



Memorandum

To: Eric M. Slosek - Director
Amherst Public Works Department
22 Dodge Rd.
Amherst NH 03031

Date: November 17, 2023

Project #: 53053.01

From: Gregory L. Bakos, PE

Re: Amherst On-Call Engineering
Task # 1: Baboosic Greenway - North 02

As requested, VHB has estimated the cost for completing bike and pedestrian related improvements on Segment "North 02" of the planned Baboosic Greenway in Amherst. The below cost estimate is provided to assist the Town of Amherst in budgeting for its local share of the CMAQ funded improvements.

Proposed Improvements

This proposed project will complete an approximately 10,800-foot-long segment of the Baboosic Greenway located north of Baboosic Road and east of NH Route 101. The proposed improvements consist primarily of a 10-foot wide granular multiuse path roughly following the former railroad layout as shown on the attached VHB schematic plans.

Trail Segments:

The attached cost estimate is broken into three segments based on the reported conditions specific to each, and discussed as follows.

Segment 1: Walnut Hill Road Crossing to Dream Lake Drive Residences

This segment of granular trail will be constructed on the existing railbed, which is described as in good condition and wide enough to accept the 10-foot-wide prepared surface. The Estimate includes tree clearing and loam and seeding along the edges and preparing the existing surface, which would primarily consist of blading and grading to a uniform cross section. The surface material would be a 4-inch layer of modified stone dust. It is assumed the existing railbed drains well and no new stormwater systems are required in this segment. This segment appears to abut wetlands in some areas and erosion controls are included in the estimate to account for that.

The northern end of this segment at Walnut Hill Road consists of a mid-block crossing at a location where sight distances are a concern due to roadway curvature. The cost estimate includes adding solar powered Rapid Flashing Beacons at the crossing; however, traffic volumes are presumed to be low, and this would not be suggested were it not for the sight distance constraints.

Segment 2: Dream Lake Drive Residences to Town owned Railbed

This segment continues southwest but the former railroad right-of-way is broken by private residences along Dream Lake Drive. The proposal is to shift to a narrow sliver of land along the rear of the private parcels to avoid backyard impacts and a potentially difficult and costly right-of-way process. Being off-line from the historic railbed means there will likely be a need for more clearing and grubbing as well as grading and filling to create a suitable platform for the trail surface. The cost estimate accounts for these items. It also includes a quantity of drainage pipe for cross culverts. The cost estimate includes assumed right-of-way costs for this segment, and these could vary considerably.

Segment 3: Town Railbed to Baboosic Road Including a Connection to Meeting Place Mall

This segment falls within the former railroad right-of-way until it reaches the intersection of Baboosic Road and the northbound NH101 on-ramp. This segment is described as overgrown, so the clearing and grubbing costs are higher than previous segments. This segment also abuts significant wetlands, and the erosion control costs reflect that.

This segment includes a 40-foot-long boardwalk structure to connect to the side of the on-ramp. It is assumed that a bridge would not be required, but the unit cost for the boardwalk is higher than the other section of boardwalk since it will cross open water. Once across the water the path would bench into the side of the ramp fill slope until it reaches Baboosic Road. The cost estimate assumes that this short connection would be paved since granular trails should not be constructed on slopes steeper than 3% and there is a grade change. It is assumed the segment ends at Baboosic Road and connects to Segment North-03 at that location.

This segment also includes a 450-foot-long boardwalk connection to the Meeting Place Mall. Helical piles may be a good solution in this location to support the boardwalk because they would likely enable top-down construction across the sensitive resource area. It should be noted that the cost of this boardwalk connection represents nearly half of the overall project cost when contingencies, design and inspection are included.

Other Considerations

It is assumed that this project will be constructed with the assistance of Federal transportation funds and will therefore be subject to NEPA and other federal regulations and will follow the NHDOT LPA process. These factors all add process and likely costs, especially to the design phase and construction administration aspects. This project will trigger environmental permits and mitigation costs are not specifically included but should be considered part of the contingencies.

Cost Summary:

CONSTRUCTION SUBTOTAL:	\$ 1,321,000.00
ENGINEERING AND PERMITTING:	\$ 202,000.00
CONSTRUCTION INSPECTION AND TESTING:	\$ 95,000.00
RIGHT-OF-WAY:	\$ 65,000.00
ESIMATE TOTAL:	\$ 1,683,000.00

See the attached detailed estimates for additional information. All costs are in 2023 dollars and not projected to a future construction year.

CONSTRUCTION COST ESTIMATEPROJECT : **Baboosic Greenway NORTH-02**

LOCATION : Amherst, NH

SUMMARY

VHB PROJECT NO. 53053.01

DATETYPE: **Program Level Conceptual Estimate****11/17/23****Segment 1** Walnut Hill Road Crossing to Dream Lake Drive Residences

CONSTRUCTION SUBTOTAL: \$ 185,000.00

ENGINEERING AND PERMITTING: \$ 30,000.00

CONSTRUCTION INSPECTION AND TESTING: \$ 20,000.00

RIGHT-OF-WAY: \$ -

ESIMATE TOTAL: \$ **235,000.00****Segment 2** Dream Lake Drive Residences to Town owned Railbed

CONSTRUCTION SUBTOTAL: \$ 151,000.00

ENGINEERING AND PERMITTING: \$ 20,000.00

CONSTRUCTION INSPECTION AND TESTING: \$ 15,000.00

RIGHT-OF-WAY: \$ 60,000.00

ESIMATE TOTAL: \$ **246,000.00****Segment 3** Town Railbed to Baboosic Road Incl. Connection to Meeting Place Mall

CONSTRUCTION SUBTOTAL: \$ 985,000.00

ENGINEERING AND PERMITTING: \$ 151,600.00

CONSTRUCTION IN SPECTION AND TESTING: \$ 60,000.00

RIGHT-OF-WAY: \$ 5,000.00

ESIMATE TOTAL: \$ **1,201,600.00****PROJECT TOTALS:**

CONSTRUCTION SUBTOTAL: \$ 1,321,000.00

ENGINEERING AND PERMITTING: \$ 202,000.00

CONSTRUCTION INSPECTION AND TESTING: \$ 95,000.00

RIGHT-OF-WAY: \$ 65,000.00

ESIMATE TOTAL: \$ **1,683,000.00**

CONSTRUCTION COST ESTIMATE

SEGMENT 1

PROJECT : **Baboosic Greenway NORTH-02**

Walnut Hill Road Crossing to Dream Lake Drive Residences

LOCATION : Amherst, NH

VHB PROJECT NO. 53053.01

DATE: 11/17/2023

TYPE: **Program Level Conceptual Estimate**

	ITEM DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	TOTAL COST
201.1	CLEARING AND GRUBBING	AC	\$ 10,000.00	1.8	\$18,000
214	FINE GRADING	U	\$ 7,000.00	1	\$7,000
304.7	STONE DUST WEARING SURFACE	TON	\$ 40.00	1020	\$40,800
616.26101	RECTANGULAR RAPID FLASHING BEACON (SOLAR) (Walnut Hill Rd)	U	\$ 35,000.00	1	\$35,000
645.531	SILT FENCE	LF	\$ 4.00	1500	\$6,000
645.7	STORM WATER POLLUTION PREVENTION PLAN	U	\$ 1,000.00	1	\$1,000
646.51	TURF ESTABLISHMENT WITH MULCH, TACKIFIERS AND LOAM	SY	\$ 4.00	6000	\$24,000
692	MOBILIZATION	UNIT	\$ 7,000.00	1	\$7,000
698.13	FIELD OFFICE TYPE C	MON	\$ 1,800.00	1	\$1,800
699	MISCELLANEOUS TEMPORARY EROSION AND SEDIMENT CONTROL	\$	\$ 1,000.00	1	\$1,000
SUBTOTAL					\$142,000
MISCELLANEOUS ITEMS (10%)					\$14,200
CONTINGENCIES (20%)					\$28,400
SUBTOTAL:					\$185,000
ENGINEERING (PE)					\$30,000
CONSTRUCTION ENGINEERING, INSPECTION AND TESTING					\$20,000
SUBTOTAL					\$235,000
ROW					\$0
ESTIMATED PROJECT TOTAL:					\$235,000

CONSTRUCTION COST ESTIMATE

SEGMENT 2

PROJECT : **Baboosic Greenway NORTH-02**

Dream Lake Drive Residences to Town owned Railbed

LOCATION : Amherst, NH

VHB PROJECT NO. 53053.01

DATE: 11/17/2023

TYPE: **Program Level Conceptual Estimate**

	ITEM DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	TOTAL COST
201.1	CLEARING AND GRUBBING	AC	\$ 20,000.00	1.5	\$30,000
203.1	COMMON EXCAVATION	CY	\$ 15.00	900	\$13,500
203.6	EMBANKMENT IN PLACE	CY	\$ 15.00	500	\$7,500
214	FINE GRADING	U	\$ 10,000.00	1	\$10,000
304.7	STONE DUST WEARING SURFACE	TON	\$ 40.00	570	\$22,800
603.00215	15" R.C. PIPE, 2000D	LF	\$ 80.00	100	\$8,000
645.531	SILT FENCE	LF	\$ 4.00	800	\$3,200
645.7	STORM WATER POLLUTION PREVENTION PLAN	U	\$ 1,000.00	1	\$1,000
646.51	TURF ESTABLISHMENT WITH MULCH, TACKIFIERS AND LOAM	SY	\$ 7.00	1800	\$12,600
692	MOBILIZATION	UNIT	\$ 5,000.00	1	\$5,000
698.13	FIELD OFFICE TYPE C	MON	\$ 1,800.00	1	\$1,800
699	MISCELLANEOUS TEMPORARY EROSION AND SEDIMENT CONTROL	\$	\$ 1,000.00	1	\$1,000
SUBTOTAL					\$116,000
MISCELLANEOUS ITEMS (10%)					\$11,600
CONTINGENCIES (20%)					\$23,200
SUBTOTAL:					\$151,000
ENGINEERING (PE)					\$20,000
CONSTRUCTION ENGINEERING, INSPECTION AND TESTING					\$15,000
SUBTOTAL					\$186,000
ROW					\$60,000
ESTIMATED PROJECT TOTAL:					\$246,000

CONSTRUCTION COST ESTIMATE

SEGMENT 3

PROJECT : **Baboosic Greenway NORTH-02**

Town Railbed to Baboosic Road Incl. Connection to Meeting Place Mall

LOCATION : Amherst, NH

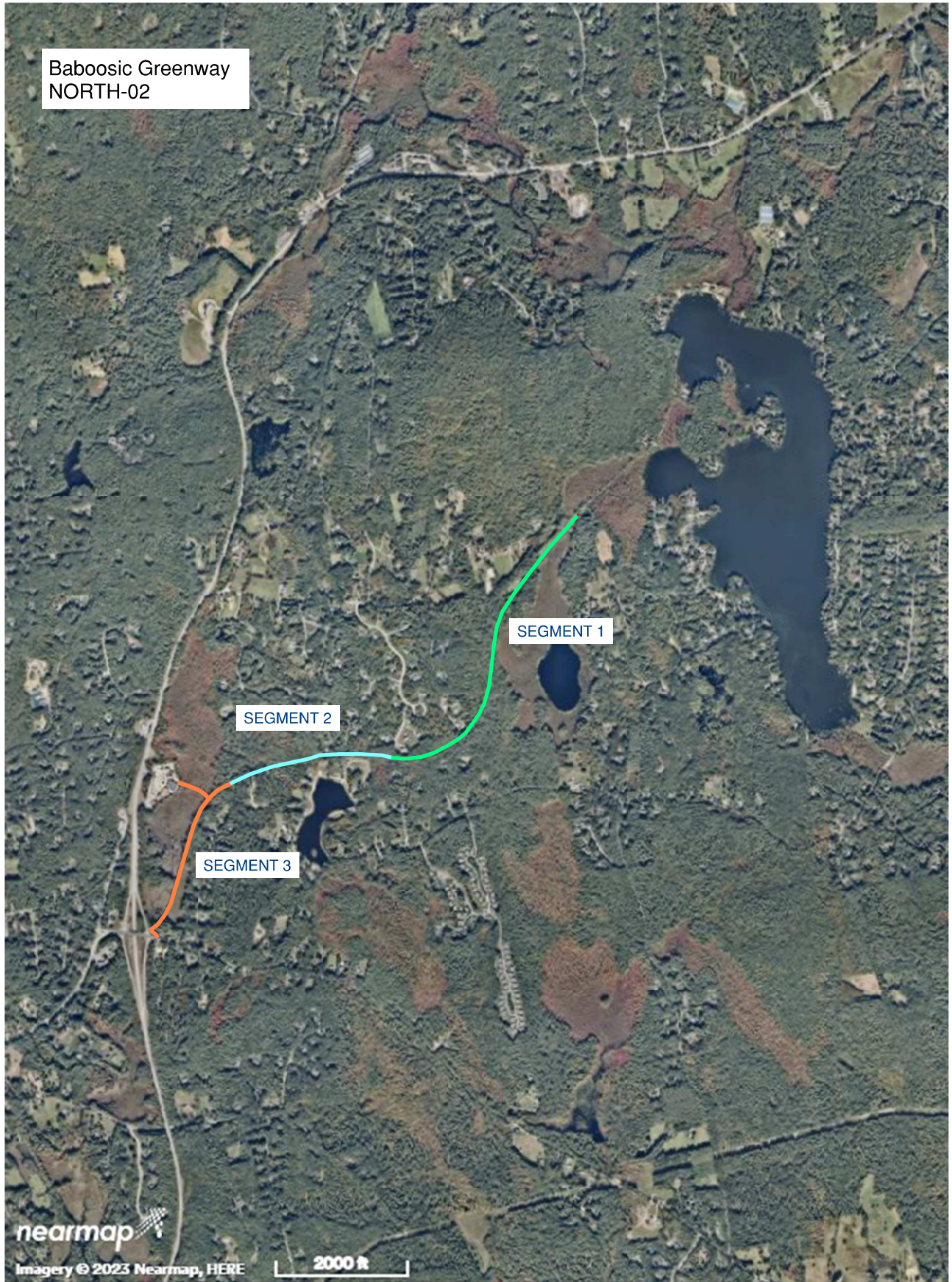
VHB PROJECT NO. 53053.01

DATE: 11/17/2023

TYPE: **Program Level Conceptual Estimate**

	ITEM DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	TOTAL COST
201.1	CLEARING AND GRUBBING	AC	\$ 15,000.00	1.1	\$16,500
203.1	COMMON EXCAVATION	CY	\$ 15.00	0	\$0
203.6	EMBANKMENT IN PLACE	CY	\$ 14.00	0	\$0
209.1	GRANULAR BACKFILL	CY	\$ 30.00	0	\$0
214	FINE GRADING	U	\$ 9,000.00	1	\$9,000
304.7	STONE DUST WEARING SURFACE	TON	\$ 40.00	525	\$21,000
585.2	STONE FILL, CLASS B	CY	\$ 40.00	120	\$4,800
606.91255	RESETTING TERMINAL UNIT (TYPE TL 2 EAGRT) (STEEL POST)	UNIT	\$ 1,500.00	1	\$1,500
608.13	3" BITUMINOUS SIDEWALK (F)	SY	\$ 65.00	120	\$7,800
608.36	6" REINFORCED CONCRETE SIDEWALK (F)	SY	\$ 100.00	12	\$1,200
608.54	DETECTABLE WARNING DEVICES, CAST IRON	SY	\$ 500.00	1.8	\$900
615.0301	TRAFFIC SIGN TYPE C	SF	\$ 90.00	25	\$2,250
618.61	UNIFORMED OFFICERS W/ VEHICLE	HR	\$ 75.00	20	\$1,500
618.7	FLAGGERS	HR	\$ 40.00	100	\$4,000
619.1	MAINTENANCE OF TRAFFIC	UNIT	\$ 5,000.00	1	\$5,000
619.253	PORTABLE CHANGEABLE MESSAGE SIGN (UNIT WEEK)	UWK	\$ 600.00	16	\$9,600
645.531	SILT FENCE	LF	\$ 4.00	3000	\$12,000
645.7	STORM WATER POLLUTION PREVENTION PLAN	U	\$ 1,000.00	1	\$1,000
646.51	TURF ESTABLISHMENT WITH MULCH, TACKIFIERS AND LOAM	SY	\$ 7.00	2200	\$15,400
692	MOBILIZATION	UNIT	\$ 40,000.00	1	\$40,000
698.13	FIELD OFFICE TYPE C	MON	\$ 1,800.00	2	\$3,600
699	MISCELLANEOUS TEMPORARY EROSION AND SEDIMENT CONTROL	\$	\$ 1,000.00	1	\$1,000
1001	BOARDWALK TO BABOOSIC LAKE ROAD / NH 101 RAMP INTERSECTION	LF	\$ 1,500.00	40	\$60,000
1002	BOARDWALK TO MEETING PLACE MALL	LF	\$ 1,200.00	450	\$540,000
SUBTOTAL					\$758,000
MISCELLANEOUS ITEMS (10%)					\$75,800
CONTINGENCIES (20%)					\$151,600
SUBTOTAL:					\$985,000
ENGINEERING (PE) (INCLUDING PERMITTING)					\$150,000
CONSTRUCTION ENGINEERING, INSPECTION AND TESTING					\$60,000
SUBTOTAL					\$1,195,000
ROW					\$5,000
ESTIMATED PROJECT TOTAL:					\$1,200,000

Baboosic Greenway
NORTH-02



SEGMENT 1

SEGMENT 2

SEGMENT 3

nearmap

Imagery © 2023 Nearmap, HERE

2000 ft



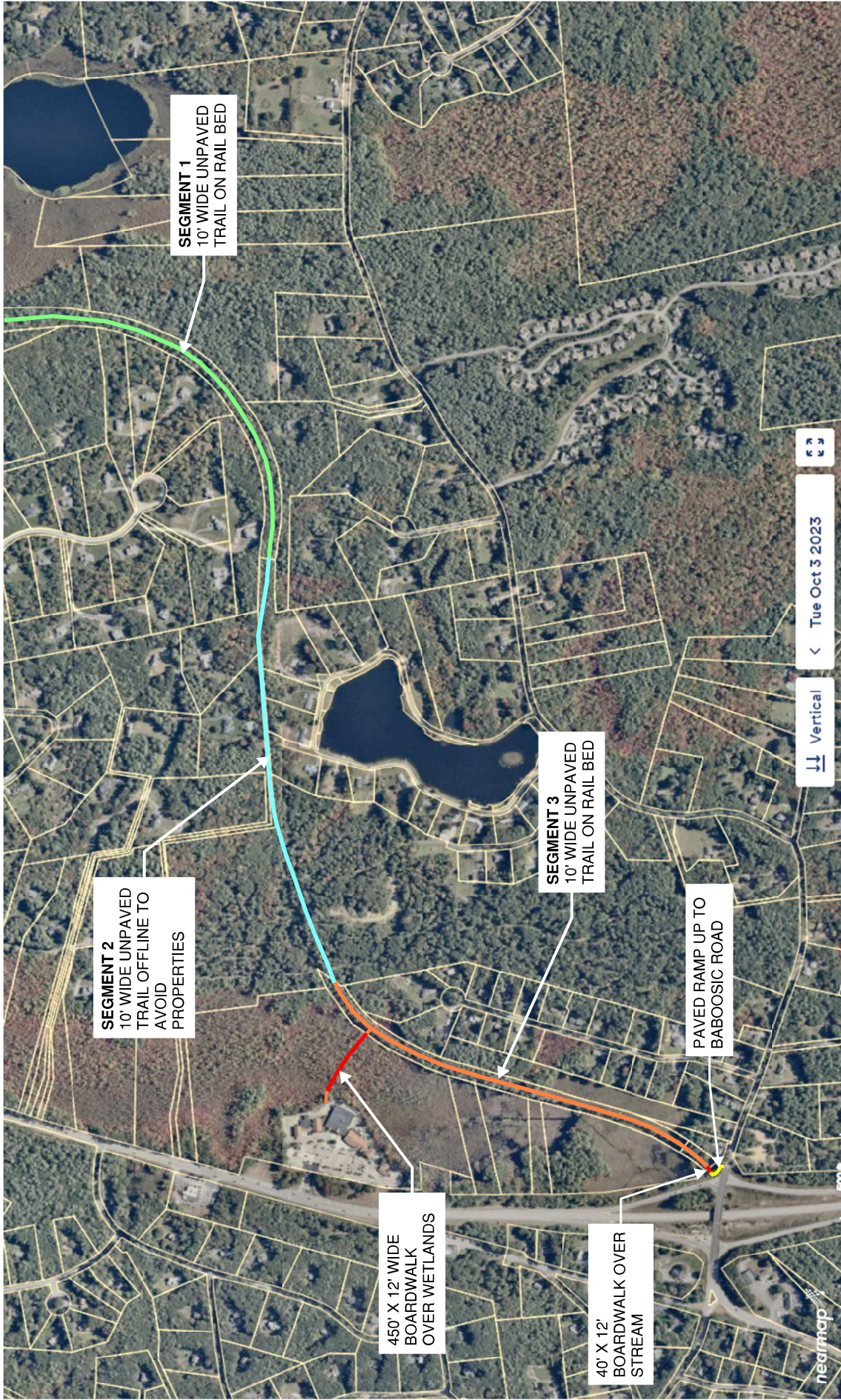
ENHANCED ROAD
CROSSING WITH
RRFEB'S

SEGMENT 1
10' WIDE UNPAVED
TRAIL ON RAIL BED

Vertical
Tue Oct 3 2023

500 ft

nearmap
Imagery © 2023, Nearmap, HERE



SEGMENT 1
10' WIDE UNPAVED
TRAIL ON RAIL BED

SEGMENT 2
10' WIDE UNPAVED
TRAIL OFFLINE TO
AVOID
PROPERTIES

SEGMENT 3
10' WIDE UNPAVED
TRAIL ON RAIL BED

PAVED RAMP UP TO
BABOOSIC ROAD

450' X 12' WIDE
BOARDWALK
OVER WETLANDS

40' X 12'
BOARDWALK OVER
STREAM



Tue Oct 3 2023



nearmap