Series of Aerial Photos of the Breach at Old Inlet

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Below are a series of aerial photographs that show the evolution of the breach at Old Inlet from shortly after its inception during super storm Sandy on October 29, 2012, to the latest photos taken January 6, 2013. For orientation, the first photo taken in April 2005 shows the configuration of the Old Inlet area prior to the breach. In the right-center of the picture, the Old Inlet dock and board walk across the island are visible as is a small embayment that had historically been used to tie up a ferry to bring people to the old beach clubs that were in that area. The inlet formed in area of the embayment and took out the entire boardwalk and part of the dock.

Figure 1. Aerial photo of the Old Inlet area taken by C. Flagg in April 2005.

January 7, 2013

November 3, 2012. The two photos below were taken on November 3, 2012 near 12:30 GMT, five days after the breach was formed. These are close up shots from the south and southwest of the new inlet in which you can see the breach, the Old Inlet dock that is no longer attached to the island, Pelican Island in the background, and several new sand islands to the north and west. All the photos were taken during flood tide. The new channel swept in from the east and hugs the east side of the breach before most of the flow turns west, south of the new sand islands.

Figure 2a. Aerial photo taken by C. Flagg and R. Giannotti on Nov. 3, 2012, from the south of the breach.

Figure 2b. Aerial photo taken by C. Flagg and R. Giannotti on Nov. 3, 2012, from the southwest of the breach.

The last in this series of November 3 photos was taken from nearly directly overhead and clearly shows the relationship between the breach channel and the familiar landmark of the dock.

Figure 2c. Aerial photo taken by C. Flagg and R. Giannotti on November 3, 2012, from the west of the breach.

November 11, 2012. A series of aerial photos, Figure 3, were taken a week later on November 11, 2012 around 1400 GMT, after a nor'easter passed through the area on November 7 and 8. There were substantial changes to both the main channel through Fire Island and the sand islands in the bay. The initial cut through the island had been fairly straight with the deepest part along the eastern edge. As a result of natural adjustment but probably mostly as a result of the nor'easter, the channel now has a decided offset to the west between the ocean and bay ends of the channel. The offset appears confined to the bay end of the channel while the ocean end does not seem to have moved. Also there is less evidence of a single deep channel.

The most visible changes to the breach occurred in the sand islands that had been formed by dune sands carried into the bay. Right after Sandy, the sand islands were north of Fire Island and west of the inlet with channels between the sand islands, Fire Island and Pelican Island. After the nor-easter the connection with the bay, which had been to the west just north of Fire Island, had completely switched directions and now makes a connection to the old Old Inlet channel to the east. passing under and through the dock as shown in the last photo below. As part of this change was the build-up of what appears to be a fairly high sand island that all but connects Fire Island to Pelican Island with a small channel that passes under the Pelican Island dock. This change in flow pattern now connects the inlet to the rest of Great South Bay through a deeper channel with greater conveyance and that may extend the natural lifetime of the inlet.

Figure 3. Aerial photo taken by C. Flagg and R. Giannotti on November 11, 2013.

November 18, 2012. A follow-on set of photos, Figure 4, were taken on Sunday November 18th between 1700 and 1800 GMT. The November 18th photos show that the original channel to the west, just north of Fire Island, had been re-established although much of the sand bar to Pelican Island remained. The western edge of the inlet near the ocean has eroded to the point that the offset on November 11th had disappeared and the ebb-tidal delta clearly exhibits east and west channels connecting the inlet to the ocean.

Figure 4. Aerial photo taken by R. Weissmann and R. Giannotti on November 18, 2013.

December 20, 2012. The next set of photos were taken a month later on December 20, 2012 between 1620 and 1700 GMT. Meteorologically, not much had happened between the November 18 and December 20 photos, so there was a more gradual evolution of the inlet as shown by a comparison between Figures 4 and 5. The most notable change was the disappearance of the sand island south of Pelican Island, and the channel to the west, which had been along the north shore of Fire Island, moved north closer to Pelican Island. There also were changes to the inlet. The eastern side of the inlet had migrated somewhat to the west. A bit of a bar had formed off the east side shown by the breaking waves. And the low sand beach along the western side had eroded away. The ebb shoal delta again visible in the area of breaking waves and the east and west channels are also evident.

Figure 5. Aerial photo taken by M. Ferrigno and R. Giannotti on December 20, 2012.

December 22, 2012 – January 6, 2013. In late December, there were a couple of storms that have again altered the configuration of the inlet at both the ocean and bay ends. On December 22 and 23. there was a sustained period of high westerly winds, which caused a significant water level rise in Bellport Bay. This event was followed a few days later by the passage of a nor'easter on December 27, which caused a second period of high water level. The combination of these storms have resulted in quite noticeable changes in the configuration of the inlet and the back bay channels, as shown by photos taken on January 6, 2013 around 2000 GMT, shown in Figure 6.

Figure 6. Aerial photo taken by J. Flagg and C. Flagg on January 6, 2013.

Along the ocean beach to the east of the inlet, an offshore bar formed that moved onshore creating a series of ridges and runnels that eventually connected to the ebb shoal. The ridge/runnel system extended all along the beach to the east, and so was not particularly associated with the inlet morphological dynamics. However, as the offshore bar moved onto the beach, it cut off the east channel and forced all the tidal flow to use the west channel, which caused it to enlarge and move into the center of the inlet. As part of that process, it appears that the ebb shoal delta has eroded away. At the same time, there was significant deposition along the eastern edge of the inlet especially at the northern end. Along the western edge of the inlet, there has been considerable erosion with the shoreline moving up to the scrub line.

In the back bay area, a substantial sand island has formed causing the formation of two channels to the west, one along the west side of Pelican Island and second one just north 0f Fire Island.

The clarity of the water made the underwater shoaling to the north of the inlet visible in a couple of the photos taken on January 6th and two of these photos are shown in Figure 7. The sand island and shoaling that extends off to the northwest of the inlet is at least 0.5 km long, while the shoals to the east of Pelican Island extend about 0.6 km from the inlet.

Figure 7a. Aerial photo of the inlet from the northwest showing the extended sand island and shoals to the west of the inlet. Photo taken by J. Flagg and C. Flagg on Jan. 6, 2013.

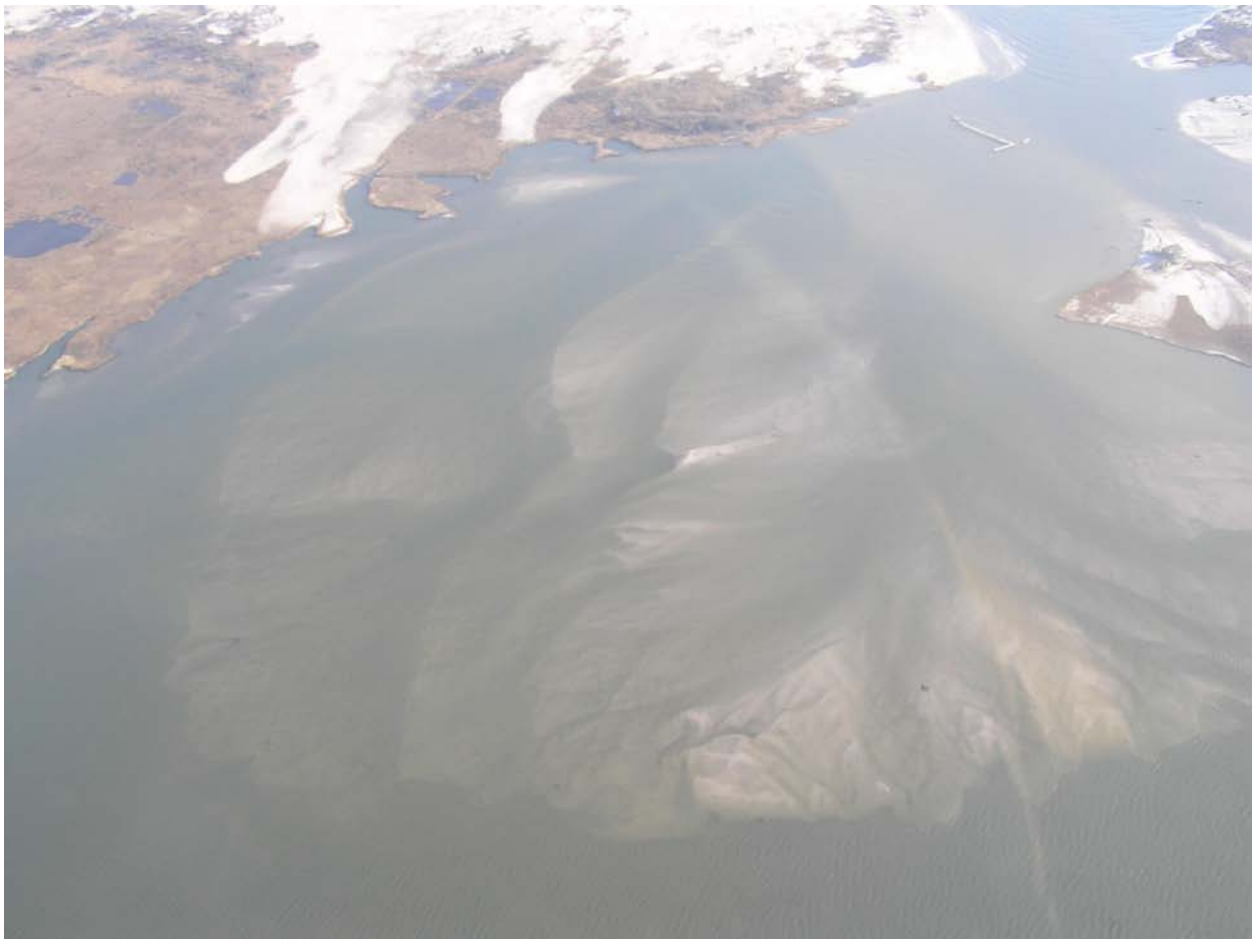

Figure 7b. Aerial photo of shoals to the northeast of the inlet. Photo taken by J. Flagg and C. Flagg on January 6, 2013.