

**COASTLINE DESIGN, P.C.  
P.O. BOX 157  
ACHILLES, VA. 23001**

**Proposal  
to develop a Shoreline Management Plan  
for  
*Neeld Estate Citizens Association (NECA)***

Plum Point, Calvert County, Maryland  
May 24, 2021

1.0 Introduction and Statement of Problem

Plum Point is located along the Chesapeake Bay in Calvert County, MD (Figure 1). The Plum Point and adjacent shorelines have gone through significant shoreline change over the years (Figure 2). The NECA shoreline extends from the south jetty (adjacent to the entrance inlet into Breezy Point marina) southward about 1,200 feet to approximately to the end of Bay Parkway. This project shoreline has evolved over the years from having a relatively wide beach 25 years ago to a narrow beach to no beach at all by 2020 resulting in extensive bulkheading and further beach width reduction.

With community concerns about the ongoing and chronic beach loss, an onsite meeting with the Shoreline Committee headed by Jon Norris was held on May 21, 2021. The result of the meeting was for Coastline Design PC to develop a proposal and Scope of Work for shoreline management along the NECA shoreline. The purpose of this proposal is to develop a plan to restore and maintain a protective and stable beach system using a combination of headland breakwater and sand nourishment as well as the potential use of dredge material from the adjacent channel. The impacts of sea level rise (SLR) and Coastal Resiliency will also be addressed.

2.0 Site Setting

The Plum Point coast is oriented roughly north south and a straight line fetch to the NNE of about 50 miles and a fetch to the ESE of about 75 miles. This impacts the impinging wind wave climate from strong NE storms with elevated storm surge will transport littoral (shorezone) sands southward. The longer wave period but less frequent SE wind driven waves will move sand north. The Maryland Department of Natural Resources (DNR) data base reports the net littoral drift (sand movement ) favors the SE but every NE storm can “counter act” that effect, at least temporarily.

In 1993 there was a wide beach from Bay Parkway northward about 800 feet where the beach narrowed almost up to the existing homes for the last 400 feet. (Figure 3). In 2007 the beach width varies from 40 -50 ft from the homes to the shoreline (Figure 4). In 2010, the north half homes began installing a bulkhead beginning with the fender pilings as seen in Figure 5. The finished bulkhead in 2012 extended from the south channel jetty about 600 feet southward along the coast except for a 35 foot opening to the beach at the end of Ridge Avenue (Figure 6). There was still a beach in front of the bulkhead. By 2020 the beach continued to narrow along shoreline with only a low tide beach along the bulkhead (Figure 7). The project shoreline today is experiencing southward migrating bank erosion and property owners have installed sand bags to abate the problem (Figure 8 and 9).

The tide range at Plum Point is 1.4 feet. According to FEMA (2014), the storm surge levels for the 10 yr, 50 yr and 100 yr storm events are 4.1 ft, 4.5 ft and 4.7 ft above mean low water (MLW). For planning purposes, we should use the 50 yr. water level. Also, according to MD DNR, a 1.3 foot rise in sea level by 2050 can be expected which we will address in the plan.

### 3.0 Recommendation

If the current erosional trend continues the sand bagged portion may become hardened with the remaining coast following suit. To re-establish a wide, protective and stable beach front along the project shoreline, a series of headland breakwaters with sand nourishment and dune grass plantings is recommended (Figure 10). This might be similar in size and scope as the headland breakwater system along the Breezy Point Marina shoreline. However, the NECA project will be a balance between the effects of the existing hardened and non-hardened shoreline segments, level of protection and costs. Phasing scenarios will also be provided. Project costs per linear foot of shoreline may range from \$1,000 to \$1,300 per foot. These are not atypical for Bay front shoreline projects and will be dependent on the site survey. Water depths along with design lengths, widths and elevations of the structures and sand nourishment will determine quantities of rock and sand required.

### 4.0 Costs

In order to address the project goals Coastline Design, PC proposes the following:

Task 1: Site Survey and site assessment:	\$9,050
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Survey will be in Maryland State Plane horizontal coordinate system with vertical control relative to mean low water (MLW). The nearshore stability will be assessed with a combination of short cores, augers and probes.

Task 2: Preliminary Shoreline Plan (CAD) and cost estimate: 7,400

The plan will include a site presentation and input from the shoreline committee.

Task 3: Pre-final plans and specifications.

Prepare Joint Permit application (JPA) for submission and act as agent: 8,750\*

This phase will include a pre-application site visit with MDE and the Corps

Task 4: Prepare final plans, specifications, cost estimate and acquire local permits, including Critical Areas and Erosion And Sediment Control 7,125

Task 5: Permit Fees (if applicable) 2,000

Travel 406

**Total \$34,731**

\*If the project is not considered a Living Shoreline there may be a \$1,500 permit fee. Local permit fees may be as much as \$500. Therefore, an additional \$2000 should be budgeted for these.

A tentative timeline follows from a Notice to Proceed:

Task 1: 45 days

Task 2: 30 days

Task 3: 270 days (permit process includes MDE, BPW and Corps). Permits include:

Maryland Dept of Environment (MDE): Water Quality Certification

Maryland Board of Public Works (BPW): Wetlands License

U.S. Army Corps of Engineers (Corps): Department of the Army Permit

Task 4: 45 days after receipt of state and federal permits from Task 3.

Invoicing will be done by percentage of each task performed as agreed upon by:



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C. Scott Hardaway, Jr.  
President  
Coastline Design PC

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Jon Norris  
Chairman NECA Shore Committee

If requested Coastline Design PC will assist on the construction phase.

Task 5: Construction Management, includes bid package and weekly project Inspection during construction:	\$20,000
Task 6: Perform an as-built survey and report	\$4,500

References

FEMA, 2014. Calvert County Maryland, Flood Insurance Study.

Maryland DNR, 2017. Littoral Drift Maps. GIS online database.

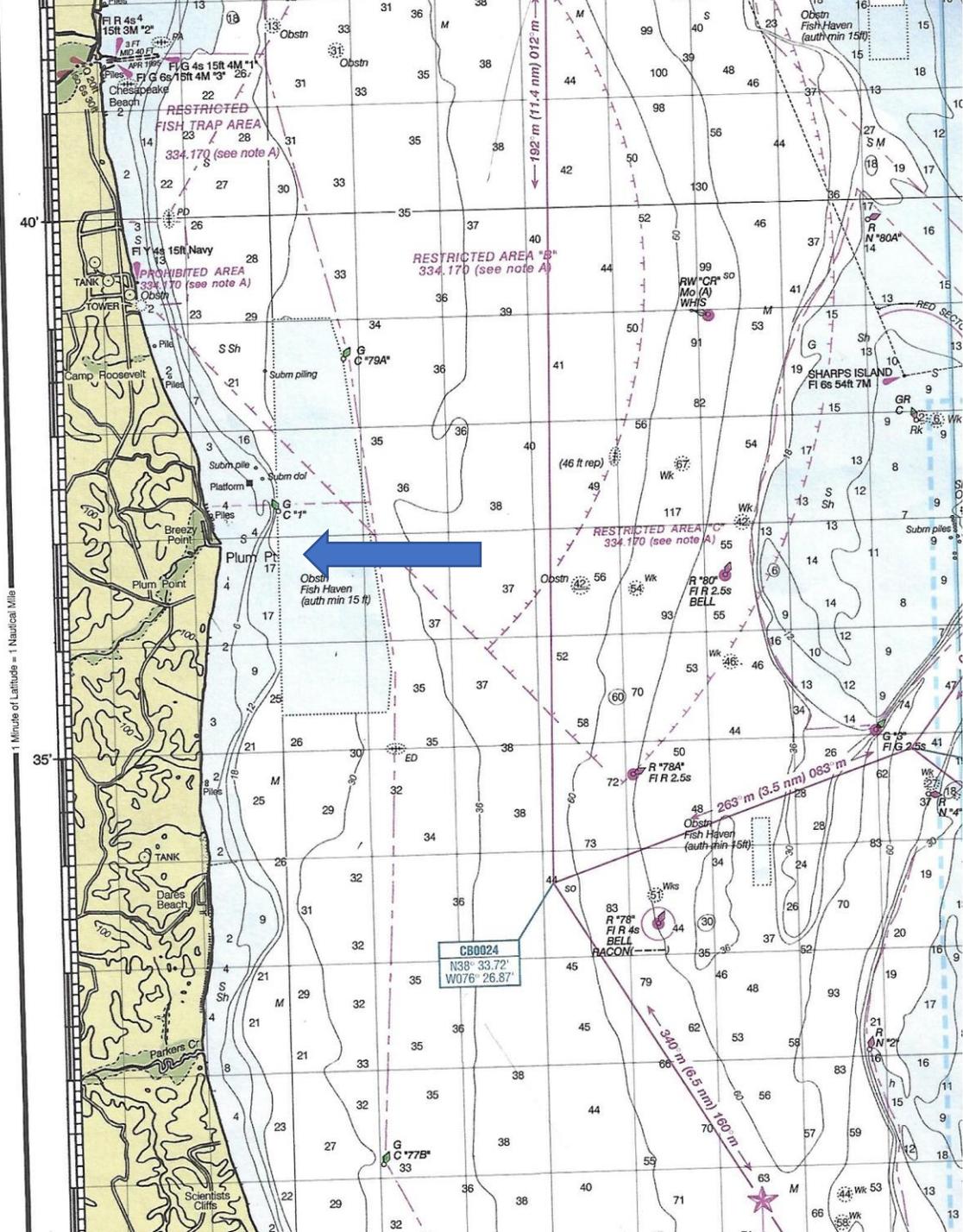
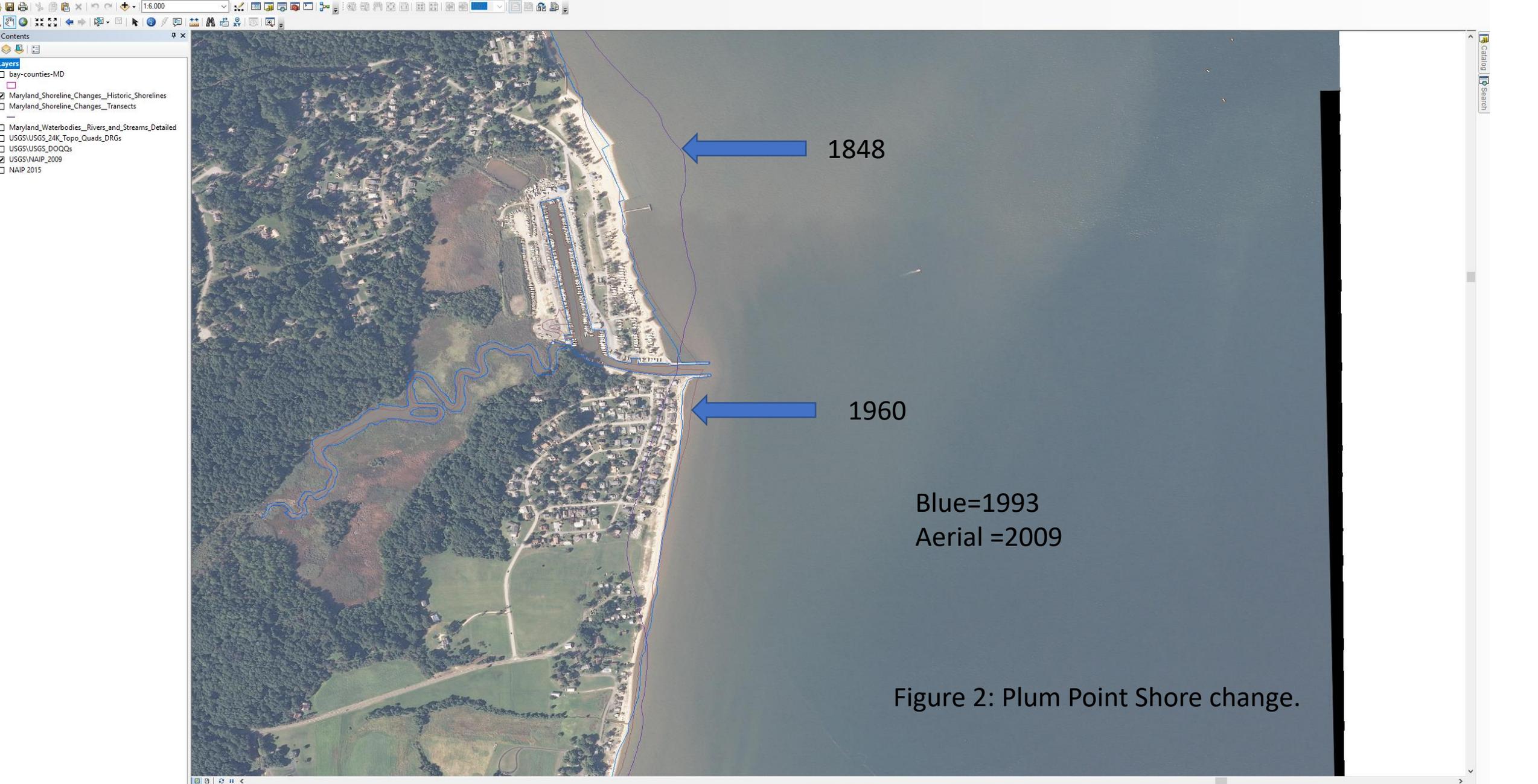


Figure 1: Plum Point and adjacent Bathymetry.



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Figure 2: Plum Point Shore change.

Drive, Huntingtown, MD

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317 Beach Dr

by Places

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Drum Point apex 1993

Park Entrance

Drum Point Property Owners Assoc. Beach

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Temporary Places

Primary Database

Announcements

Borders and Labels

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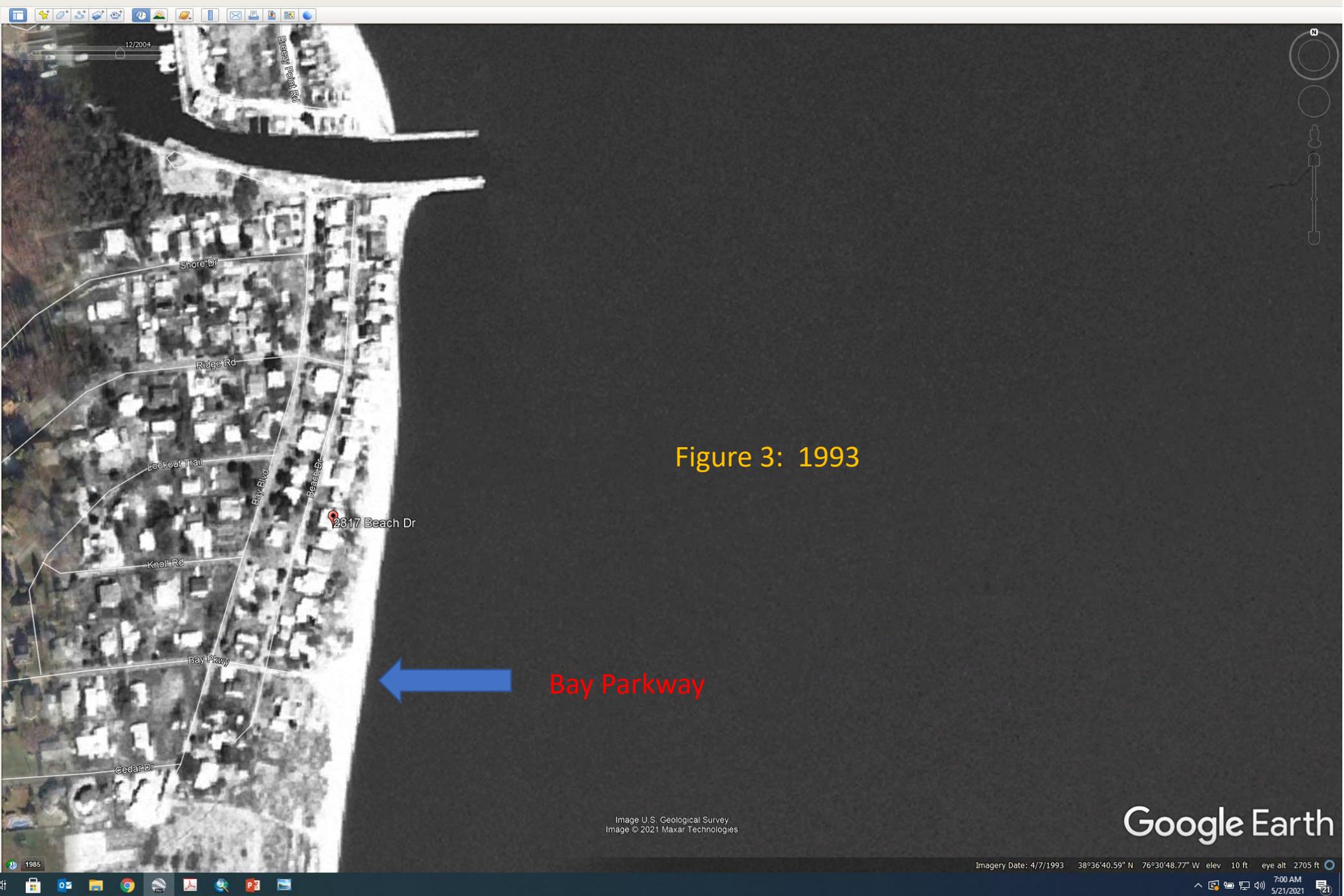


Figure 3: 1993

Bay Parkway

Google Earth

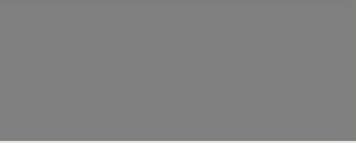
Imagery Date: 4/7/1993 38°36'40.59" N 76°30'48.77" W elev 10 ft eye alt 2705 ft

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Figure 4: 2007

Image USDA Farm Service Agency  
Image U.S. Geological Survey

Google Earth

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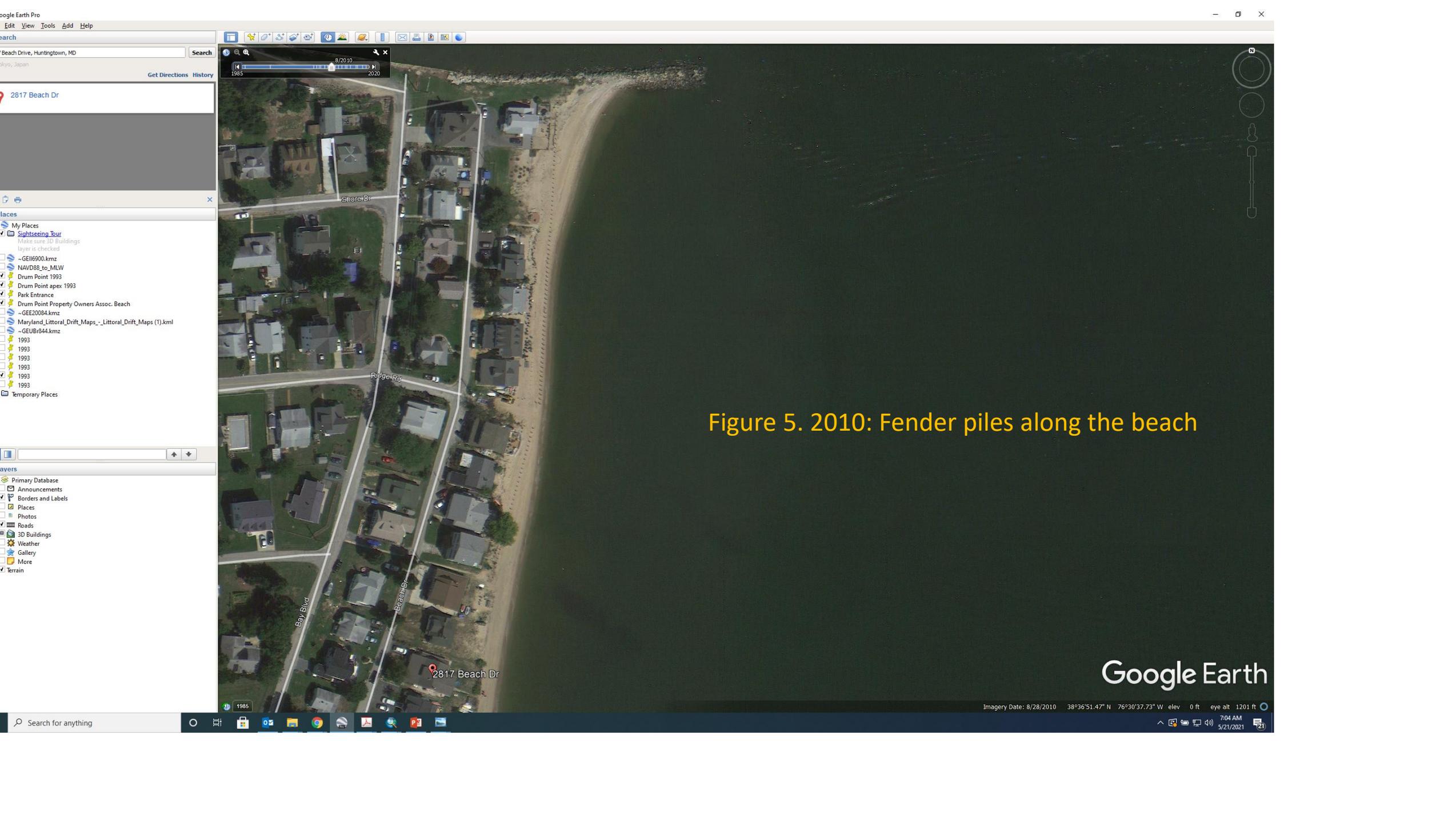


Figure 5. 2010: Fender piles along the beach

Google Earth



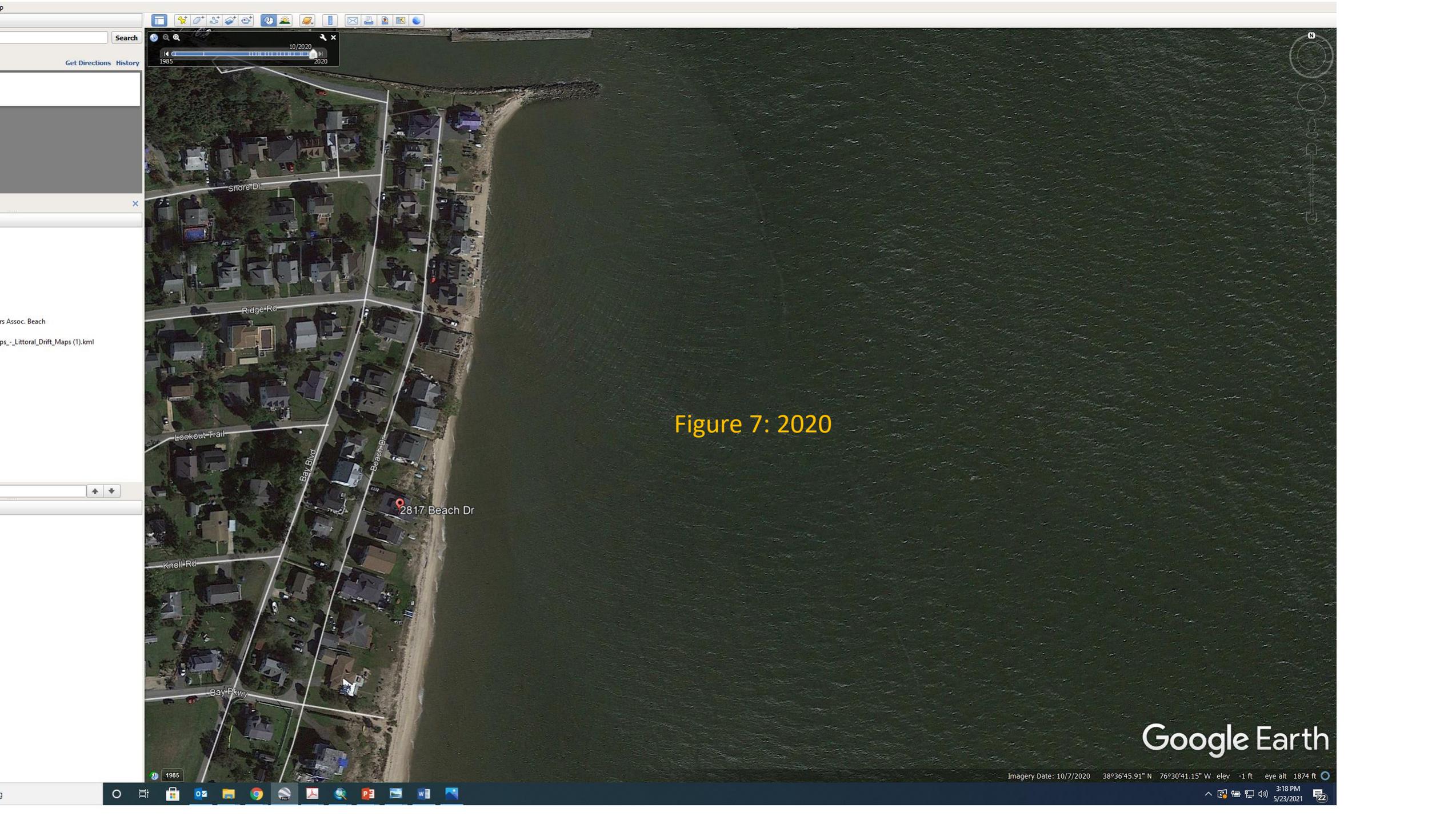


Figure 7: 2020

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Figure 8: Looking north from the meeting house shore. Beach meeting took place on May 21, 2021.

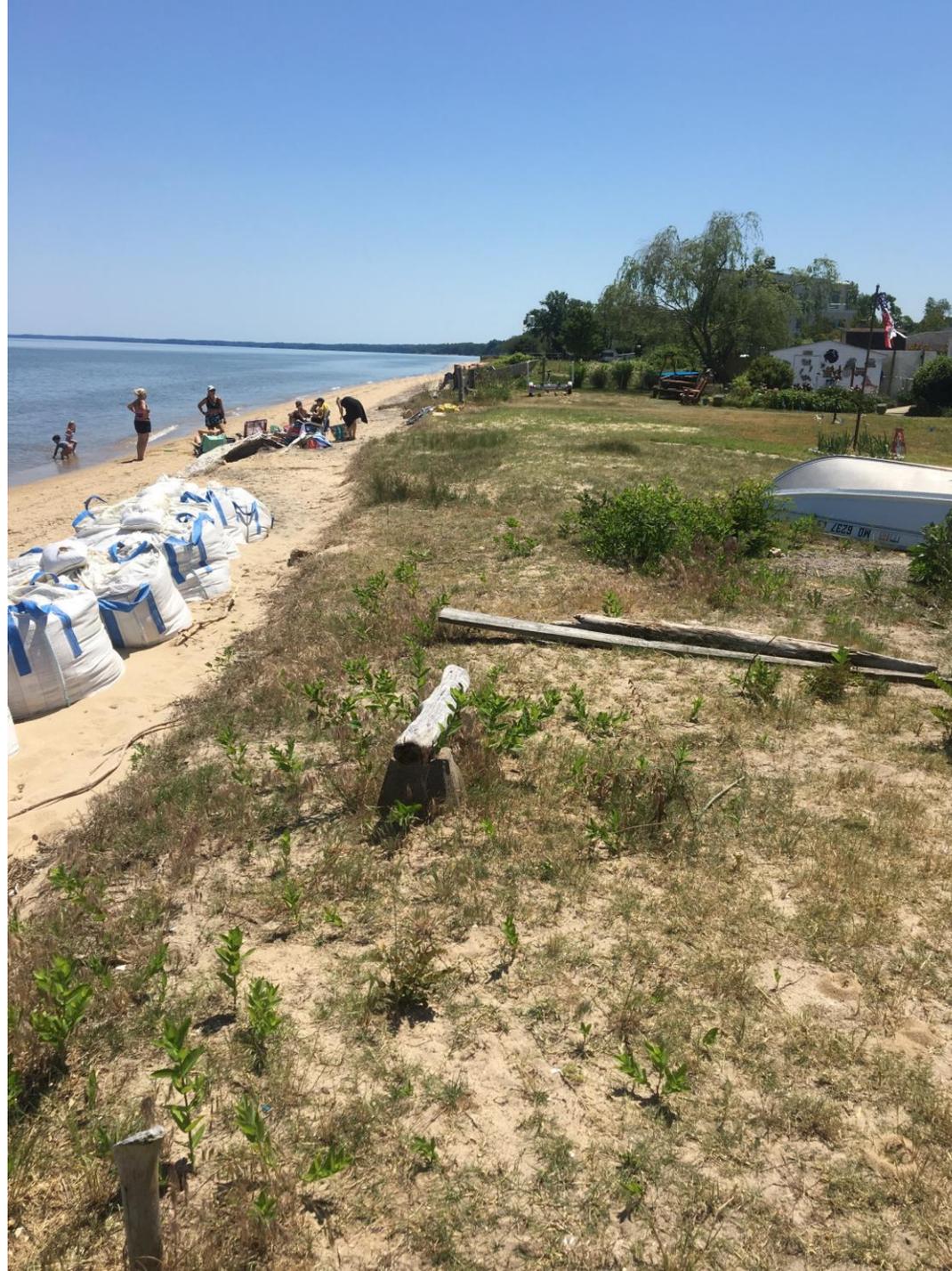


Figure 9: Looking south from the meeting house shore. Beach meeting took place on May 21, 2021



Figure 10: Plum Point Concept sketch with a 100 ft spur and 3-200 ft headland breakwaters with sand nourishment .

Dune grass will be planted along the backshore and behind each structure. Maybe opportunity for low marsh too in lee of breakwater units.