

Reopening Old Slough Road for Vehicle Travel in Emergencies

Introduction

The Town of Mattapoisett and Mattapoisett Land Trust, Inc. (MLT) are working together to reopen Old Slough Road as an emergency route for vehicles traveling to and from the Point Connett and Angelica Point communities in Mattapoisett. These communities presently are accessed by a single two-lane road: Angelica Avenue. Due to coastal location and low elevation this road is threatened by sea level rise and coastal storm damage. In the event Angelica Avenue becomes impassable, approximately 130 homes in Point Connett and Angelica Point would be cut off from emergency services and residents would be unable to enter or leave their homes. These project locations are shown on Map 1.

The Town of Mattapoisett received funding from the Massachusetts Office of Coastal Zone Management through a FY22 Coastal Resilience grant (grant number BD-21-1042-CZM-ENV40-61020) to undertake survey and engineering design work to determine how best to reopen Old Slough Road, construction requirements to improve the road to passable condition for vehicles, initial construction cost estimates, and acquisition of necessary environmental permits. Work started late in 2021 and this design phase was completed on June 30, 2022. The information on this web page presents project results to date. Additional information is provided in four sections:

- Why reopen Old Slough Road?
- Present condition of Old Slough Road,
- Planned improvements, and
- Schedule going forward.

Why reopen Old Slough Road for emergency use?

Angelica Avenue is highly vulnerable to both sea level rise (SLR) and more intense coastal storms. As illustrated on Map 1, Angelica Avenue is the only route of access for residents, visitors and property owners in the

Angelica Point (~30 homes) and Point Connett (~100 homes) communities. Angelica Avenue is a two-lane paved road maintained by the Town and is in reasonably good condition. But moving east from Island Street the elevation of Angelica Avenue drops from 11 feet to a low of 5 feet in the area around the stream crossing and then rises again moving east to 34 feet at the intersection with Old Slough Road. This elevation profile for Angelica Avenue is shown in Exhibit 1.¹

Maps 2 and 3 illustrate the vulnerability of Angelica Avenue to sea level rise and to more intense coastal hurricanes, using data layers from MASS GIS. As shown in Map 2, increases in Mean Higher High Water (MHHW) of 4 feet or more are expected to overtop the road, and such increases are predicted to occur around 2050. These predicted MHHW levels are taken from the recent Fuss & O'Neill work on the Mattapoissett Neck Road Resiliency Project (cited as F&O'N) and are shown in table form in Exhibit 2. Given the low point elevation of Angelica Avenue of 5 feet, the vulnerability of the road to SLR soon after 2050 is clear.

More importantly, Angelica Avenue is highly vulnerable *now* to more intense hurricanes. As shown in Map 3, even a Category 1 hurricane is predicted to flood a large segment of the road. And the recent F&O'N work on Mattapoissett Neck Road predicted storm water elevations in 2030 ranging from 6 feet (50% probability storm) to 12 feet (1% probability storm). These storm water elevations increase by 2070 to 10 feet and 17 feet, respectively, as shown in Exhibit 3. While the storm water projections for Mattapoissett Neck Road only are accurate for that road, there is no reason to think that Angelica Avenue would be spared similar flooding from future hurricanes and other coastal storms. Any Mattapoissett coastal road at elevations of 5 or 6 feet is highly vulnerable to increasingly intense coastal storms.

In contrast to Angelica Avenue, Old Slough Road runs along higher ground in a northerly direction away from the coast (see Map 1). The elevation profile for Old Slough Road is shown in Exhibit 4. As shown, the southern boundary of the project area (where present pavement ends) is at elevation 25 feet, and moving north along the road the elevation dips to a

¹ Elevations for Angelica Avenue and Old Slough Road are from Google Earth (GE) and are stated as NAVD88. GE elevations were compared to field surveyed elevations recently measured by Fuss & O'Neill (F&O'N) as part of the Mattapoissett Neck Road (MNR) resiliency project. GE elevations for MNR matched the surveyed F&O'N elevations, which were reported as NAVD88.

low of 22 feet before rising to 49 feet at the northern end of the project area (where the Town-maintained road begins again at Bowman Road.) Thus reopening Old Slough Road to vehicle traffic in emergency situations would be a climate-resilient solution to likely future damage to Angelica Avenue. Old Slough Road is not subject to climate risks due to SLR and more intense coastal storms.

Reopening Old Slough Road will generate large public benefits. First, property owners, residents and visitors to the Point Connett and Angelica Point communities will gain a critical access and escape route in the event of damage to or inundation of Angelica Avenue. Members of both communities have advocated for the reopening for many years.

Second, all Mattapoisett residents and visitors will benefit from improved access to MLT's Old Aucoot District lands via use of the improved Old Slough Road as a trail. The Old Aucoot District contains 400 acres that are fully open to the public at no charge for passive outdoor recreation such as walking, hiking, birding, hunting, horseback riding, and trail biking. The Old Aucoot trail map is shown as Map 4. Old Slough Road runs roughly parallel to the southern portion of the Red Trail, an unimproved woods path.

Third, Mattapoisett taxpayers will benefit over the longer term by having Old Slough Road open for emergency vehicle travel. The availability of this alternative route will delay and reduce the need for Mattapoisett to spend funds elevating and fortifying Angelica Avenue to withstand increasingly severe effects from climate change.

Present Condition of Old Slough Road

The northern end of Old Slough Road begins at the southern end of Bowman Road, approximately at the property boundary of MLT's Santos Farm preserve. The road continues south for roughly 3,000 feet as an unimproved woods way. The south end of Old Slough Road is maintained by the Town for a short distance starting at the driveway entering the residence at 4 Old Slough Road. The maintained part of the road then intersects Angelica Avenue (see Map 1).

The land surrounding Old Slough Road is owned by MLT as well as two private abutters: Park and Correia. The locations of abutters are shown on Map 5. Exhibit 5 provides photographs of the condition of Old Slough Road in May 2021. Photos 1 and 2 show the view north and south from the north entrance to MLT's Santos Farm Preserve, the northern end of the project area. The road in this area is passable to vehicles but would not withstand sustained use in an emergency. Photos 3 and 4 show the road as it passes the Park residence (see Map 6.) This section is narrow and in poor condition. The road here is not passable to vehicles, and often is muddy and very soft. Photo 5 shows a typical section of Old Slough Road running south from the Park residence. As shown the road is narrow and uneven, and much of the road normally is muddy and soft due to rainfall and high groundwater in some sections. Finally, Photos 6 and 7 show the southern end of the project area where Old Slough Road transitions to a Town-maintained road at the driveway for the Correia property at 4 Old Slough Road. The driveway to the Correia property is visible to the left in Photos 6 and 7.

Old Slough Road originally was accepted as a Town road in 1810, with the width of the road set at 27 feet. While an offshoot of the road was unaccepted in 1931 or 1932, the full distance from Bowman Road to Angelica Avenue remains a Town way. Based on letters from and to the Board of Selectmen dated August 11, 1982 and May 26, 1968 the road was used as an emergency access route until approximately 1985. Old Slough Road apparently was never paved, and over the last 35 years has fallen into disrepair with an uneven surface, ruts and encroaching trees and vegetation. The road remains passable on foot, trail bike, all-terrain vehicle or horseback and is used as a woods trail.

Planned improvements

Engineering plans for improvements to Old Slough Road are shown here. These plans show a reconstructed road that largely will follow the existing path of the road. However in some areas the road will be rerouted slightly to minimize disturbance to wetlands and to allow gradual turns needed for longer emergency vehicles. The improved roadway includes a 12-foot wide gravel travel lane, with a one-foot wide gravel shoulder on each side. At the edge of the improved road tree branches and brush will be cleared and maintained to 9.5 feet high.

The 12-foot travel lane is designed for use by vehicles traveling in one direction only (either north or south). In an emergency when the road is opened, traffic control would be maintained by police or fire officers at each end of the road. However, three wider turnouts are provided along the road to allow opposing vehicles to pass if necessary without the need for one vehicle to travel in reverse back to one end or the other.

The improved road will have locked gates preventing vehicle traffic from entering at both the north and south ends, and these would be opened only in emergency situations. Keys to the gates will be provided to the Police and Fire Departments, Highway Department, and MLT. In normal times the improved road would be passable for walkers, hikers, horseback riders, and bicycles. No motorized vehicles would be permitted. Persons with mobility impairments also would be able to utilize the road if they are able to traverse a packed gravel surface.

The proposed design for reopening Old Slough Road is being developed in consultation with the Town's Administrator, Conservation Agent, Highway Surveyor and Fire Chief during both site visits and office meetings. The design proposed here meets the requirements of these departments and the Select Board.

The improved Old Slough Road will continue to abut or pass through private property. Thus MLT signs will be posted at the north and south ends asking all users to stay on the road, be respectful of neighbors, keep dogs on a leash, and limit hours of use to between dawn and dusk.

Schedule going forward

The engineering design work was funded by MA CZM through June 30, 2022 and is substantially complete. The Town now is applying to CZM for additional grant funding to obtain the necessary environmental permit, develop detailed construction bid documents, and fund actual construction of the improved road. If the grant application is successful we expect additional funds to become available in October 2022. While construction timing always is uncertain, this should allow the reconstruction of Old Slough Road to be completed within calendar 2023.

The plans for Old Slough Road described here are being published for public information and comment. A required public hearing before the Conservation Commission will be scheduled in Fall 2022 as part of the environmental permitting process. An additional public hearing to gather comment on the Old Slough Road project will be scheduled in Fall 2022 or Winter 2023. Interested citizens are encouraged to participate in these hearings.

Old Slough Road - Locus Map

Map 1



Old Slough Road

Project Area

Angelica Avenue vulnerable section

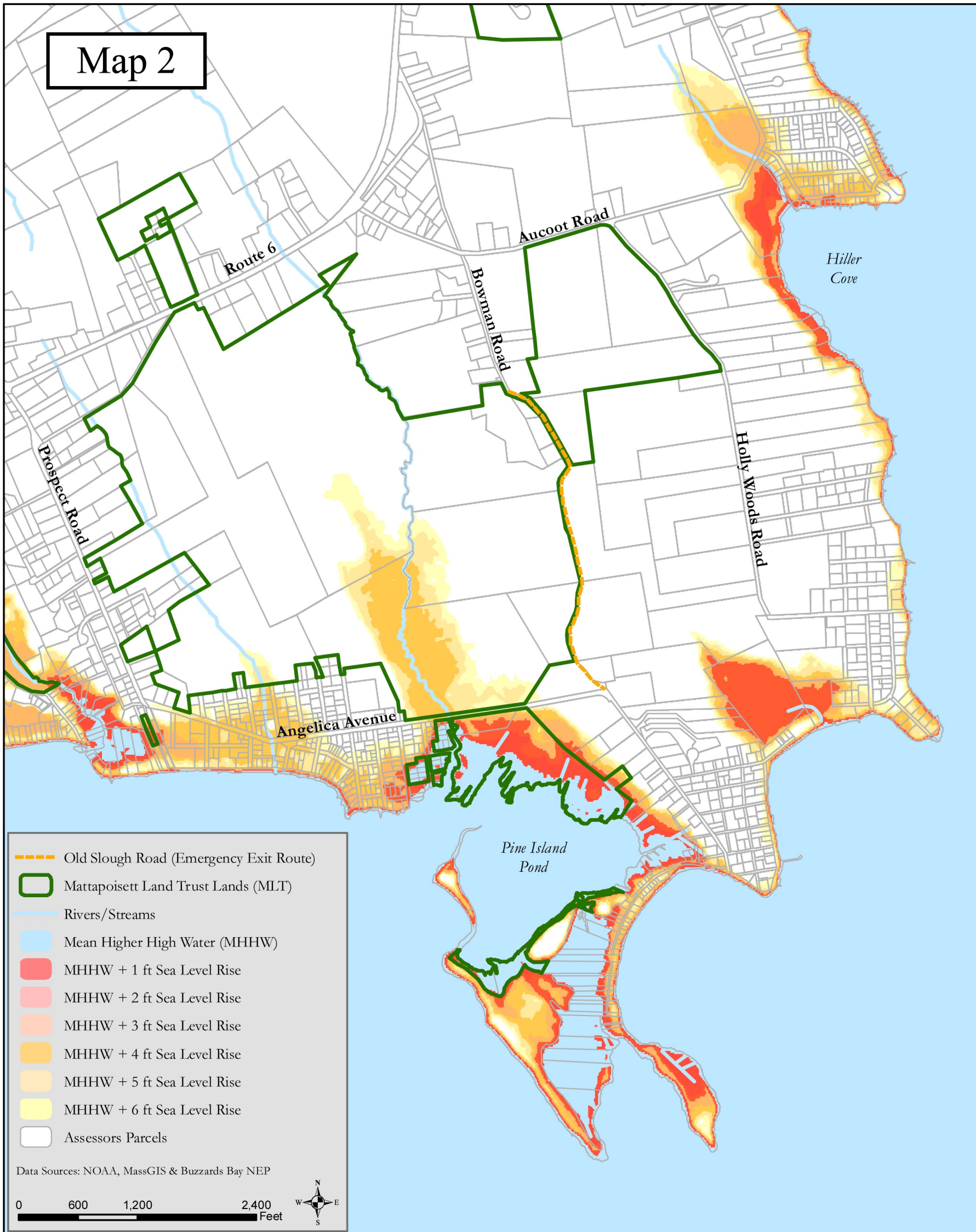
Threatened Communities

- Old Slough Road (Emergency Exit Route)
- ▭ Mattapoisett Land Trust Lands (MLT)



Old Slough Road - Sea Level Rise Scenarios

Map 2



Old Slough Road - Hurricane Surge Scenarios

Map 3



Old Aucoot District

~400 acres of property owned by the Mattapoisett Land Trust



This map was prepared by the Buzzards Bay National Estuary Program at the request of the Mattapoisett Land Trust. Data Sources: MassGIS, Town of Mattapoisett and Buzzards Bay NEP. Boundary lines and trail locations are approximate. May 12, 2021.

Old Slough Road - Abutters



Exhibit 1

Angelica Avenue Elevation Profile

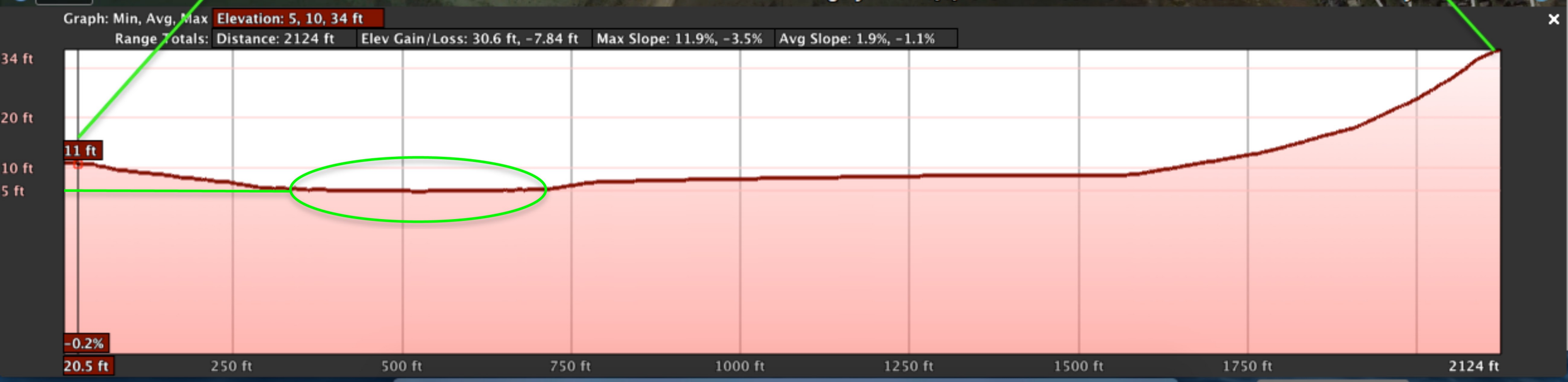
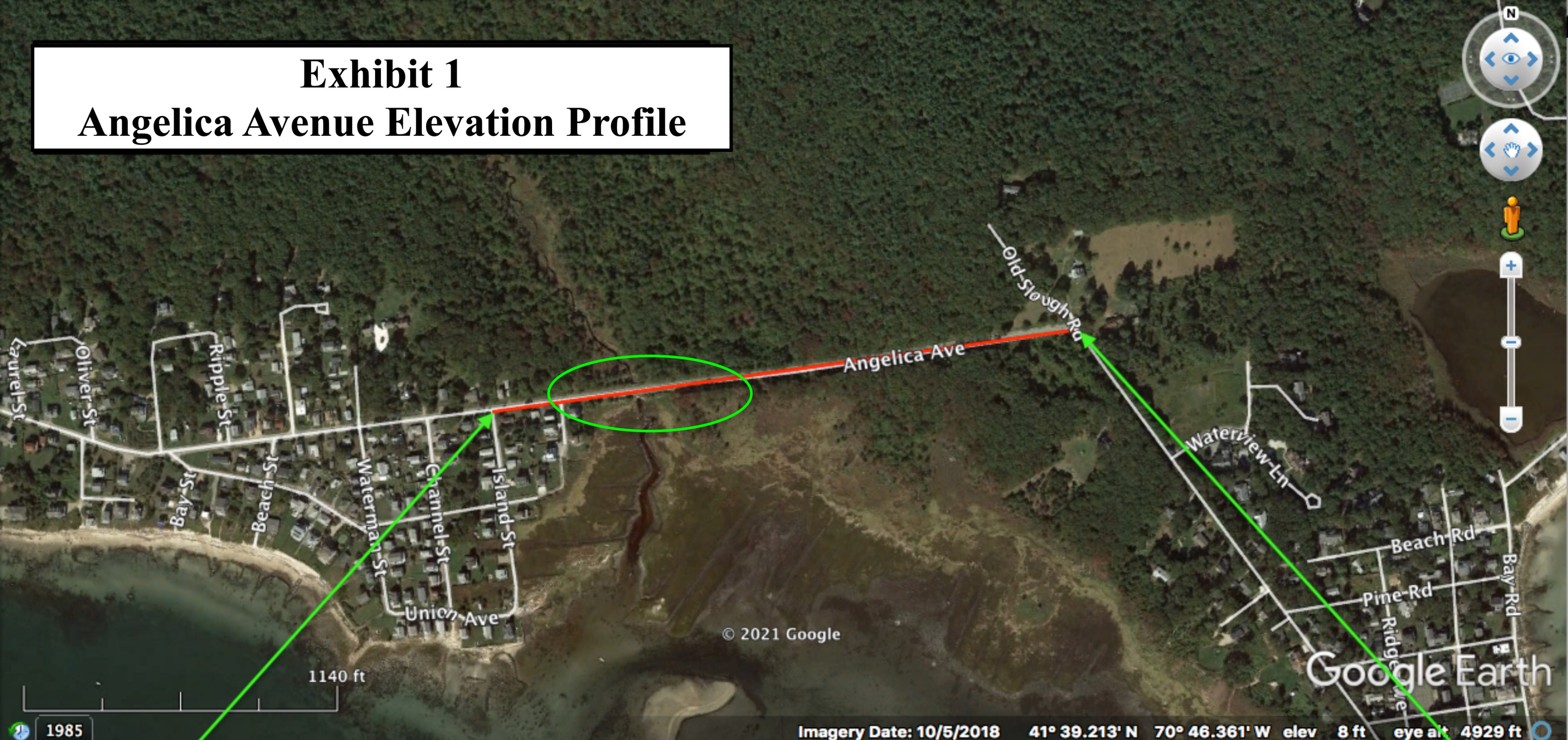


Exhibit 2 Sea Level Rise Projections

MHW = average elevation of all high tides
MHHW = average of daily higher high tides

These figures illustrate daily tidal averages and do not account for storms.

	Present	2030	2050	2070
MLLW	-1.7	-0.4	0.9	2.8
MLW	-1.6	-0.4	0.9	2.8
MTL	0.2	1.4	2.7	4.5
MHW	2	3.2	4.5	6.3
MHHW	2.3	3.4	4.7	6.5

***Projected Changes to Tidal Datum relative to NAVD88ft.**

Exhibit 3

Coastal Storm Projections

Figures show probability during a calendar year that storm surge will exceed the stated elevation. For example in 2030 there is a 1 % chance that storm surge will exceed 12 feet and the average storm (50% probability) will exceed 6.4 feet.

Probability of Exceedance Curve	Present Water Surface Elevation (ft NAVD88)	2030 Water Surface Elevation (ft NAVD88)	2050 Water Surface Elevation (ft NAVD88)	2070 Water Surface Elevation (ft-NAVD88)
0.1	13.5	14.9	17.9	20.5
0.2	12.7	14	16.9	19.4
0.5	11.6	12.9	15.5	17.9
1	10.7	12	14.4	16.8
2	9.9	11.1	13.4	15.6
5	8.7	10	12	14.1
10	7.8	9	10.8	13
20	6.9	8.1	9.6	11.7
25	6.5	7.7	9.2	11.2
30	6.2	7.4	8.8	10.8
50	5.2	6.4	7.6	9.5
100	2.9	4	4.8	6.6

Source: Fuss & O’Neill and Woods Hole Group, Mattapoissett Neck Road Resiliency Project, March 24, 2021 Stakeholder Briefing, page 15

Exhibit 4 Old Slough Road Elevation Profile



Exhibit 5
Photographs of Existing Conditions in May 2021, Old Slough Road
(Page 1 of 2)



Photo 1. North end of Old Slough Road, looking north to Bowman Road



Photo 2. Looking south from north end of Old Slough Road into MLT Santos Farm Preserve



Photo 3. Looking south at north side of Park property, Old Slough Road on right side

Exhibit 5
Photographs of Existing Conditions in May 2021, Old Slough Road
(Page 2 of 2)



Photo 4. Old Slough Road looking south, Park property fence on left

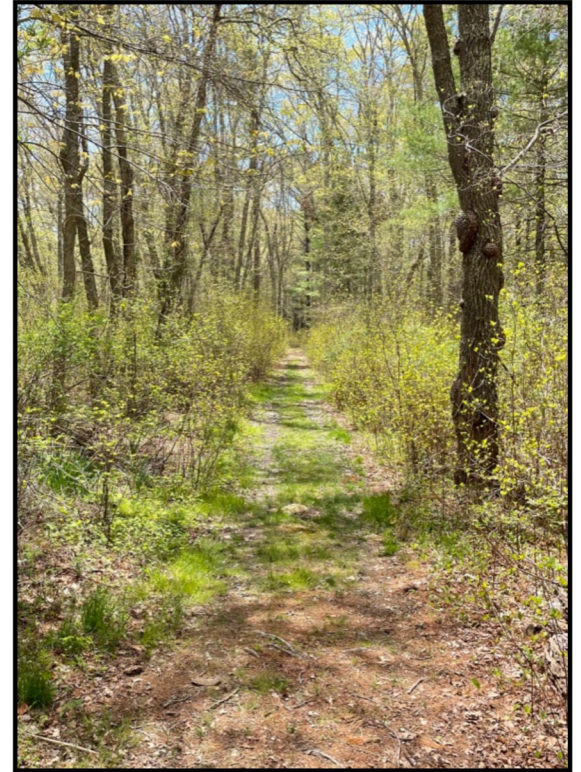


Photo 5. Old Slough Road looking south after Park property (Typical conditions)

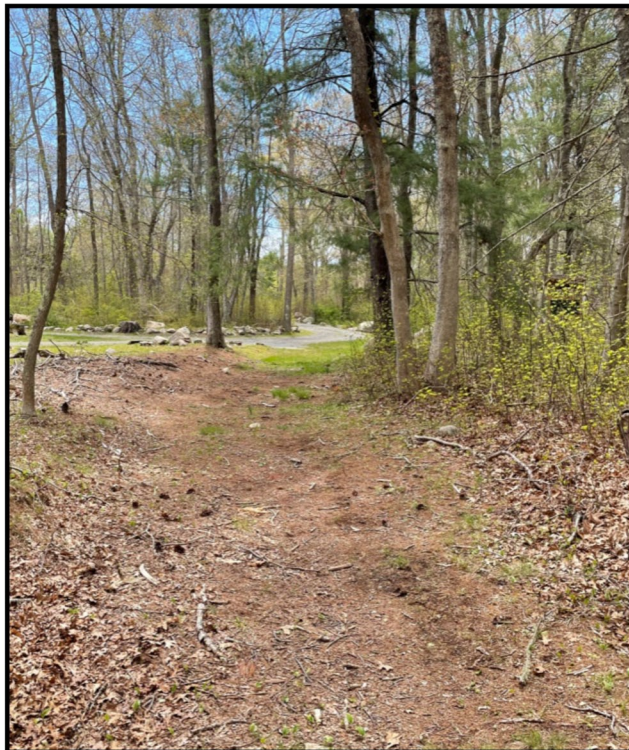


Photo 6. South end of Old Slough Road, looking south to north end of Town maintained section



Photo 7. Looking south to Angelica Avenue over Town-maintained southern section of Old Slough Road