From:	Dickson, Stephen M.
To:	Jon Carter
Cc:	Slovinsky, Peter A; John.W.Cannon@noaa.gov; Emily@wellsnerr.org; Marvinney, Robert G.
Subject:	RE: Wells Beaches
Date:	Wednesday, March 28, 2018 10:33:04 AM
Attachments:	WE02_Dec17-Mar18.png WE03_Oct17-Mar18.png WE02_2007vs2018.png WE03_2007vs2018.png 2018-02-28_03-05_WellsStormTide.PNG

Hi Jon,

I have been keeping track of Wells Beach via our citizen volunteers that measure beach profiles once a month. They send photos and measure the beach elevations near Casino Point (WE02) and south of the south jetty (WE03) and at Laudholm Beach. Attached are some graphs showing the height of the beach. Thanks to collaboration and coordination with John Cannon at the National Weather Service in Gray, some of the teams are measuring before and after major storms if they can muster a team. The attached pictures tell the story and are summarized below.

WE02_Dec17-Mar18.png shows the lowering and erosion in the last three months just north of the Casino Point parking lot and observation area. The biggest drop in the beach elevation occurred in the first week of March with the destructive combination of (a) large tides, (b) big surf, and (c) a storm surge of 2 or so feet for several days (**WellsStormTide** graph attached; purple line is the surge; red line is the storm tide - actual level in Wells Harbor) and multiple high tides that topped flood stage.

WE03_Oct17-Mar18.png shows a more progressive lowering of the beach from Halloween to earlier this month. The more abundant sand at this location allows some sand recovery between storms. Nevertheless, the lowering is most acute after the early March 2018 storm.

WE02_2007vs2018.png and **WE03_2007vs2008.png** show a comparison of beach levels just after the 2007 Patriots' Day Storm and the early March 2018 storm. At WE02, the levels are very similar. At WE03, the upper beach and dune fared better in 2018 than in 2007. This is likely due to more sand in that area than a decade ago (sand moves north along the beach on average) as well as the dune absorbing the surf and depositing sand on the frontal dune ridge to build it higher.

As Pete Slovinsky and I have published in our ***State of Maine's Beaches*** series, that it took up to two years for sand to fully return after the Patriots' Day Storm on many of Maine's beaches. Deep erosion also occurred over the winter of 2009-2010 when sea level was, on average over the winter, 6 to 12 inches higher than normal and there were back-to-back northeasters, much like this month. Lower average winter sea levels in subsequent years allowed the beach sand to return. In the last few weeks, we have seen some sand already moving back up the profiles from York to Scarborough. Storm season is not over yet (after all, the Patriots' Day Storm was mid-April) so there may be some low profiles for a few more months.

Based on our data and past trends, I do anticipate the beaches will be recovering naturally this spring and through the entire summer. The summer recreational beach may not be quite as wide as

last year, but sand should be coming in to help cover some of the gravel and cobbles exposed now.

Our past *State of Maine's Beaches* reports are available on our web site and illustrate the physical locations of WE03 and WE02, among others. Our 2009 report discusses recovery after the Patriots' Day Storm. The 2011 report also discusses the Patriots' Day Storm as well as damaging northeasters in 2010. The 2013 report does indicate recovery after winter erosion has not done as well recently as it had in the past, so that adds a little caveat to the anticipated recovery going forward from today. The 2015 report discusses the abrupt sea level rise of 2009-2010. The 2017 report shows the most recent trends.

With my more than 30 years of experience, I can say this has been a record for severe beach and dune erosion that has rivaled any year. Wells is not alone in this condition. All of Maine's beaches took an enormous hit in the last month.

Let us know if we can provide more information going forward. We are very grateful for community support for the State of Maine's Beach Profiling Program and the year-round field effort of citizens. As we go forward, the continued monitoring of our beaches is critical to provide a scientific context for their management.

Regards,
Steve

Stephen M. Dickson, Ph.D.
Marine Geologist
Maine Geological Survey, DACF
93 State House Station
Augusta, ME 04333-0093
207-287-7174
http://www.maine.gov/dacf/mgs/

From: Jon Carter [mailto:jcarter@wellstown.org]
Sent: Wednesday, March 28, 2018 9:02 AM
To: Dickson, Stephen M. <Stephen.M.Dickson@maine.gov>
Subject: Wells Beaches

Hi Steve: The recent storms have set us back with eroded Wells beaches that are now stone covered. Have you or others been down to take a look at them by any chance? I would like to know your thinking on them and thoughts about the spring sand restoration potential from the tides.
Thank you
Jon

Jonathan Carter
Wells Town Manager