 38—Looking west towards Hoosic River bridge



Figure 39—Existing trusses and sidewalk on Hoosic River bridge





Concept 2 Segment 3

On-road shared-use path along the northern edge of State Route 2 between Roberts Drive and Brayton Hill Terrace (10 feet wide along roadway; 8 feet on the bridge)

Segment 3 After crossing Roberts Drive on an enhanced crosswalk (with wider curb ramps), the NAAT sidepath continues along the north side of Route 2. The 10-foot-wide sidepath tapers to approximately 8 feet in width to meet the existing sidewalk on the north side of the Route 2 bridge over the Hoosic River. One utility pole would need to be relocated to the north side of the existing guard rail to accommodate the 8-foot path between the guardrail and existing granite curb (see Figure 41).

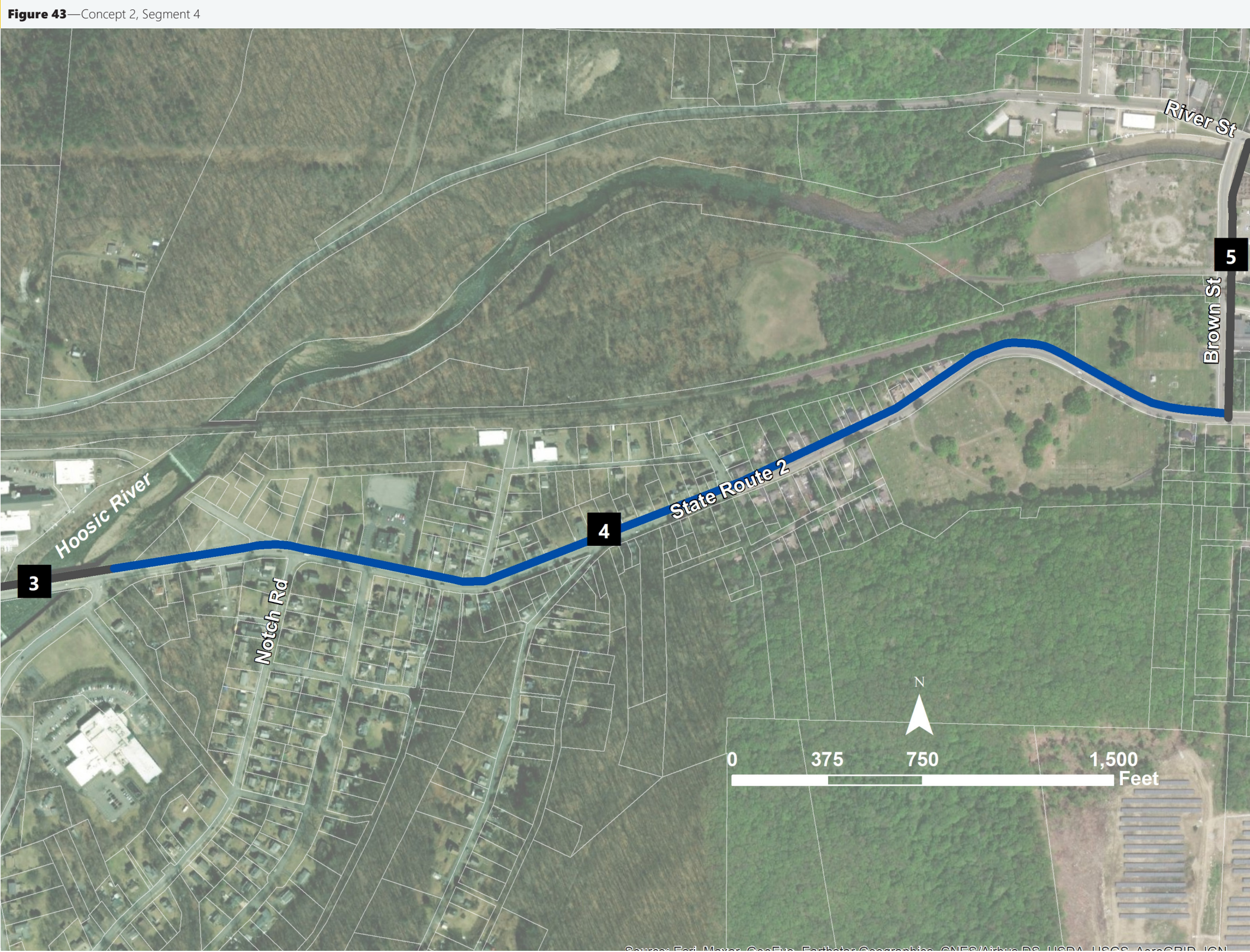
The existing sidewalk on the Hoosic River bridge will serve as the NAAT alignment. Because it does not meet the 10-foot-wide standard for a shared use path, a concrete barrier could be installed in the shoulder area, along the length of the bridge. This will increase the comfort level of path users, especially eastbound bicyclists facing westbound motor vehicle traffic. A structural analysis and modification of the bridge joints are required to accommodate the NAAT on the bridge (see Figure 42). This segment will coordinate with improvements proposed in the Brayton Elementary School Safe Routes to School project.

Figure 41—Looking east along Route 2 at Roberts Drive



Figure 42—Looking east along Route 2 bridge





Concept 2 Segment 4

On-road shared-use path along the northern edge of State Route 2 between Brayton Hill Terrace and Brown Street

Segment 4a East of the Hoosic River bridge at Brayton Hill Terrace, Route 2's ROW narrows to 56 feet and narrows further to 52 feet east of Richview Avenue. From the bridge to Brown Street, the 42-foot roadway includes a pair of 13-foot travel lanes with approximately 8-foot shoulders on each side (see Figure 44). The preferred option for the NAAT, similar to Segments 2 and 3 above, will feature a minimum 8-foot-wide sidepath on the north side. This requires relocating the north curb 4 feet–6 feet closer to the center of the roadway and restriping the road with 11-foot travel lanes and 6-foot–7-foot shoulders. During design narrower shoulders could be explored (4 feet) but functionality of the shoulder would need to be discussed with the City or MassDOT. Relocation of catch basins and utility poles (north side only) along the length of the section will be required.

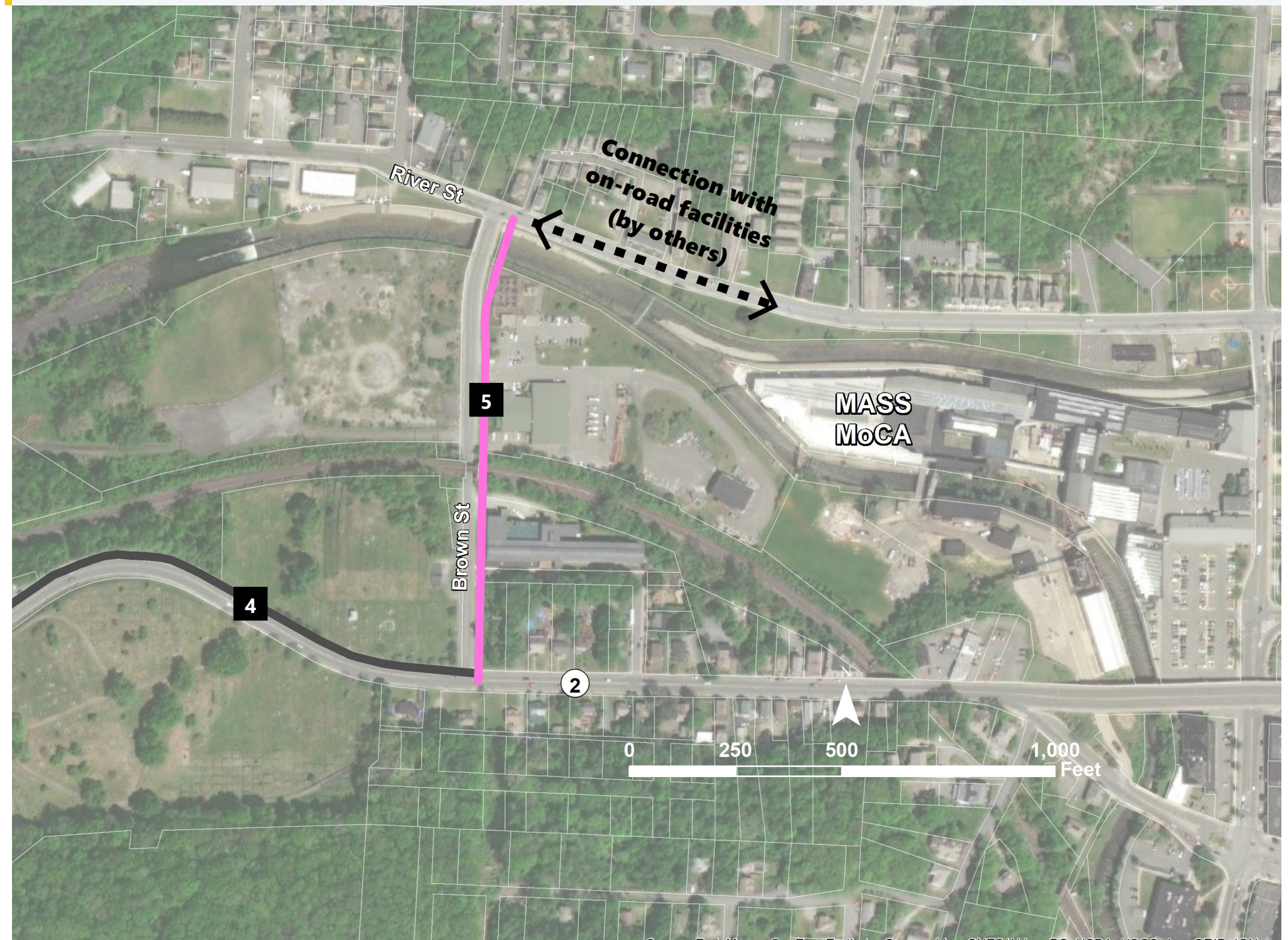
Segment 4b An alternative option would leave the sidewalks untouched from the Hoosic River bridge to Brown Street. Instead, the roadway would be restriped with 8-foot-wide buffered bike lanes in each direction (with white delineator posts set within the 3-foot buffer). Doing this requires the removal of parking on both sides. Transitions for eastbound bicyclists who must depart the sidepath on the north side and use the eastbound bike lane on the south side of Route 2 will need to be carefully considered. The transition for eastbound bicyclists would occur at the Brayton Hill Terrace signalized intersection and at the existing crosswalk at Brown Street to access the sidepath described in Segment 5.

Note Relocating the north curb and shifting the centerline 2 feet–3 feet to the south in the preferred options likely triggers the need for a mill and repaving effort to adjust the roadway crown.

Figure 44—Looking east along Route 2 towards Richview Avenue



Figure 45—Concept 2, Segment 5



Concept 2 Segment 5

On-road shared-use path along eastern edge of Brown Street

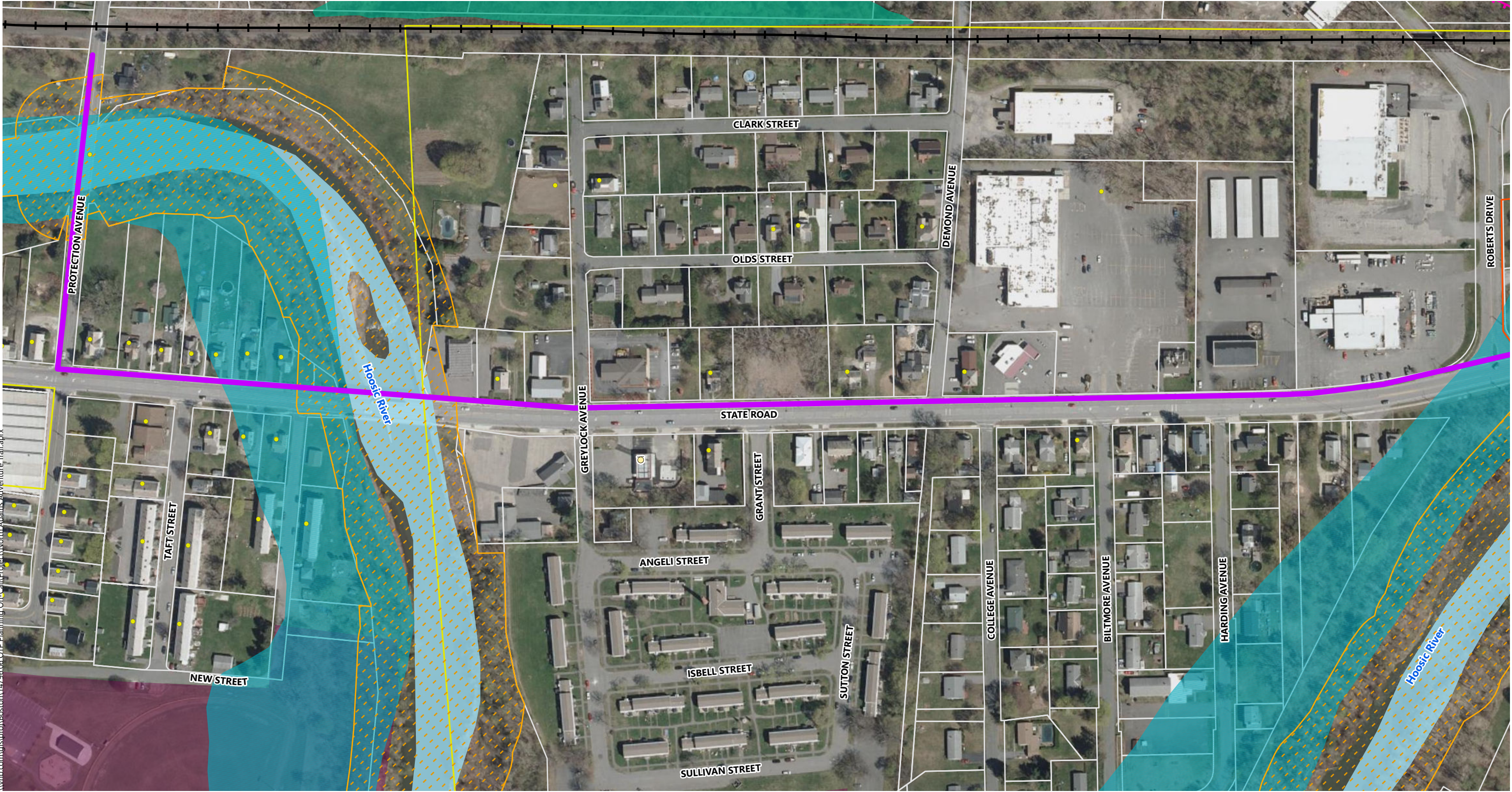
Segment 5 At Brown Street, the NAAT corridor turns north and runs along the east side of the roadway to River Street. South of the rail corridor, the 50-foot-wide ROW includes a 7-foot sidewalk on the east side with an approximately 34-foot roadway that contains two wide travel lanes. At the rail overpass, the roadway narrows to 18 feet with a 3-foot–4-foot wide sidewalk. North of the rail corridor, the 50-foot-wide ROW includes 7-foot sidewalks on each side with an approximately 34-foot roadway with two wide travel lanes. As Brown Street crosses the Hoosic River, the roadway widens slightly to 36 feet, flanked by 7-foot sidewalks to form a 50-foot-wide bridge.

Retrofitting the roadway for trail use requires narrowing the curb-to-curb width of the roadway to 30 feet—two 11-foot travel lanes with 4-foot shoulders—and widening the east sidewalk to 12 feet, which includes a crash barrier/guard rail at the top of the curb (10 feet clear). At the rail overpass, only 21–22 feet total is available (see Figure 46). Here, the east sidewalk narrows to 8 feet (no guardrail) with a 14-foot-wide travel lane requiring motor vehicle queueing, similar to what is proposed in Concept 1, Segment 2B (as a precaution for emergency vehicles, a beveled/rolled curb provides an opportunity for emergency vehicles to use the sidewalk if necessary). At the north termination of the NAAT, coordination with the proposed on-road bicycle facilities on River Street will provide an effective transition.

Note The centerline shift of 2 feet to the west may trigger the need for a mill and resurfacing effort to adjust the roadway crown. Additionally, structural analysis of the Brown Street bridge and modification of the bridge joints will be required to accommodate the wider concrete sidewalk and crash barrier.

Figure 46—Looking north along Brown Street at the rail crossing





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|------------------------------|--|-----------------------------------|-----------------------------|------------------------------|
| Adventure Trail Concept 2 | Railroad | Nat'l Register of Historic Places | NHESP Potential Vernal Pool | OpenSpace |
| Underground Storage Tanks | Inventoried Property | Nat'l Register of Historic Places | NHESP Priority Habitat | DCR-State Parks & Recreation |
| Hazardous Materials Site | Inventoried Area | MassDEP Wetlands | FEMA 100 Year Floodplain | Municipal |
| MA-Regulated Hazardous Waste | Approved Wellhead Protection Areas (Zone II) | Perennial Stream | Intermittent Stream | River/Open Water |

North Adams Adventure Trail

North Adams, Massachusetts

Adventure Trail Concept 2
Resource Map
Page 1 of 3

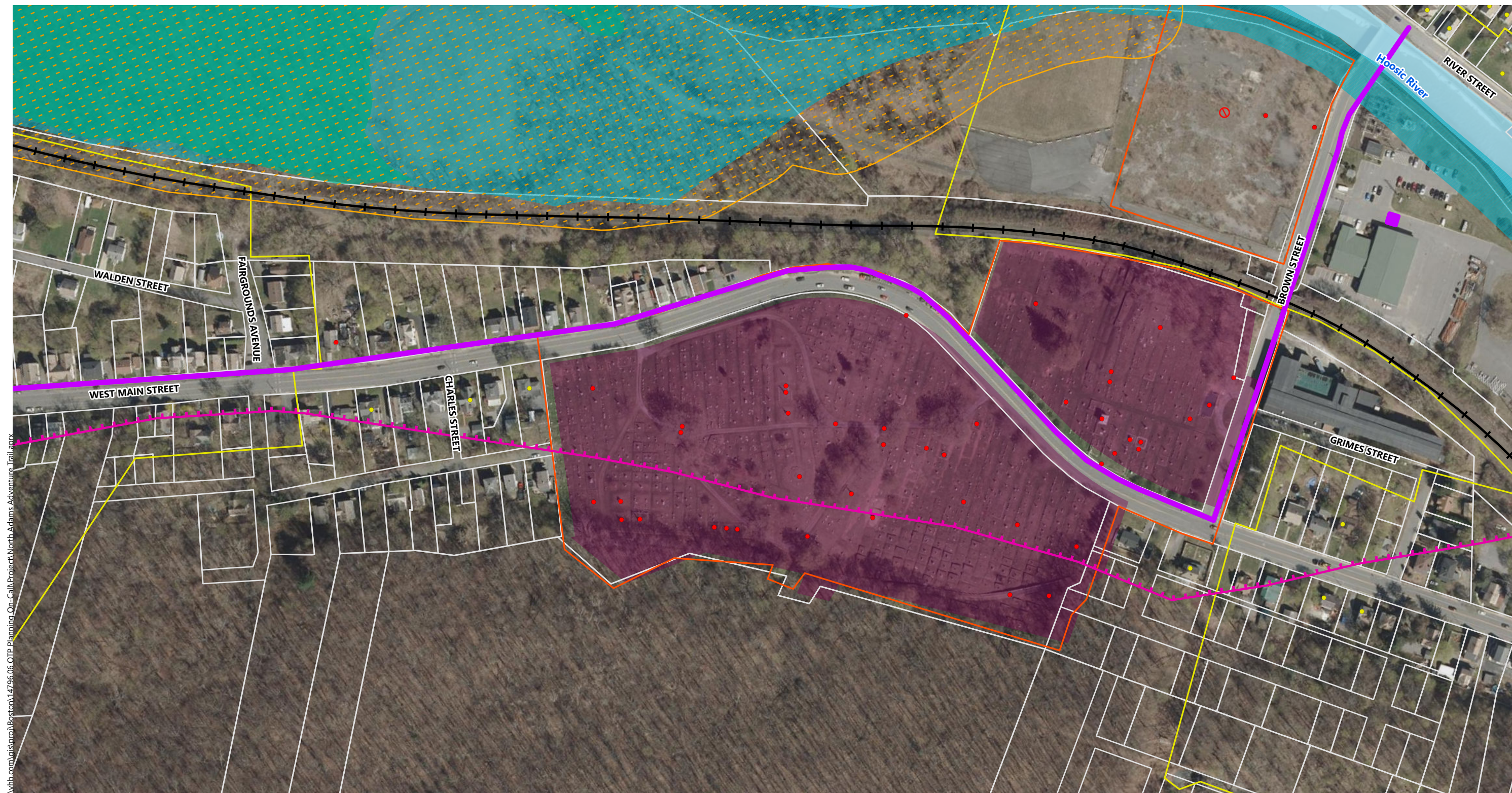
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| <p>— Adventure Trail Concept 2</p> <p> Railroad</p> <p> Underground Storage Tanks</p> <p> Hazardous Materials Site</p> <p> MA-Regulated Hazardous Waste</p> | <p>• Nat'l Register of Historic Places</p> <p>• Inventoried Property</p> <p> Nat'l Register of Historic Places</p> <p> Inventoried Area</p> <p> Approved Wellhead Protection Areas (Zone II)</p> | <p> NHESP Potential Vernal Pool</p> <p> NHESP Priority Habitat</p> <p> MassDEP Wetlands</p> <p> FEMA 100 Year Floodplain</p> <p> Perennial Stream</p> <p> Intermittent Stream</p> | <p>OpenSpace</p> <p> DCR-State Parks & Recreation</p> <p> Municipal</p> | <p> River/Open Water</p> |
|---|---|---|---|--------------------------|



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|------------------------------|--|-----------------------------------|-----------------------------|------------------------------|------------------|
| Adventure Trail Concept 2 | Railroad | Nat'l Register of Historic Places | NHESP Potential Vernal Pool | OpenSpace | River/Open Water |
| Underground Storage Tanks | Inventoried Property | Nat'l Register of Historic Places | NHESP Priority Habitat | DCR-State Parks & Recreation | |
| Hazardous Materials Site | Inventoried Area | Perennial Stream | MassDEP Wetlands | Municipal | |
| MA-Regulated Hazardous Waste | Approved Wellhead Protection Areas (Zone II) | Intermittent Stream | FEMA 100 Year Floodplain | | |



Concept 2

	Limits	Length	Type	Right-of-Way Actions	Active Railroad Right-of-Way	Roadway Crossings	Railroad Crossings	FEMA Floodplain	Wetlands	Habitat	Comments	Difficulty
1	NAAT Section 2 Trailhead to Route 2	665 feet	On-road		No						Curb adjustments, utility relocations and tree removal will be necessary; structural analysis of bridge necessary	Low
2	Protection Avenue to Roberts Drive	2,980 feet	On-road	Possible impact on east side of bridge	No	3		Path located in 100-year floodplain		Path along Route 2 located in GIS-mapped priority habitat associated with the Hoosic River	Approaches to bridge taper and will need more detailed alignment location, may impact utility poles/hydrants; existing trusses on bridge create pinchpoint, bridge replacement project may accommodate wider path; structural analysis of bridge necessary	Moderate
3	Roberts Drive to Brayton Hill Terrace	770 feet	On-road		No			Path located in 100-year floodplain		Path along Route 2 located in GIS-mapped priority habitat associated with the Hoosic River	Portion along the bridge will require concrete barrier; structural analysis of bridge necessary; may have utility impact (pole)	Moderate
4a	Brayton Hill Terrace to Brown Street	5,183 feet	On-road bidirectional shared use path		No	4					Will require curb modifications and utility relocations (catch basins, utility poles); will require removal of on-street parking on one side	Low
4b	Brayton Hill Terrace to Brown Street	5,183 feet	On-road bike lanes in both directions		No	10 (total for both sides)					Will require removal of on-street parking on both sides; complicated transition from bidirectional shared use path to bike lanes on each side	Low
5	Route 2 to River Street	1,110 feet	On-road		No		1	Path located in 100-year floodplain			Requires curb modification; will require narrowing to one travel lane and the path under the rail bridge requiring vehicle queuing	Low

Concept 2—Potential Construction Cost Estimate

	Description	Length	Type	Approximate Cost/Feet	Potential Construction Cost	Notes
1	Protection Avenue to Route 2	665 feet	Roadway/Sidepath SUP	\$900.00	\$598,500.00	Sidepath shared use path.
2	Route 2 from Protection Avenue to Roberts Drive	2,980 feet	Roadway/Sidepath SUP	\$900.00	\$2,982,000.00	Separated shared use path with buffer. Will require concrete barrier for +/-500 feet due to narrower ROW From the western edge of the Hoosic River bridge to Greylock Drive. Assume \$200/foot for concrete barrier = \$100,000. Potential utility pole impacts and relocations +\$200,000.
3	Route 2 from Roberts Drive to Brayton Hill Terrace	770 feet	Roadway/Sidepath SUP	\$900.00	\$963,000.00	Separated shared use path with buffer. Will require +/-350-foot length concete barrier along bridge. Assume \$200/foot for concrete barrier = \$70,000. Potential utility pole impacts and relocations +\$200,000.
4	Route 2 from Brayton Hill Terrace to Brown Road	5,183 feet	Roadway/Sidepath SUP	\$900.00	\$5,064,700.00	Separated shared use path with buffer. Potential utility pole impacts and relocations +\$200,000.
5	Brown Street from Route 2 to River Street	1,110 feet	Roadway/Sidepath SUP	\$1,100.00	\$1,221,000.00	Separated shared use path with buffer. Will likely require concrete barrier the entire stretch.

This estimate has been prepared with the following assumptions and is for planning purposes only:

- » Survey, geotechnical evaluations, design, and permitting has not been completed.
- » Concept plans included as part of the North Adams Adventure Trail Feasibility Study (Phase II—MassDOT Planning Phase) dated 10/04/2021 were developed using MassGIS information and simple line work on an aerial to depict existing and proposed conditions.
- » Linear foot construction costs are based on other projects that are in various design stages, including the Ashuwillticook Rail Trail in Adams/North Adams (25%), Williamsburg Greenway/Route 9 Williamsburg (25%), North Adams Adventure Trail (NAAT) Feasibility Study Phase 1 (Concept), and a review of various bid prices from recent MassDOT TIP projects.
- » ROW actions such as acquisitions or temporary/permanent easements have not been conducted.
- » A desktop concept design contingency was added.

Linear Feet—14,135 feet Miles—2.68	\$10,829,200.00	
Desktop Concept Design Contingency For Unknowns—15%	\$1,624,380.00	15%
Landscaping, Hardscaping, Wayfinding, Lookouts, Furnishings, etc	\$200,000.00	Allowance for landscaping items along the path includes: benches, bike racks, repair stations, and trash receptacles.
Traffic Management—1%	\$108,292.00	
Mobilization—3%	\$324,876.00	
Police Details—3%	\$433,168.00	MassDOT Standard Contingencies.
MassDOT Construction Engineering—10%	\$1,082,920.00	
Construction Contingency—10%	\$1,082,920.00	
Subtotal	\$15,685,756.00	
Inflation (3% per year over 7 years)	\$3,605,745.36	MassDOT Typical Inflation for TIP Projects to project out to future funding year. 3–4%.
Total Easterly Section	\$19,291,501.36	
SAY	\$19,300,000.00	

Additional Notes

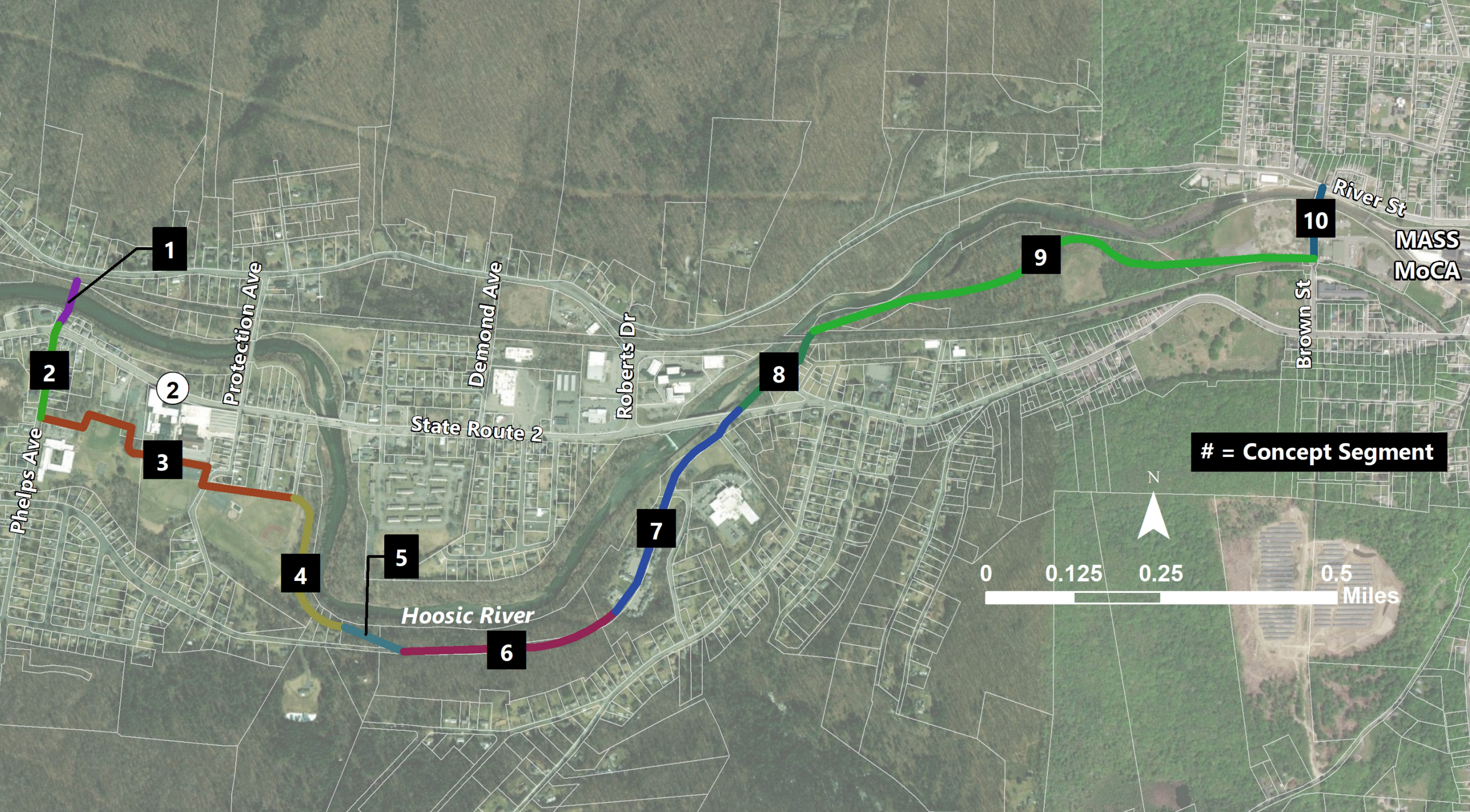
- » ROW acquisitions, easements, etc. must follow the ROW process as per the MassDOT Right of Way Bureau under Massachusetts General Laws Chapter 79.
- » No additional street lighting.

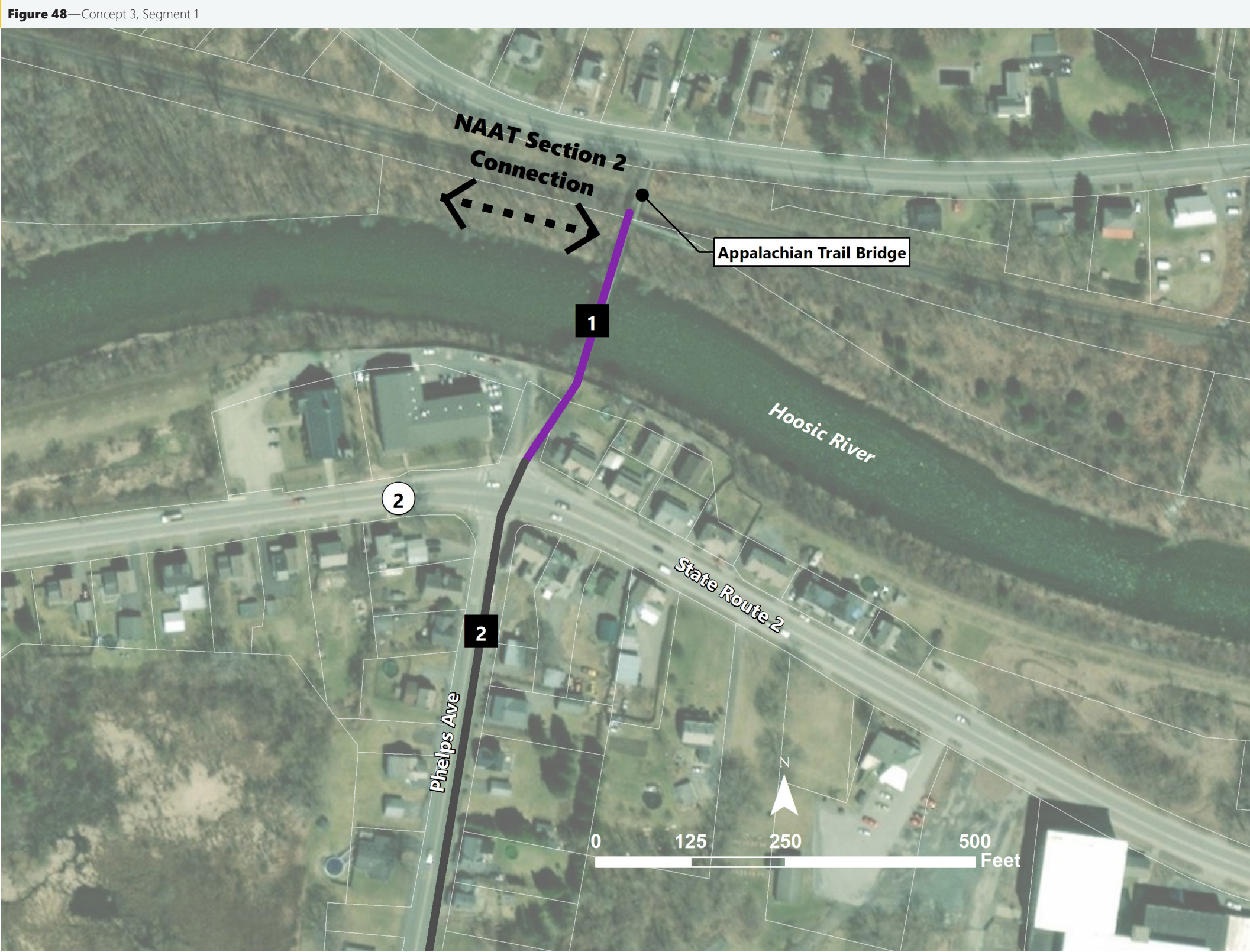
Concept 3

Summary of Proposed NAAT Alignment and Alternate Segments

Concept 3 provides an alignment that connects numerous community facilities and links them to the overall NAAT network. The alignment meanders away from the Route 2 corridor, but creates an improved access for the affordable housing neighborhood along Brayton Hill Terrace to various community resources and the Greylock WORKS commercial property. This alignment also introduces a new active transportation connection to the Berkshire Family YMCA, connects two elementary schools, and intersects with the Cascade Trail. This concept intersects with the central section of the North Adams Adventure Trail further west than Concepts 1 and 2, at the Appalachian Trail Bridge over the railroad tracks and the Hoosic River. This is part of the NAAT Phase I Section that the City is actively pursuing. The trail then travels down Phelps Avenue towards the Greylock Elementary School where it turns eastward and continues off-road for approximately a half mile across a mix of public and private property, Greylock WORKS and the Alcombright Athletic Complex, to an existing foot path along the river. The alignment then connects with the Barbour Street extension, an existing dirt road along the never-completed roadway that connects Barbour Street with Brayton Hill Terrace. The path is currently used for municipal vehicles to access utility infrastructure that runs in the area. Concept 3 then continues along Brayton Hill Terrace, crosses State Route 2, runs off-road adjacent to the river, crosses under the rail corridor, and continues along a path through the fairgrounds parcel to Brown Street. From there it travels along Brown Street and connects with the on-road bicycle facilities proposed by others on River Street.

Figure 47—Concept 3





Concept 3 Segment 1

Appalachian Trail bridge and ramp, path to Route 2

Segment 1 As the future NAAT approaches from the west, a switchback ramp from either the rail corridor or the riverbank provides a connection to the existing Appalachian Trail bridge. The footbridge over the Hoosic River and the recently installed ADA ramp and path link to the intersection of Phelps Avenue and State Route 2 (see Figure 49). The existing Appalachian Trail Bridge could require modifications to support this segment. Additional analysis will be necessary to determine the best approach.

Figure 49—Ramp and access to Appalachian Trail Bridge





Concept 3 Segment 2

State Route 2 crossing and shared street with sidewalk along Phelps Avenue to Greylock Elementary School

Segment 2 Using the existing crosswalks at the Phelps Avenue/Route 2 signalized intersection, the NAAT continues south until turning to the east at the edge of the Greylock School's north parking lot. Traffic volumes and speeds on Phelps Avenue are moderate enough that many bicyclists are likely to ride on the roadway. To facilitate pedestrians and traffic-hesitant bicyclists, the east sidewalk is to be widened to 8 feet minimum by incorporating the existing 6-foot sidewalk and adjacent 3-foot-wide grass strip. New granite curbs will be needed for a smooth edge, but no encroachments on the clear width are expected since utility poles lie on the west side of the street.

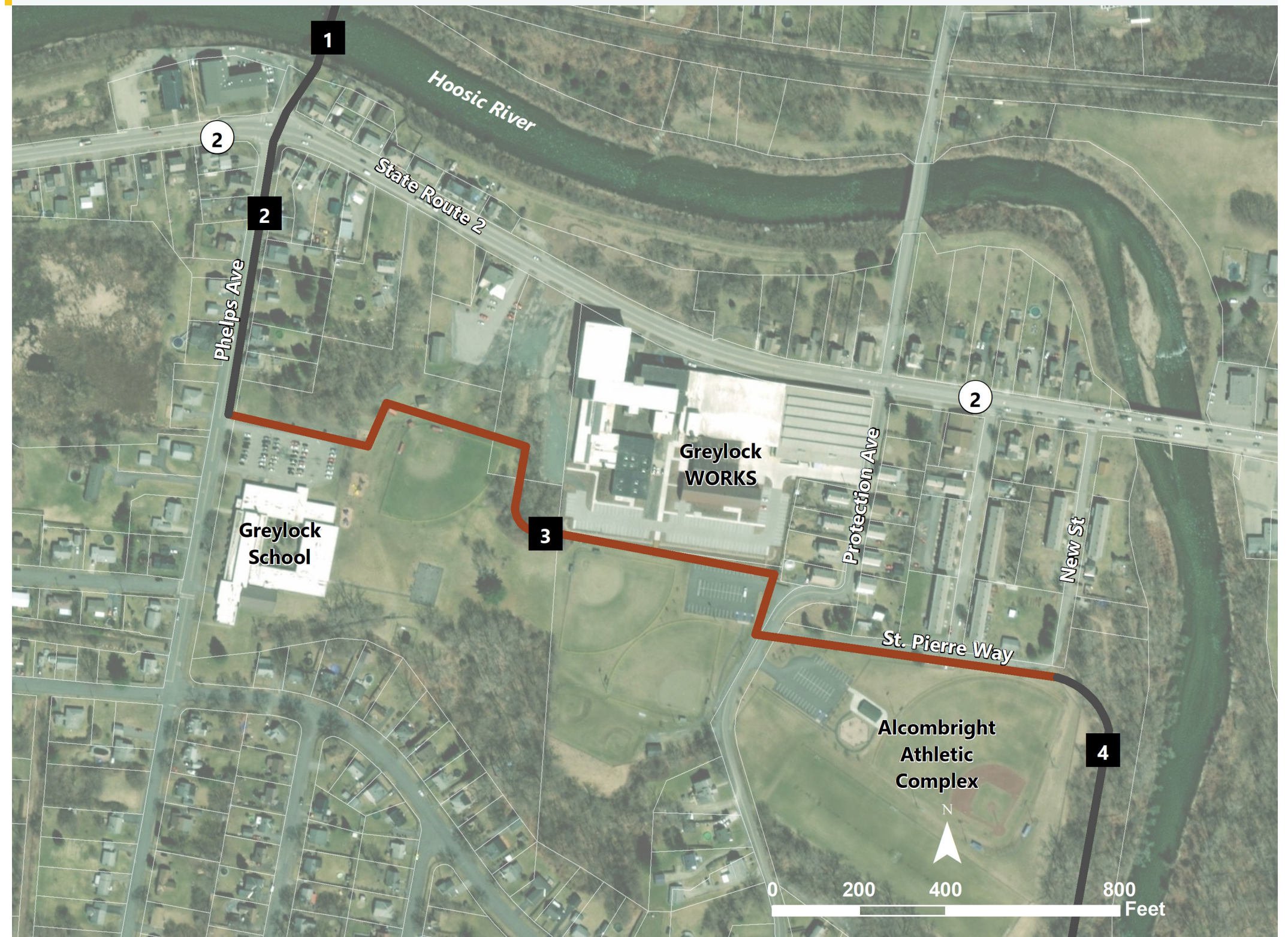
Figure 51—Looking south along Phelps Avenue



Figure 52—Looking east from Phelps Avenue at ballfields adjacent to Greylock Elementary School



Figure 53—Concept 3, Segment 3



Concept 3 Segment 3

Off-road path through Greylock Park and Alcombright Athletic Complex

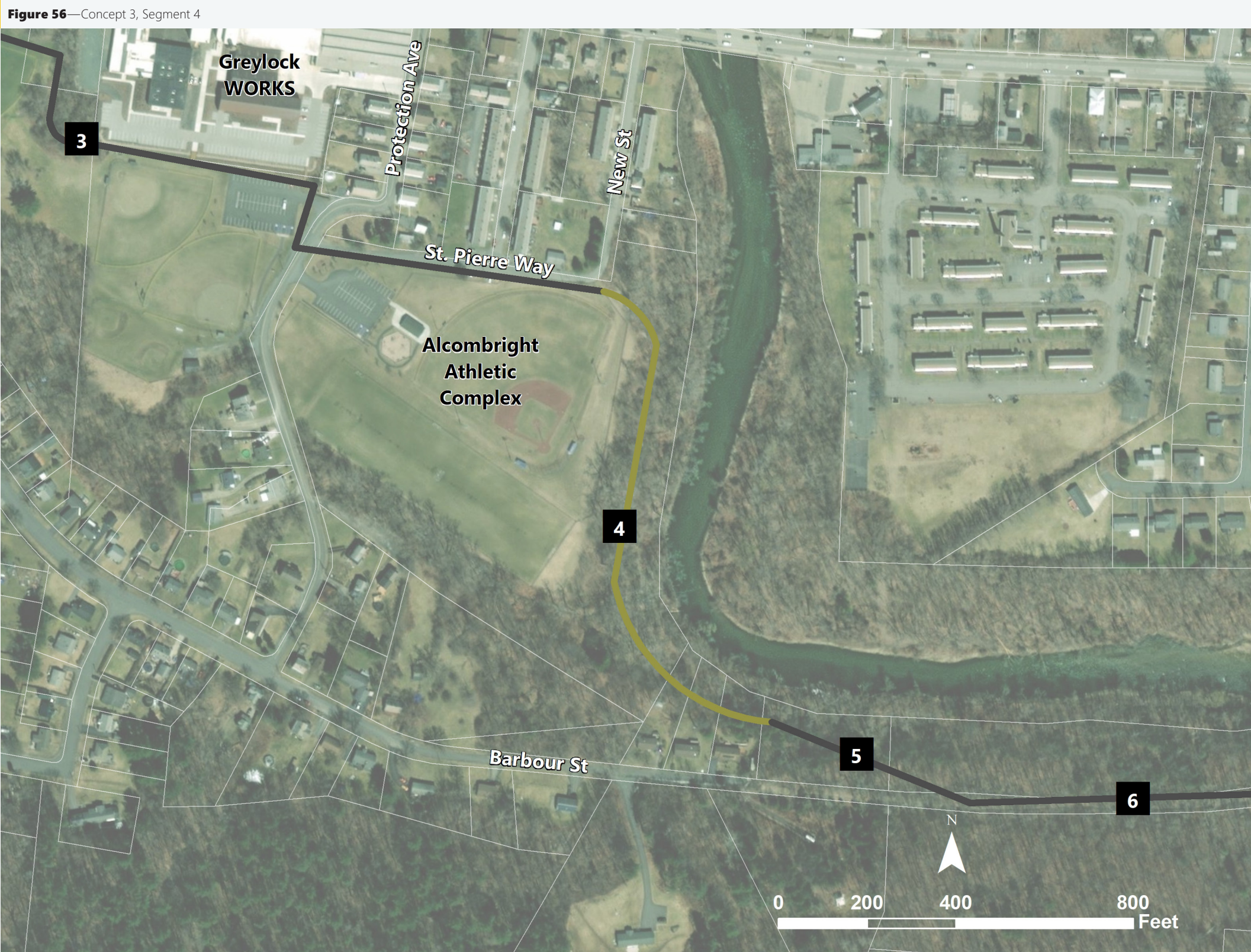
Segment 3 As it continues east from Phelps Avenue, the NAAT will be a 10-foot-wide paved path along the north perimeter of the City-owned land between Phelps Avenue and the Hoosic River. From west to east, the path alignment runs along the north side of the Greylock School parking lot, around the Greylock Park ballfields and between the parking lot adjacent to Protection Avenue and the Greylock WORKS property. It then turns south for a short stretch, parallel to Protection Avenue to a road crossing at the St. Pierre Way intersection. The NAAT continues east between the Alcombright Athletic Complex parking area and ballfield to an existing footpath in the wooded area adjacent to the river.

Figure 54—Looking east towards Saint Pierre Way between ballfield and Greylock WORKS



Figure 55—Alcombright parking lot and ball field





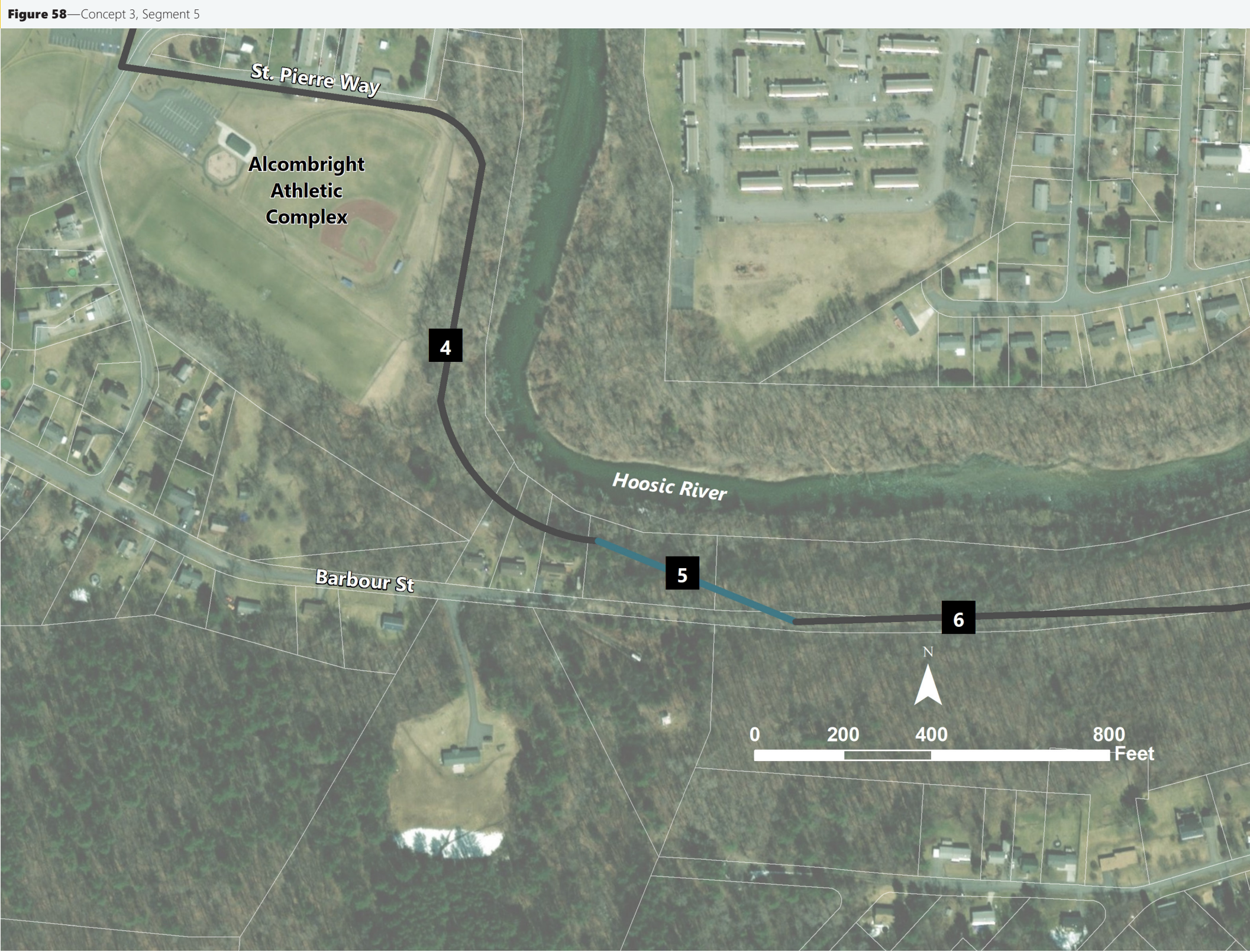
Concept 3 Segment 4

Off-road path along the Hoosic River

Segment 4 The path leaves the athletic complex and enters the wooded area adjacent to the river near the corner of New Street and St. Pierre Way. The path alignment follows an existing footpath and hugs the top of the embankment for roughly 1,000 feet. Because it is a wooded area, the path will require felling a number of trees to provide space for the 10-foot paved path and required offsets. As the path approaches the end of Barbour Street, easements will be required as it passes through residential properties adjacent to the river.

Figure 57—Existing footpath between river and athletic complex





Concept 3 Segment 5

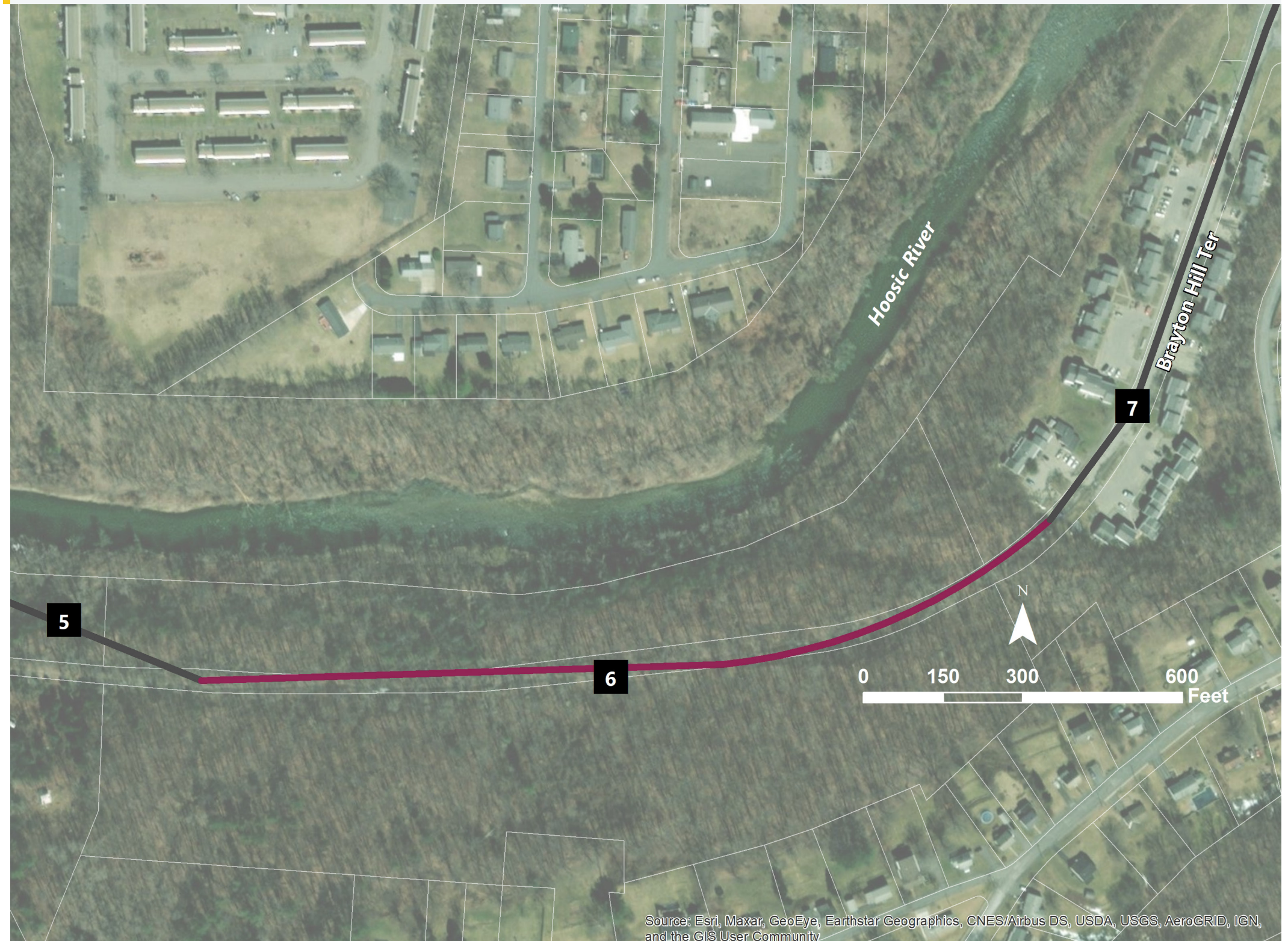
Grade change from lower path to upper path

Segment 5 Beyond the residential properties, the NAAT will ascend the steep incline to meet the paper street portion of Barbour Street (Barbour Street Extension). There is currently a gate at the western end of the paved portion of Barbour Street restricting access. The eastern end of the approximately half mile dirt road is open and is signed for public use (dog walking). Some impact to the adjacent private property is expected, but the need for a switchback to accommodate the roughly 20-foot vertical grade change is unlikely as there appears to be sufficient area to accommodate the gradual incline while considering the grade limitations for a shared use path. Exact alignment of the path traversing the grade change is to be identified as part of a future phase with field survey to finalize grading accommodations and location of an intermittent stream in the area.

Figure 59—Barbour Street Extension



Figure 60—Concept 3, Segment 6



Concept 3 Segment 6

Off-road upper path

Segment 6 The path continues east by taking advantage of the dirt/gravel road bed between the gated dead end at Barbour Street and the access at Brayton Hill Terrace (see Figure 62). Although used by municipal vehicles to access utility infrastructure, some modest regrading and other minimal improvements are expected within the public ROW. There is an existing culvert carrying an intermittent stream under the dirt road that will need to be field checked. In addition to the municipal vehicles, the approximately 20-foot-wide dirt road is used as a recreational path through the access at Brayton Hill Terrace.

Figure 61—Looking west toward Barbour Street along the dirt road



Figure 62—Upper path access at Brayton Hill Terrace





Concept 3 Segment 7

On-road along Brayton Hill Terrace and through the intersection with State Route 2

Segment 7 From the end of the dirt/gravel road to State Route 2, the NAAT uses Brayton Hill Terrace, a low-volume street with modest traffic speeds. The speed limit is not posted, but it is assumed to be 25 mph. If the speed limit is higher than that, a shared use path may be more appropriate. The route provides a sidewalk on the west side for pedestrians with bicyclists using the roadway. Because of the topography, a climbing bike lane along the west curb provides more space for bicyclists to generate the momentum needed to ascend the hill. People riding downhill are generally able to maintain a similar speed as the local traffic and are expected to ride in the travel lane. Shared lane markings and signs are provided in the downhill direction to encourage safer positioning in the center of the northbound lane. Because the curb-to-curb width is 30 feet, parking will be restricted to the east side only and no center line will be striped within the 18-foot-wide two-way travel lane. This segment of the trail provides a direction connection to the Brayton Hill Park, the Berkshire Family YMCA, the Brayton Elementary School, and the Cascade Trail.

At the north end of Brayton Hill Terrace, path users cross Route 2 at the existing crosswalk. Because of the variable pedestrian and bicycle movements in both directions, an exclusive pedestrian crossing phase is recommended at the signalized intersection (if not incorporated already). This segment will coordinate with improvements proposed in the Brayton Elementary School Safe Routes to School project.

Figure 64—Looking north along Brayton Hill Terrace

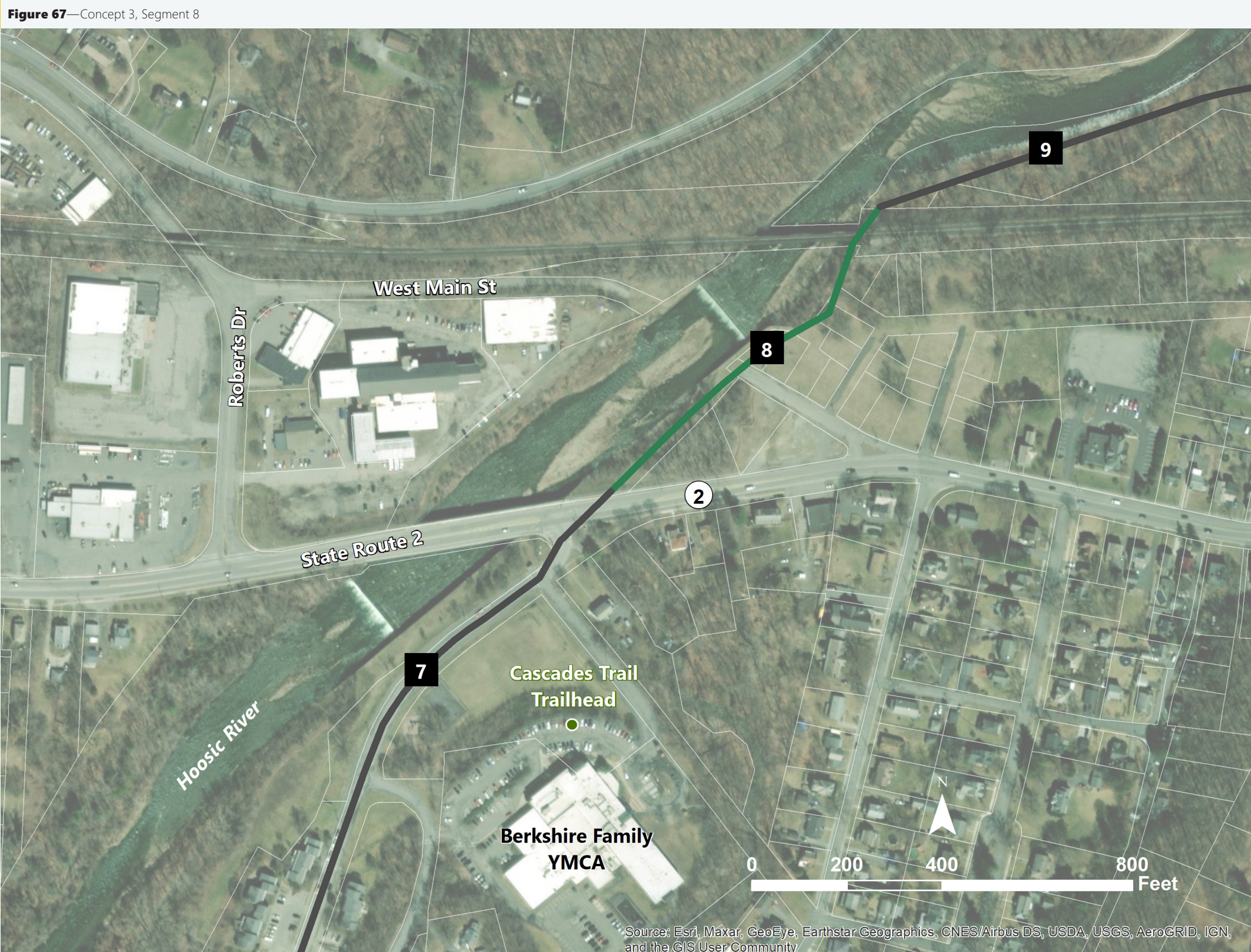


Figure 65—Looking east at Brayton Hill Terrace/Route 2 intersection



Figure 66—Brayton Hill Park on the east side of Brayton Hill Terrace





Concept 3 Segment 8

Off-road path and underpass below railroad tracks

Segment 8 East of the existing Brayton Hill Terrace crosswalk, the Route 2 sidewalk will be widened to 8 feet to accommodate the NAAT alignment for approximately 100 feet. A break in the guardrail is necessary to provide space for the path to veer to the north and run along the east bank of the Hoosic River up to the railroad corridor (see Figure 68). Property ownership varies between public and private adjacent to the river and will need to be confirmed in next stages of planning and design. It is likely an easement for the path will be required along some portions of this section, especially north of the old West Main Street dead-end stub.

The approach to the rail corridor requires felling a number of trees to provide space for the 10-foot path and required offsets. Because of the embankment, crossing the elevated railroad line requires a tunnel or culvert. The hope is that the NAAT can stay on a consistent level and not dip below grade when passing under the tracks. Similar to the new Norwottuck Rail Trail underpass in Northampton, or the Blackstone River Greenway in Blackstone, the intent is for a pre-cast concrete or metal tunnel/culvert to be installed below the tracks with minimal disruption to rail service above.

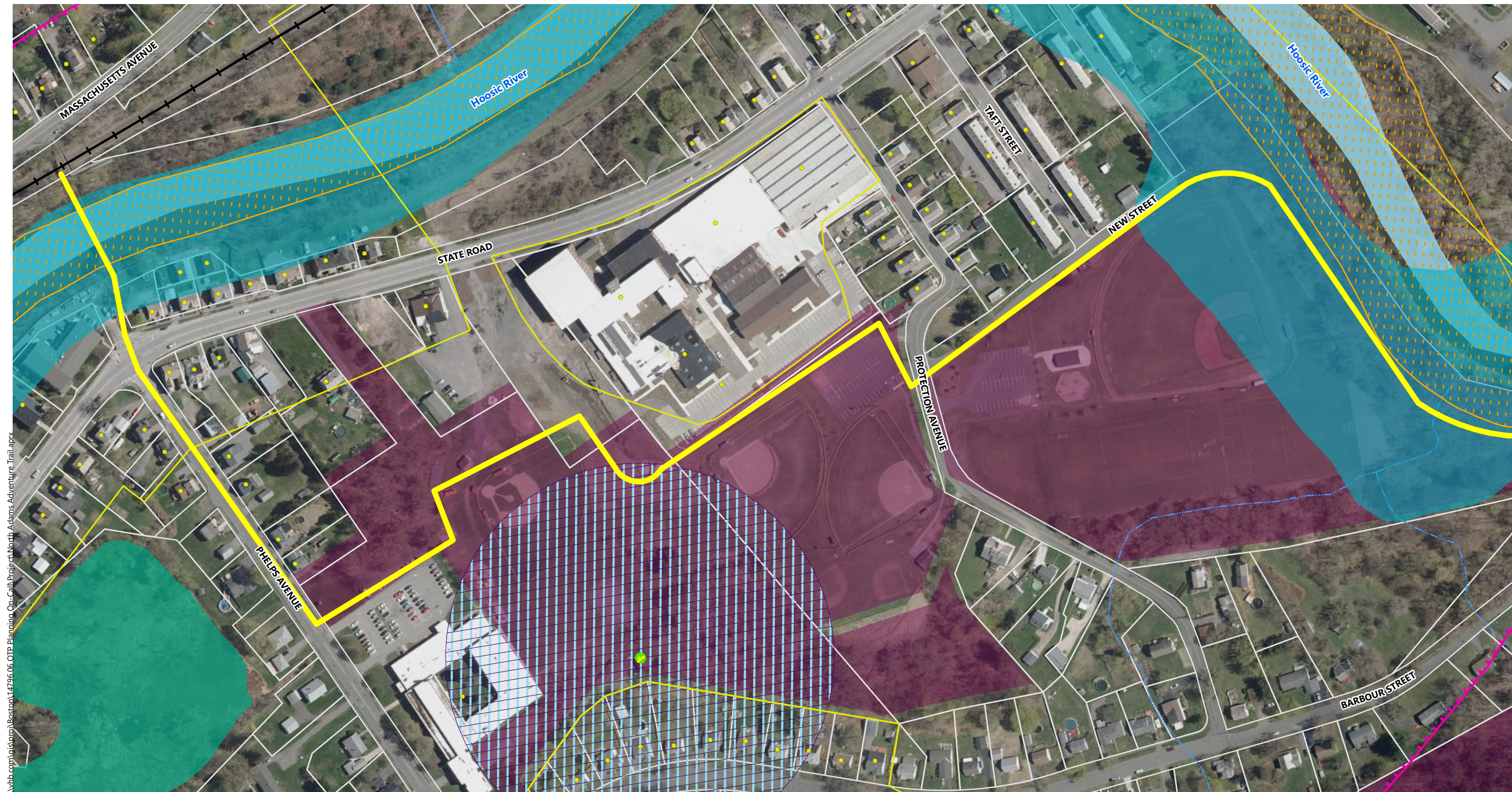
At this point, the remainder of the path would follow the same alignment as Concept 1, Segments 7 and 8. (see page 16 for detailed description.)

Figure 68—Looking towards rail corridor at the Brayton Hill Terrace/Route 2 crosswalk



Figure 69—Looking southwest towards Route 2 along south riverbank with West Main Street stub in foreground





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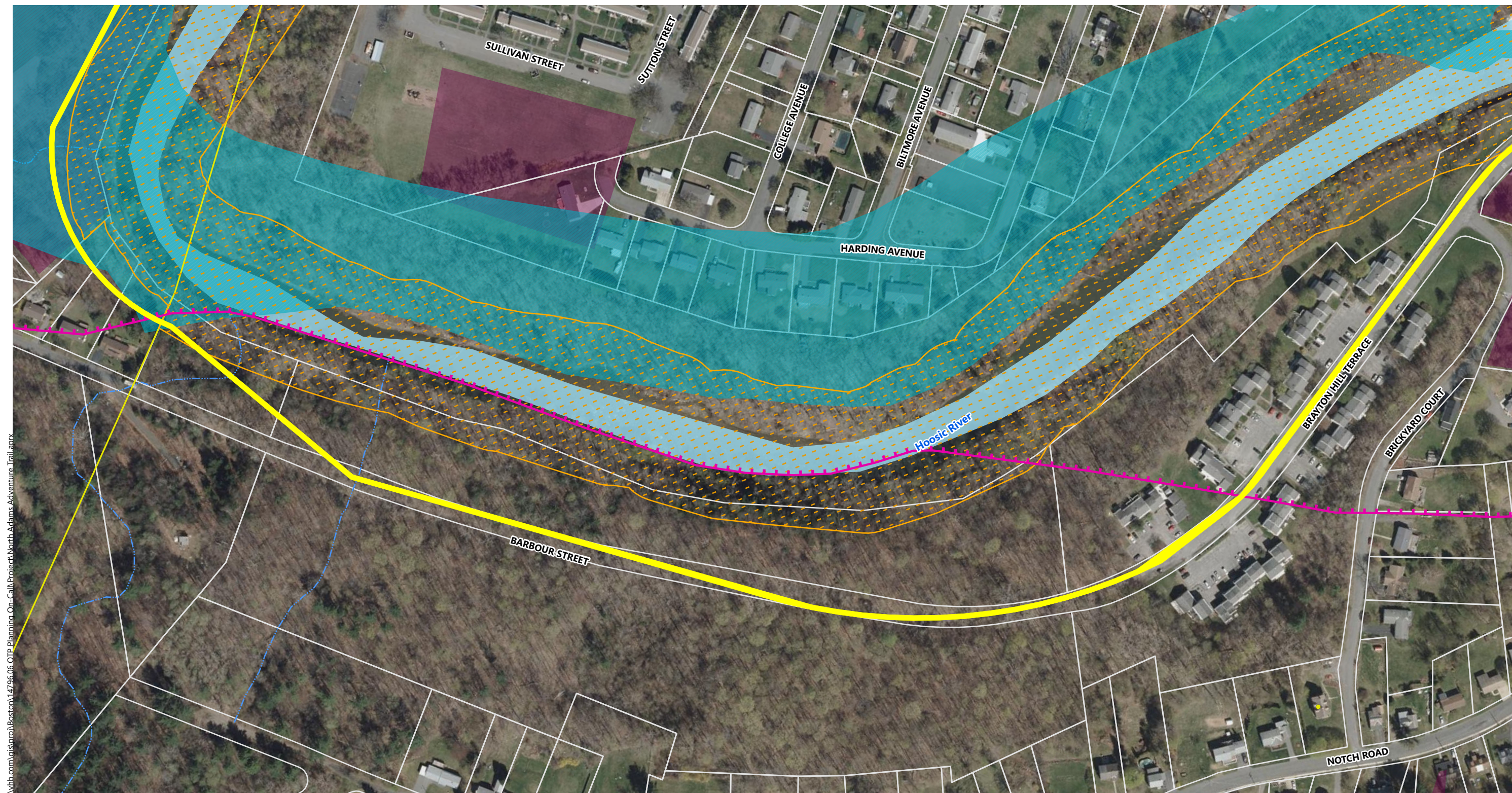
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|------------------------------|-----------------------------------|--|-----------------------------|------------------------------|------------------|
| Adventure Trail Concept 3 | Hazardous Materials Site | Nat'l Register of Historic Places | NHESP Potential Vernal Pool | Perennial Stream | Municipal |
| Railroad | MA-Regulated Hazardous Waste | Inventoried Area | NHESP Priority Habitat | Intermittent Stream | Private |
| Community Groundwater Source | Nat'l Register of Historic Places | Wellhead Protection Areas (Zone I) | MassDEP Wetlands | OpenSpace | Assessed Parcel |
| Underground Storage Tanks | Inventoried Property | Approved Wellhead Protection Areas (Zone II) | FEMA 100 Year Floodplain | DCR-State Parks & Recreation | River/Open Water |

North Adams Adventure Trail

North Adams, Massachusetts

Adventure Trail Concept 3 Resource Map Page 1 of 4

Source: MassDOT, MassGIS, VHB



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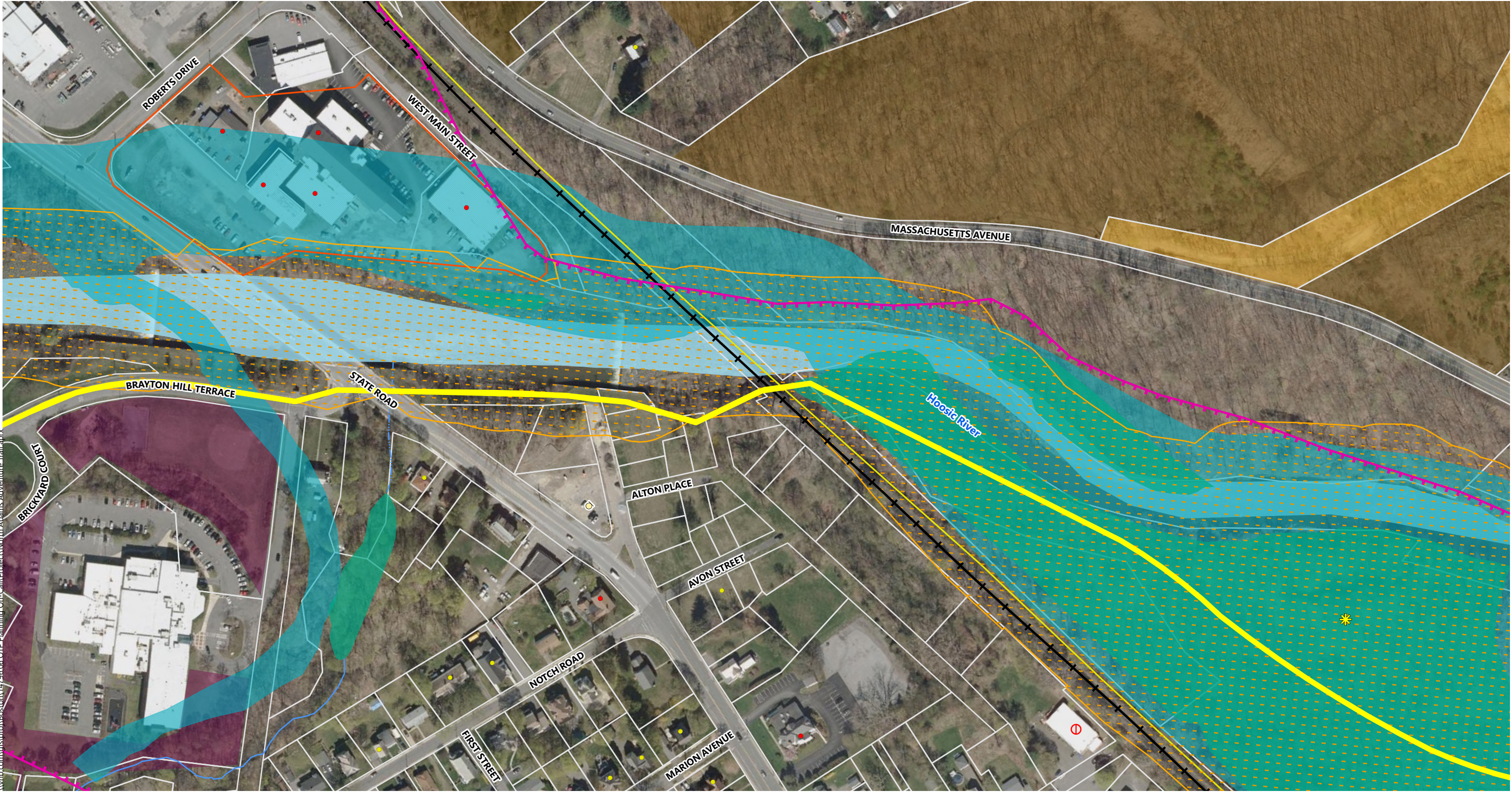
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| Railroad | MA-Regulated Hazardous Waste | Inventoried Area | NHESP Priority Habitat | Intermittent Stream | Private |
| Community Groundwater Source | Nat'l Register of Historic Places | Wellhead Protection Areas (Zone I) | MassDEP Wetlands | OpenSpace | Assessed Parcel |
| Underground Storage Tanks | Inventoried Property | Approved Wellhead Protection Areas (Zone II) | FEMA 100 Year Floodplain | DCR-State Parks & Recreation | River/Open Water |

North Adams Adventure Trail

North Adams, Massachusetts

Adventure Trail Concept 3 Resource Map Page 2 of 4

Source: MassDOT, MassGIS, VHB



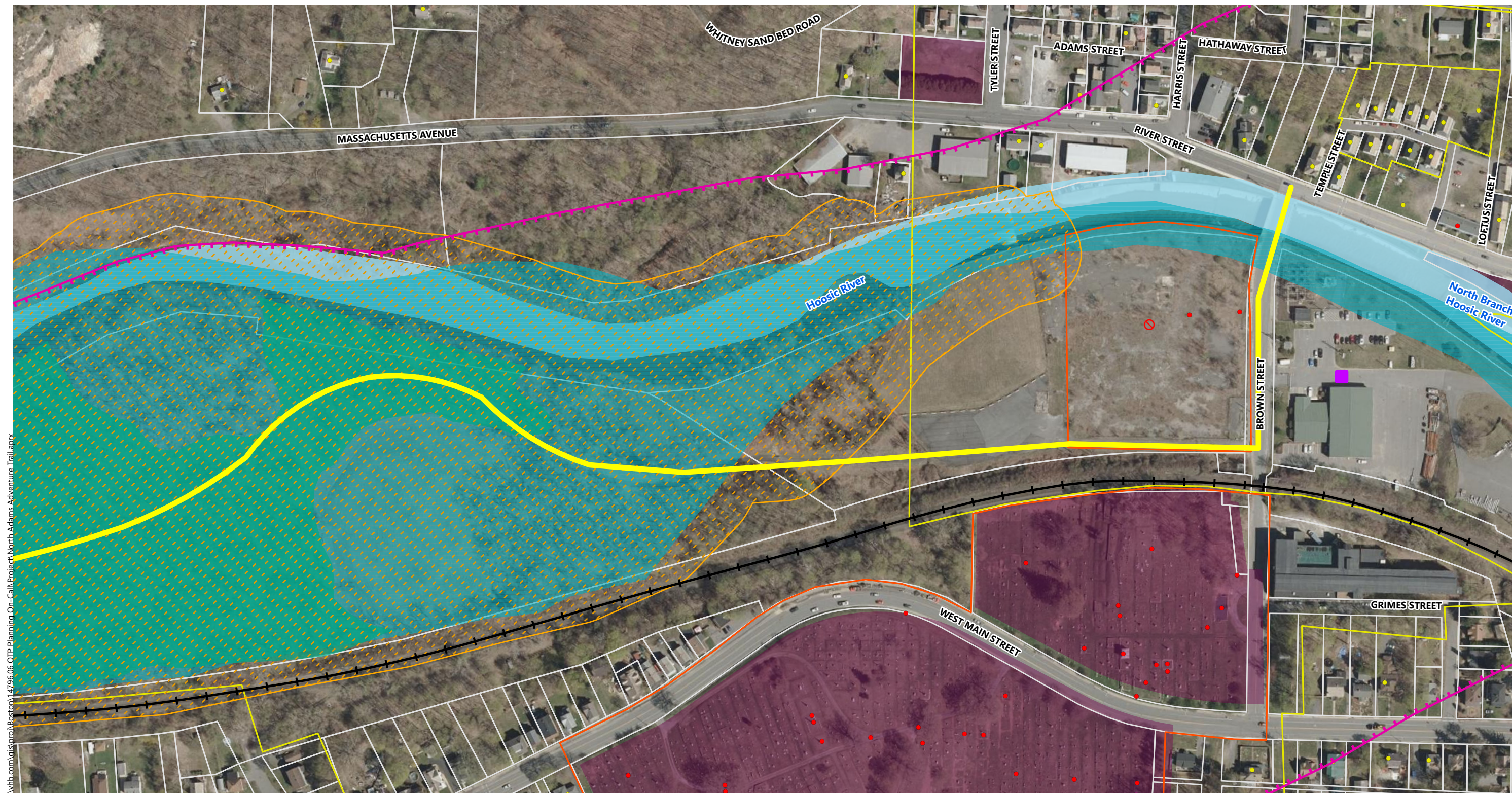
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North Adams Adventure Trail

North Adams, Massachusetts

Adventure Trail Concept 3
Resource Map
Page 3 of 4

Source: MassDOT, MassGIS, VHB



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North Adams Adventure Trail

North Adams, Massachusetts

Adventure Trail Concept 3 Resource Map Page 4 of 4

Source: MassDOT, MassGIS, VHB



Concept 3

	Limits	Length	Type	Right-of-Way Actions	Active Railroad Right-of-Way	Roadway Crossings	Railroad Crossings	FEMA Floodplain	Wetlands	Habitat	Comments	Difficulty
1	NAAT Section 2 Trailhead to Route 2	360 feet	Off-road		No		1	Path located in 100-year floodplain		Bridge travels over GIS-mapped priority habitat associated with the Hoosic River	Path requires the use of the Appalachian Trail facilities to cross the Hoosic River and and railroad ROW	Low
2	Route 2 to Greylock School	720 feet	On-road		No	1					Curb modification necessary; Phelps Avenue will accommodate confident riders	Low
3	Phelps Avenue to Hoosic River	2,400 feet	Off-road	Encroaches on public and private properties	No	1		Path located in 100-year floodplain	Proximity to river may require impact to buffer zone. Final alignment analysis will be necessary.		Requires coordination with municipality and private owners on alignment; Wellhead protection area (Zone I) in close proximity (to be avoided)	Low
4	Along the Hoosic River	1,230 feet	Off-road	Impacts residential properties along Barbour Street	No			Path located in 100-year floodplain	Proximity to river may require impact to buffer zone. Final alignment analysis will be necessary.	Final alignment to avoid GIS-mapped NHESP associated with Hoosic River	Primarily follows existing path alignment adjacent to the river; crosses rear portion of multiple parcels that front on Barbour Street, path would be greater than 150 feet through heavily wooded area from closest residence	Moderate
5	Grade Change from Lower Path to Upper Path (ROW)	485 feet	Off-road	Impact to private parcels between river and ROW	No				Culvert and mitigation measures may be necessary for crossing intermittent stream	Final alignment to avoid GIS-mapped NHESP associated with Hoosic River	Significant grade change through wooded area, will require additional survey to locate best alignment	Moderate
6	Upper Path to Brayton Hill Terrace	1,665 feet	Off-road		No						Follows existing path used by city DPW	Low
7	Brayton Hill Terrace to Route 2	1,675 feet	On-road		No			Path located in 100-year floodplain		Possible overlap with GIS-mapped NHESP along Brayton Hill Terrace	Uses existing infrastructure to accommodate cyclists and pedestrians with minimal modifications necessary	Low
8	Route 2 to Railroad ROW	980 feet	Off-road		No	1	1			Path travels through GIS-mapped priority habitat associated with the Hoosic River	Runs adjacent to headwall for Hoosic River, may require coordination with ACOE; includes crossing under railroad ROW; both public and private property ownership	Low
7	Hoosic River to Brown Street	4,075 feet	Off-road	Enire segment is within private property	No			Path located in 100-year floodplain	Approximately 2,400 linear feet of potential wetlands impact		Potential hazardous materials concerns throughout this site; wetland locations should be field verified	Moderate
8	Brown Street to River Street	545 feet	On-road		No	1					Plenty of ROW, but curb and utility adjustments may be necessary; structural analysis of bridge necessary	Low

Concept 3—Potential Construction Cost Estimate

	Description	Length	Type	Approximate Cost/Feet	Potential Construction Cost	Notes
1	Ramp Connecting to Appalachian Trail Bridge	360 feet	Ramp/Bridge	\$700.00	\$252,000.00	Exact location will depend on final alignment for NAAT Section 2. This segment would provide a direct connection from the at-grade NAAT to the existing Appalachian Trail bridge via a switchback ramp.
2	Route 2 Crossing and On-Road (Phelps Avenue) Separated Path	720 feet	Roadway	\$900.00	\$648,000.00	Route 2 Crossing recently updated by MassDOT, then transition to side path along roadway. Curb modification along Phelps Avenue will be necessary to accommodate the new path alignment.
3	Path through Parks to Hoosic River	2,400 feet	Path	\$200.00	\$480,000.00	At-grade path adjacent to ballfields in municipal park area and athletic complex.
4	Path through Wooded Area	1,230 feet	Path	\$200.00	\$246,000.00	Path along existing footpath through the woods adjacent to the river.
5	Path Traversing Grade Change through Wooded Area	485 feet	Path	\$700.00	\$339,500.00	Path covering significant grade change between lower path and upper path. May require retaining wall or other stabilization efforts.
6	At-Grade Path along Existing Dirt Road	1,665 feet	Path	\$200.00	\$333,000.00	Path along existing +/-20-foot dirt road.
7	On-Road (Brayton Hill Terrace Separated Path	1,675 feet	Roadway	\$25.00	\$41,875.00	Bike lane along west side of road to provide bikers uphill a climbing lane. Striping and signage along east side allowing cyclists to stay in travel lane. Assume \$25/foot for signage and striping. This includes signs, green paint, and other associated pavement markings.
8	At-Grade Route 2 Crossing and Off-Street Path to Tunnel Crossing Railroad ROW	980 feet	Path/Tunnel	\$200.00	\$756,000.00	At-grade path and tunnel under railroad. Assume 40-foot culvert at \$14,000/linear foot = \$560,000.
9	Path in Fairgrounds to Brown Street	4,075 feet	Path	\$200.00	\$3,695,000.00	Segments of boardwalk likely necessary based on GIS wetlands mapping, need field verification. Assuming 2,400 feet of boardwalk and 1,675 feet of path for estimate purposes (boardwalk = \$1,200/foot).
8	Brown Street	545 feet	Roadway	\$900.00	\$490,500.00	Roadway improvement to account for trail, no new bridge on Brown Street. Possibly bridge modifications and roadway improvements for converting existing sidewalks to shared use path.

This estimate has been prepared with the following assumptions and is for planning purposes only: <ul style="list-style-type: none">» Survey, geotechnical evaluations, design, and permitting has not been completed.» Concept plans included as part of the North Adams Adventure Trail Feasibility Study (Phase II—MassDOT Planning Phase) dated 10/04/2021 were developed using MassGIS information and simple line work on an aerial to depict existing and proposed conditions.» Linear foot construction costs are based on other projects that are in various design stages, including the Ashuwillticook Rail Trail in Adams/North Adams (25%), Williamsburg Greenway/Route 9 Williamsburg (25%), North Adams Adventure Trail (NAAT) Feasibility Study Phase 1 (Concept), and a review of various bid prices from recent MassDOT TIP projects.» ROW actions such as acquisitions or temporary/permanent easements have not been conducted.» A desktop concept design contingency was added.	Linear Feet—14,135 feet Miles—2.68		\$7,281,875.00	
	Desktop Concept Design Contingency For Unknowns—15%		\$1,092,281.25	15%
	Landscaping, Hardscaping, Wayfinding, Lookouts, Furnishings, etc		\$200,000.00	Allowance for landscaping items along the path includes: benches, bike racks, repair stations, and trash receptacles.
	Traffic Management—1%		\$72,818.75	
	Mobilization—3%		\$218,456.25	
	Police Details—3%		\$291,275.00	MassDOT Standard Contingencies.
	MassDOT Construction Engineering—10%		\$728,187.50	
	Construction Contingency—10%		\$728,187.50	
	Subtotal		\$10,613,081.25	
	Inflation (3% per year over 7 years)		\$2,439,670.01	MassDOT Typical Inflation for TIP Projects to project out to future funding year. 3–4%.
	Total Easterly Section		\$13,052,751.26	
	SAY		\$13,100,000.00	

- Additional Notes**
- » Assume 10-foot path for trail with 2-foot shoulders to minimize wetland impacts and disturbance in riverfront and flood plain areas.
 - » Easements for path with railroad ROW will require approval from railroad ROW and approval from Public Utilities Commission.
 - » If proposed path will falls within layout of the railroad obtaining easements could be time consuming, costly, and might not be approved by railroad.
 - » ROW acquisitions, easements, etc. must follow the ROW process as per the MassDOT Right of Way Bureau under Massachusetts General Laws Chapter 79.
 - » 5,000 SF of wetland impacts will require a variance through DEP, could be challenging to get approvals.
 - » Other than impacts noted above, utility impacts anticipated to be negligible.
 - » From a ROW, design and permitting perspective, the path through MassMoCA should not be included as part of the MassDOT design process.
 - » No Path/Street Lighting are included.
 - » Bridges and boardwalks have been assumed to be H-20 Loading for emergency vehicles, a typical requirement for MassDOT projects.

Contact

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