2018 Isle of Palms Restoration Project
Year 8 Monitoring Report

2026
MONITORING REPORT



Prepared for

City of Isle of Palms
Isle of Palms, South Carolina

COASTAL SCIENCE & ENGINEERING

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2018 Isle of Palms Restoration Project
Annual Beach and Inshore Surveys

Year 8 (2026) Monitoring Report

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EXECUTIVE SUMMARY

This report is provided to the City of Isle of Palms as part of semi-annual beach monitoring efforts. It focuses on changes in beach condition between February 2026 and June 2026 and briefly discusses volume changes relative to the 2018 post-project condition. The June 2026 survey reoccupied the same beach profile locations as prior surveys and included data collection over the deltas of Dewees and Breach Inlets. This survey also serves as the pre-construction survey for the upcoming nourishment project, establishing the beach's pre-project condition to document project performance and potential FEMA assistance claims.

Figure A shows the survey baseline and boundaries for reaches defined in earlier reports. Note that the monitoring reaches differ from the reaches identified in construction documents for the upcoming beach nourishment project. CSE recently subdivided Reaches 5 and 6 to provide more localized information on beach conditions along the dynamic northeastern end of the island.

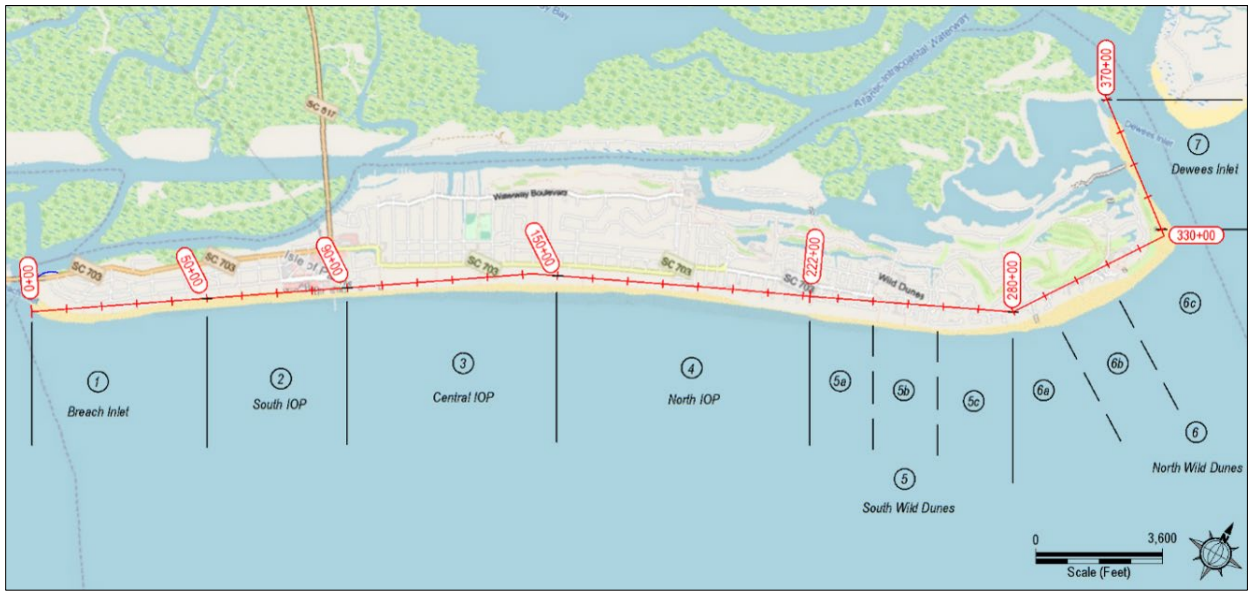


FIGURE A. Isle of Palm survey reference line and monitoring reaches.

The two main factors controlling beach volume change from February 2026 to June 2026 were accretion in Reaches 1 and 2, and onshore migration and spreading of shoal sand along the Wild Dunes area. Both events have led to net volume gains along the beach, despite the presence of erosional areas. Overall, the island gained 229,675 cubic yards (cy) in the past year, with 187,400 cy accreted from August 2025 to February 2026 and 42,075 cy of sand was gained between February 2026 and June 2026.

Volume gains were highest along the south end, in Reaches 1 and 2. The area south of the pier gained 317,725 cy in the past year, with 152,875 cy of that total being gained over the past four months (Table A, Figures B-D). Much of the accretion in the first part of the survey period can be attributed to the

gains from the USACE beneficial use project. At the time of the February 2026 survey, Cottrell was in the process of placing up to 200,000 cy of sand in the vicinity of 6th and 7th Avenues (B. Kyzar – USACE). A portion of this volume is captured in the August 2025 to February 2026 monitoring data, while the remainder is in the February to June 2026 window. Note that some of the total volume pumped by Cottrell was lost from the system during placement, as was observed during the work by Athena. Some of the gains, especially in the north end of Reach 2, can be attributed to a down-drift movement of sand from the center of the island. Sand moving into the area from the north originated from the 2018 nourishment project and has now reached the southern end of the island.

Most stations south of Station 65+00 (Access 9) experienced substantial growth of the dry sand beach. The average movement of the dry sand beach (4.5-ft contour) at the south end was around 26.8 feet, with the largest gain close to 105.3 feet (Figure E). This is largely because sand from Reaches 3 and 4 continued to move farther south down the island. It is also partly due to the seasonal transition from a winter to a summer beach profile: as the beach shifts from winter to summer conditions, the offshore bar moves closer to shore and can widen the dry sand beach. Some gains in the dry sand beach are also attributable to continued movement of sand higher in the beach profile from sand placed below the low-tide line in the USACE project.

While some of this growth reflects natural seasonal variation, the significant volume increase points to genuine beach recovery. Reaches 1 and 2 experienced uncharacteristic erosion from 2021 to 2024, and CSE anticipated that the USACE disposal project, combined with sediment movement through the littoral system from upcoast, would eventually lead to some level of recovery. The beach currently holds as much sand volume as it did in June 2019, and the position of the high tide line is at or near its most seaward position documented since 2009 between 2nd Ave and the Pier.

The central portion of the island continues to experience migrating waves of accretion and erosion that are moving through the area. The waves can span a few thousand feet and result in individual station volume changes that vary alongshore. The waves are associated with sand availability from upcoast, as sand is either trapped by approaching shoals or released by nourishment or shoals after attachment. CSE has been able to track “packages” of sand that move alongshore (generally south) from the northeast end of the island. In fact, the sand wave currently moving through the pier appears to have originated from the 2018 nourishment project at the northeast end of the island.

Overall, Reach 3 gained 1,750 cy in the past year, but erosion has increased over the past four months due to the disruption in the upcoast sand supply. Reach 4 lost a total of ~62,100 cy from August 2025 to June 2026. Erosion has increased recently due to the lack of sand supply from farther north, as sand supply from Reach 5 has been reduced in recent years. CSE expects that directly following the completion of the 2026 nourishment project, sand supply to Reach 4 will increase, resulting in a new accretional wave that propagates south.

Reaches 5 and 6 span the most dynamic, highly developed shoreline in South Carolina. The current shoal attachment event is toward the end of its cycle but is still bringing sand to the center portions of Wild Dunes. Sand has started to spread along other areas of the reaches, slowing some of the erosion rates present in recent years. Individual stations immediately adjacent to the attachment site are gaining substantial amounts of sand, with unit volume change ranging from –60.9 cy/ft (cubic yards per foot) to +73.7 cy/ft in the past year. Accretion is occurring along Beachwood East and Dunecrest Ln, and Mariner's Walk to Summer Dunes Ln as the shoal attachment is welded to the shore and starting to spread alongshore.

The area fronting the Grand Pavilion continues to lose sand, as the erosional trend that affected Beachwood East in recent years has shifted to the southwest. CSE expects erosion to continue between 5th Ave and the Grand Pavilion; however, nourishment will mask the underlying erosional trend. Near Seascape and Ocean Club, erosion has slowed in the second half of the year; however, the erosion in past years has left this area particularly vulnerable. The dry sand beach is completely eroded fronting Ocean Club, allowing water to run under the structure.

Overall, Reaches 5 and 6 show a net loss of approximately –64,325 cy over the year, with most of those losses occurring in the past four months (approximately –48,150 cy) and occurring near the north and south ends of Wild Dunes. The shoal is almost completely attached to the beach as of July 2026. While erosion has slowed in Reaches 5 and 6 as sand spreads alongshore, areas away from the attachment site are likely to continue eroding until the upcoming nourishment project is completed.

At the time of this report, Marinex Construction has initiated placement of 2.5 million cy of sand along the northern and southern ends of the island. Approximately 1.7 million cy will be placed along the Wild Dunes area, and 800,000 cy along the area south of the pier. By the end of the project, the island will contain around 1.55 million cubic yards (mcy) more sand than has been present in any survey conducted by CSE.

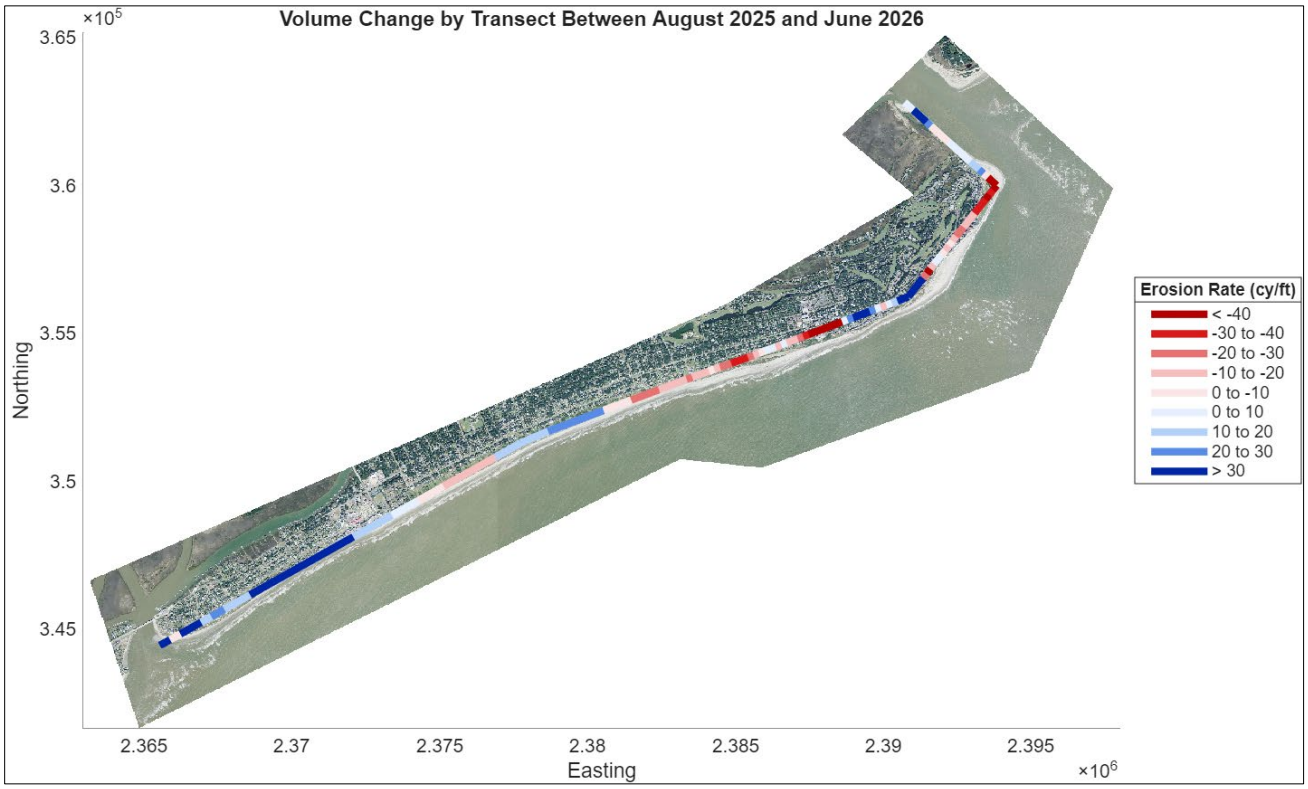


FIGURE B. Image showing the volume change by station for the year. Accretion (blue) is mostly seen at the south end of the island, where the USACE project and downdrift sand movement have built up the beach. Pockets also occur near the shoal attachment areas. Erosion (Red) is shown in some erosion hotspots in Reaches 5 and 6.

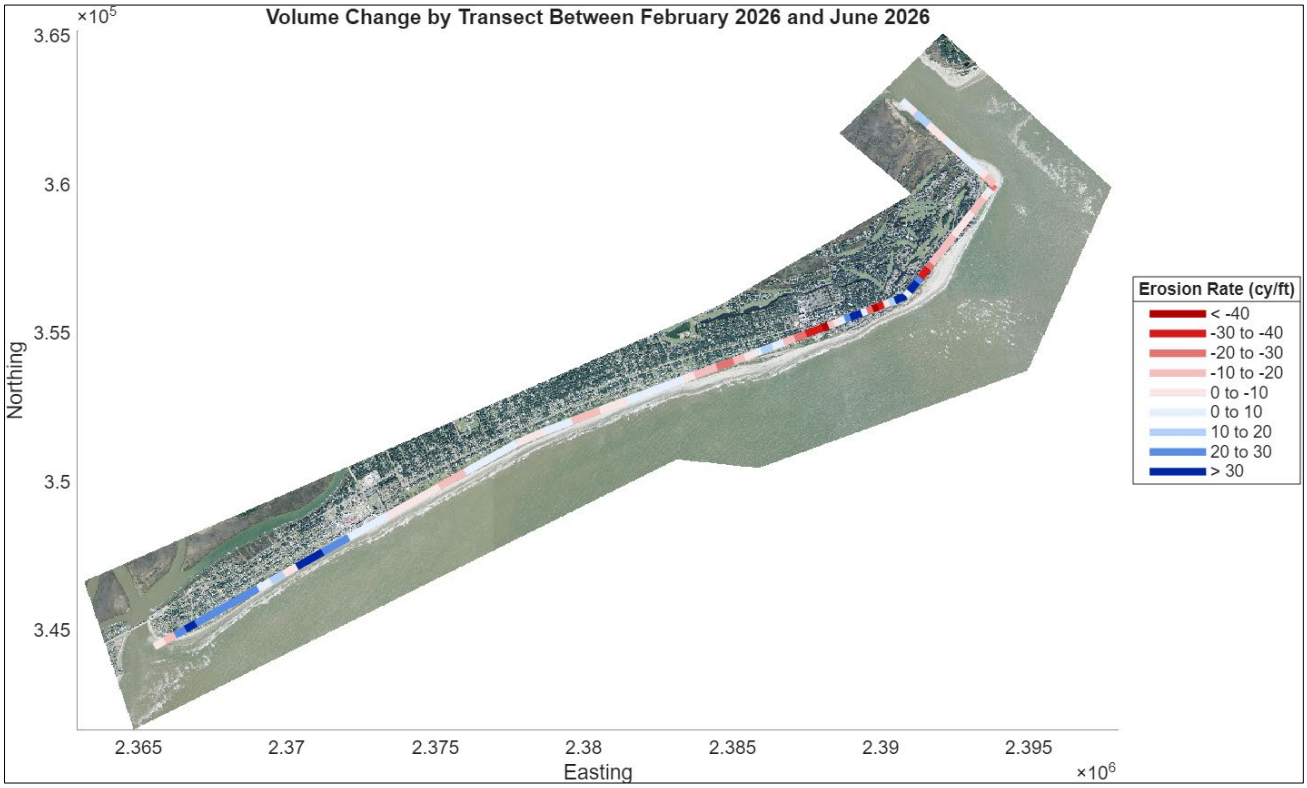
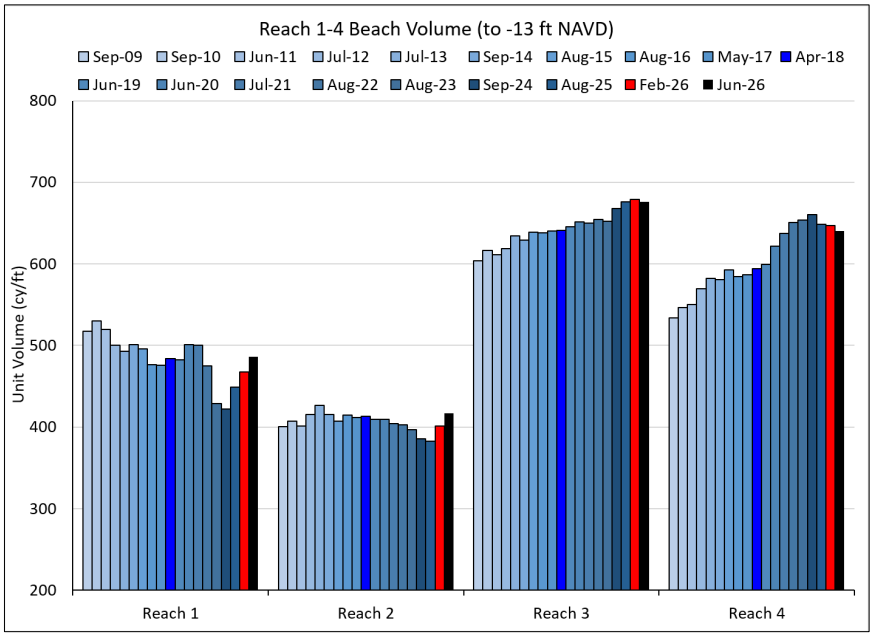


FIGURE C. Image showing the volume change by station from February 2026 to June 2026. Accretion (blue) is mostly seen at the south end of the island, where downdrift sand movement has built up the beach. Pockets also occur near the shoal attachment areas. Erosion (Red) is shown in some erosion hotspots in Reaches 5 and 6; note the decreased erosion on the northeast side of the island compared to Figure B.

TABLE A. Beach condition change from 2025–2026 for each monitoring reach.

	Shoreline Contour Change (ft)			Unit Volume Change (cy/ft)			Total Volume Change (cy)		
	Aug 25 to Feb 26	Feb 26 to Jun 26	Aug 25 to Jun 26	Aug 25 to Feb 26	Feb 26 to Jun 26	Aug 25 to Jun 26	Aug 25 to Feb 26	Feb 26 to Jun 26	Aug 25 to Jun 26
Reach 1	45.5	34.6	80.0	18.3	18.7	37.0	82,217	84,110	166,327
Reach 2	70.0	17.2	87.1	18.4	15.3	33.6	82,631	68,765	151,396
Reach 3	-2.1	-4.4	-6.5	3.6	-3.3	0.3	21,716	-19,960	1,756
Reach 4	-14.7	-10.5	-25.2	-1.3	-7.3	-8.6	-9,396	-52,703	-62,099
Reach 5a	-15.8	17.3	1.5	-6.2	-3.3	-9.5	-12,382	-6,629	-19,011
Reach 5b	-6.4	-34.8	-41.2	-33.3	-24.1	-57.4	-46,614	-33,751	-80,365
Reach 5c	30.3	20.0	50.3	26.3	15.8	42.2	63,150	38,038	101,188
Reach 6a	52.7	111.2	163.9	20.8	2.7	23.6	25,015	3,300	28,315
Reach 6b	5.6	-20.1	-14.5	4.7	-14.2	-9.6	8,409	-25,625	-17,216
Reach 6c	-44.9	-12.0	-56.9	-26.9	-11.7	-38.6	-53,745	-23,483	-77,228
Reach 7	-5.1	-4.4	-9.5	6.6	2.5	9.1	26,391	10,012	36,403



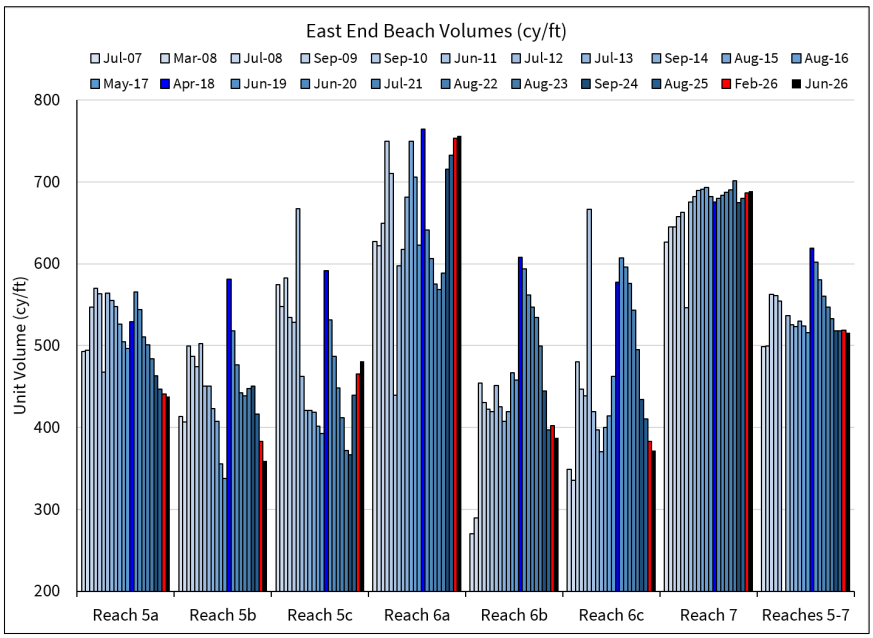


FIGURE D. Total beach volumes (unit-length basis – cubic yards per foot) for the monitoring reaches between 2007 and 2026 (note: surveys were not available for Reaches 1–4 until 2009). July 2008 and April 2018 represent post-nourishment conditions.

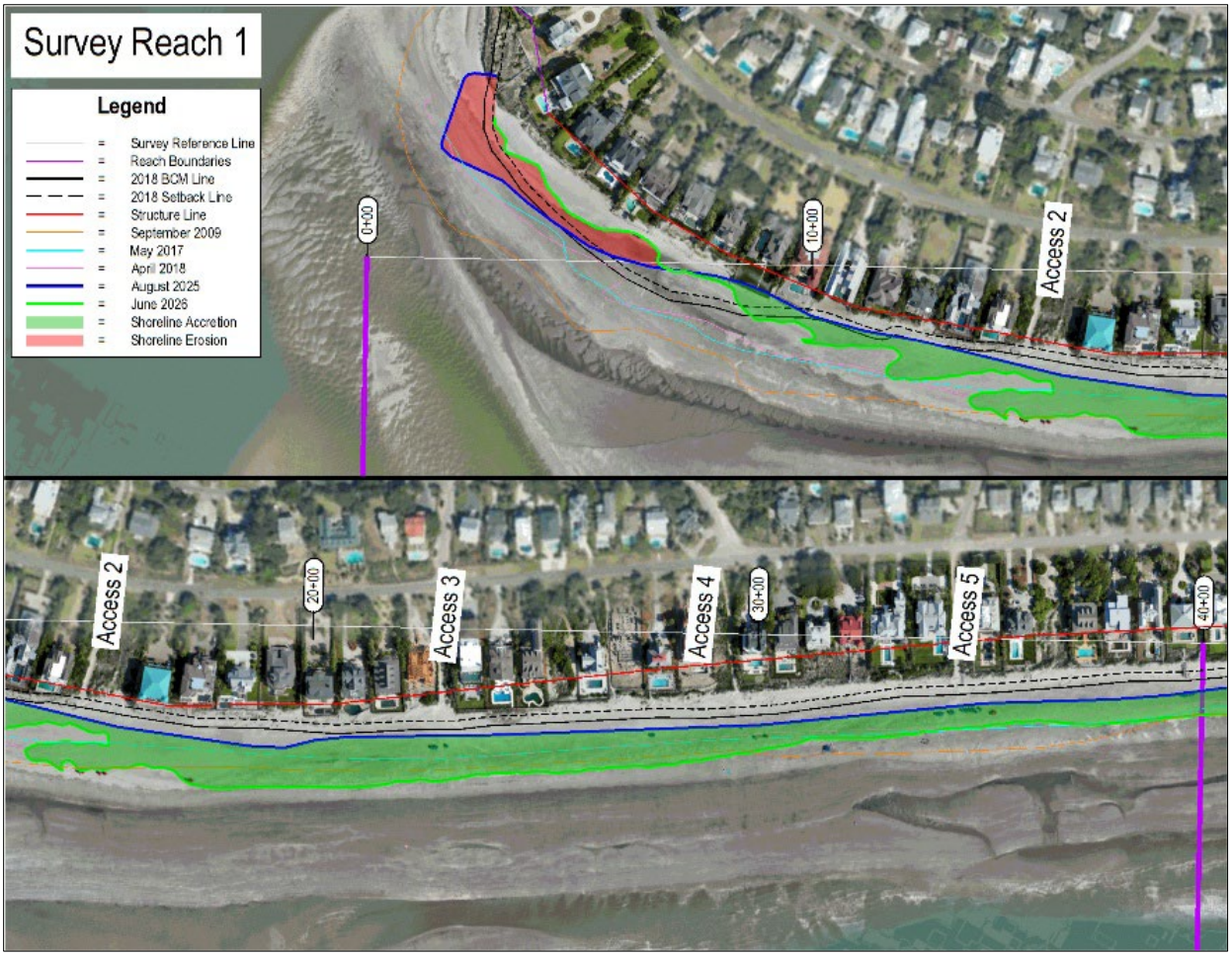


FIGURE E. Example map showing the position of the typical high-tide line measured by the +4.5 ft NAVD contour for the most recent surveys. Previous shoreline positions are shown for reference, along with the location of the state jurisdictional lines. The green and red shaded areas show growth or erosion of the high tide line between 2025 and 2026. Appendix C provides maps for the full island at a larger scale.

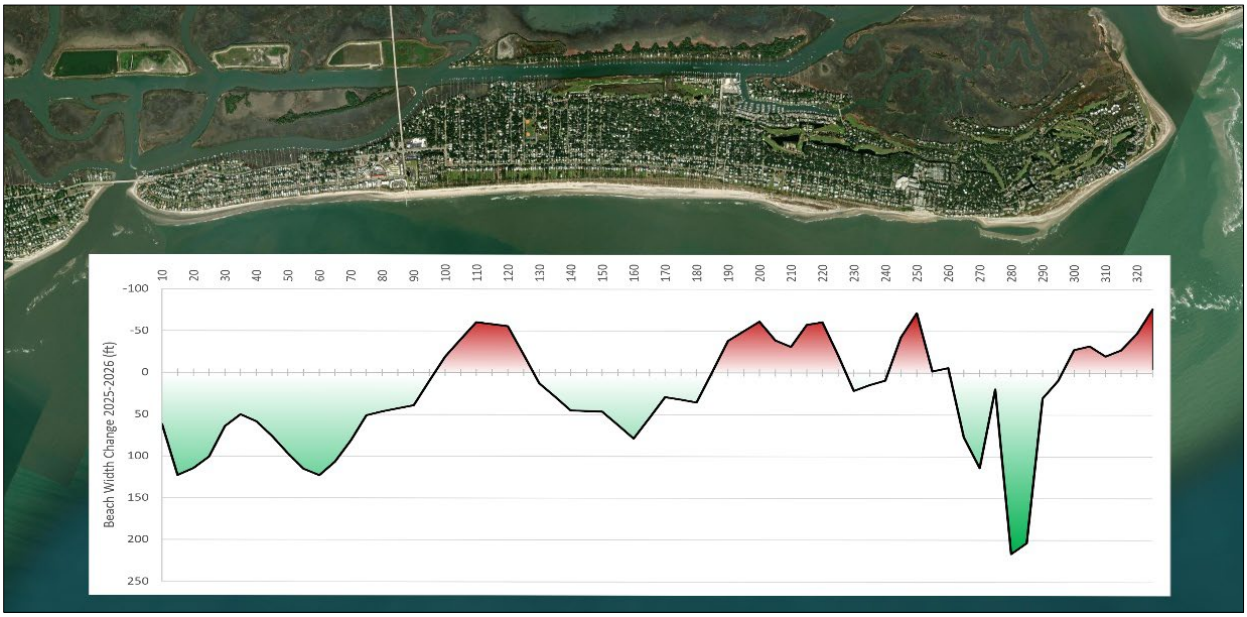


FIGURE F. Beach width change (as measured by the normal high-tide line) from August 2025 to June 2026. The data graph is positionally referenced to the aerial image.

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1.0 INTRODUCTION

This monitoring report is submitted to the City of Isle of Palms, SC (IOP) by Coastal Science & Engineering (CSE) as part of an ongoing beach monitoring effort that began in 2007 during planning for the 2008 Isle of Palms Beach Restoration Project (P/N 2007–02631–2IG) (CSE 2008). This report follows earlier monitoring reports submitted annually to the City, as well as additional reports and engineering documents related to shoal management and beach nourishment activities (P/N 2010–1041–2IG; 2016–00803 (CSE 2019). The report details beach conditions as surveyed in June 2026 and compares them with selected earlier dates, including the pre-2018 project condition. This is the eighth annual monitoring report following the 2018 nourishment project. Certain portions of this report detail monitoring efforts required by state and federal permit conditions for the 2018 project. This report also documents the pre-project condition for the upcoming nourishment project planned to start in late July 2026.

Analyses in this report include detailed beach volume change along the ~7-mile beach, which spans from Breach Inlet to Dewees Inlet. It also compares earlier beach conditions with current conditions, calculates annual erosion rates, and measures linear shoreline change. Large-scale morphologic changes occurring in Breach Inlet and Dewees Inlet are also discussed, along with the anticipated impacts of these shifting shoals on the future beach condition. Ground and aerial photographs are included to visually represent beach conditions. These images document areas with dune escarpments, show dry-beach width, and delineate areas with existing or potential erosion damage.

This report also discusses storm events in 2025 and their impact on the beach, as well as updated sea level rise information for the Isle of Palms. Observations of escarpments, vegetation, sand fences, and other beach management considerations are also discussed.

2018 Nourishment Project Summary

Sponsor: The beach restoration project was funded by the City of Isle of Palms, the State of South Carolina, Wild Dunes Community Association (including individual property owners and regimes), and Wild Dunes Resort. The City of Isle of Palms served as project owner and administrator.

Engineer: Coastal Science & Engineering (CSE, Columbia, SC)

Contractor: Great Lakes Dredge & Dock Co. (Oak Brook, IL)

Permit: SC048C–OCRM USACE P/N 2016–00803

Scope: Placement of 1,676,518 cubic yards (cy) of sand in the following areas.

Reach 1 (4,400 lf)	Sta 236+00–280+00	942,320 cy	214 cy/ft
Reach 2 (4,400 lf)	Sta 280+00–324+00	734,198 cy	167 cy/ft

Const. Cost: $13,545,585.70

Nourishment Schedule

- 13 December 2017 –Mobilization of equipment and pipe
- 16 January 2018 –First pumping near Beach Club Villas
- 24 February 2018 –Completion of Reach 1
- 23 March 2018 –Completion of Reach 2
- 1 April 2018 –All equipment removed from beach and offshore zone – Project Complete

Monitoring Events

- May 2017 –Pre-Project Annual Survey
- April 2018 –Post-Project Survey
- June 2019 –Year 1 Survey
- June 2020 –Year 2 Survey
- July 2021 –Year 3 Survey
- August 2022 –Year 4 Survey
- August 2023 –Year 5 Survey
- September 2024 –Year 6 Survey
- February 2025 –Year 7.1 Survey
- August 2025 –Year 7.2 Survey
- February 2026 –Year 8.1 Survey
- June 2026 –Year 8.2 Survey

2.0 SETTING

2.1 Project Setting

The Isle of Palms is a ~7-mile-long barrier island located north of Charleston Harbor. It has a southeast-facing shoreline bounded by Breach Inlet and Sullivan's Island to the south, with Dewees Inlet and Dewees Island to the north (Figure 2.1). The northern end of the island is wider due to periodic sand additions through shoal bypass events (Kana et al 1985; Kana 2002; Traynum and Kaczkowski 2015). These events result in a net accumulation of sand over several decades, which builds the updrift end of the island. The downcoast end of the island is narrower and terminates in a recurved spit at Breach Inlet. These characteristic morphologies are typical of 'drumstick' barrier islands (Hayes 1979) and occur along mixed energy coasts where both tides and waves influence shoreline evolution (Figure 2.1).

The eastern end of the island is typically more dynamic due to the influence of shoals associated with the Dewees Inlet ebb-tidal delta. Figure 2.2 shows aerial images of the east end of the island from 1944 to 1963. The photos document a large-scale shoal bypass event that impacted the shoreline encompassing the area now known as Wild Dunes. The shoal stretched for approximately two miles along the eastern end of the island. It was so large that a new ephemeral barrier beach was established over 1,000 feet (ft) seaward of the previous shoreline. This new beach ridge trapped a tidal lagoon that was flushed by a small channel, and the shoal attached to the beach sometime between 1944 and 1949. By 1957, the shoal had merged with the beach, buried the lagoon, and was completely attached to the main portion of the island by 1963.

The emergence of this large shoal may be a result of the merging of several shoals in the delta, partially visible in the 1944 image (Fig 2.2, upper left), including two visible shoals at the northeastern tip of the island. These shoals were likely, at one point, a trailing ebb spit (see Kana 2002), and the sand from this spit merged with a shoal further west to create the large sand body that formed the lagoon. The shoal ultimately added well over 1,000,000 cubic yards (cy) of sand to the beach.



FIGURE 2.1. Schematic of the Isle of Palms showing the wider northeast end characteristic of a 'drumstick' barrier island.

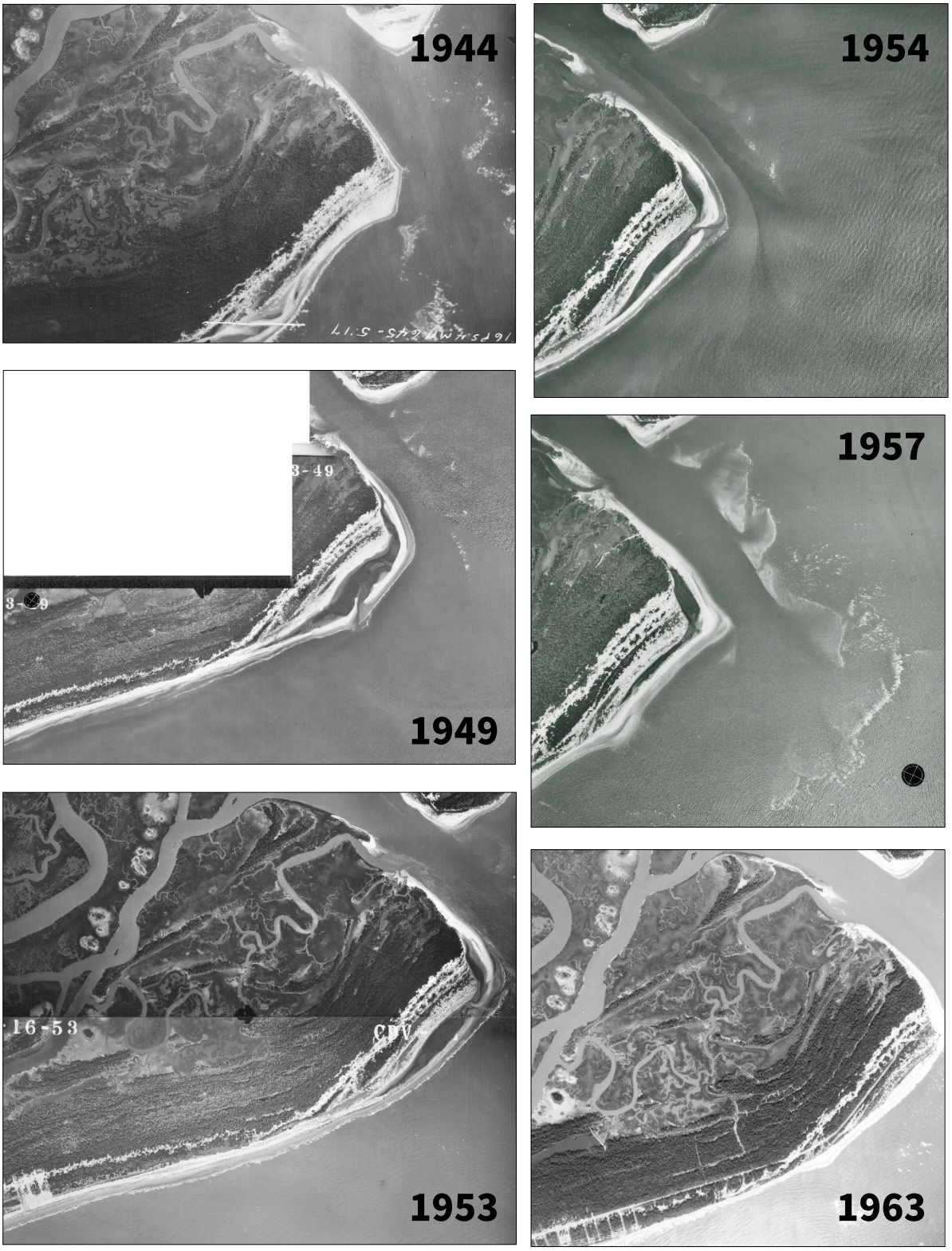


FIGURE 2.2. Historical aerials from CSE 2010 report page 56 (Figure 3.35).
Photo sequence begins (left column from top) in 1944, 1949, and 1953, then continues (right column from top) through 1954, 1957, and 1963. [Note that images are not at the same scale.]

This shoal attachment effectively built the shoreline at the northeast end of the island seaward ~500 feet (ft) between 1944 and 1963; however, much of this accreted sand eventually spread to downcoast areas. In short, the eastern end of the island (east of the present-day Beach Club Villas) was developed on sand that recently accreted to the beach and not on the stable upland area that had existed for decades, like most of the remainder of the island. Much of the development built in the late 1970s and early 1980s occurred in areas that were likely wet-sand beach in the 1930s–1940s.

Following the large-scale event mentioned previously, the eastern end of the island continued to experience shoal-bypass events, though all were smaller in magnitude than the 1940s–1960s event. These events generally attached along the central Wild Dunes area and are more characteristic of shoal-bypass events described by Kana et al (1985), with distinct stages of 1) emergence, 2) migration and attachment, and 3) spreading (Fig 2.3). These events have caused focused erosion along various portions of the Wild Dunes area, including two events in the 1980s, another in the late 1990s, and a large event in the mid-2000s that led to the 2008 beach nourishment project.

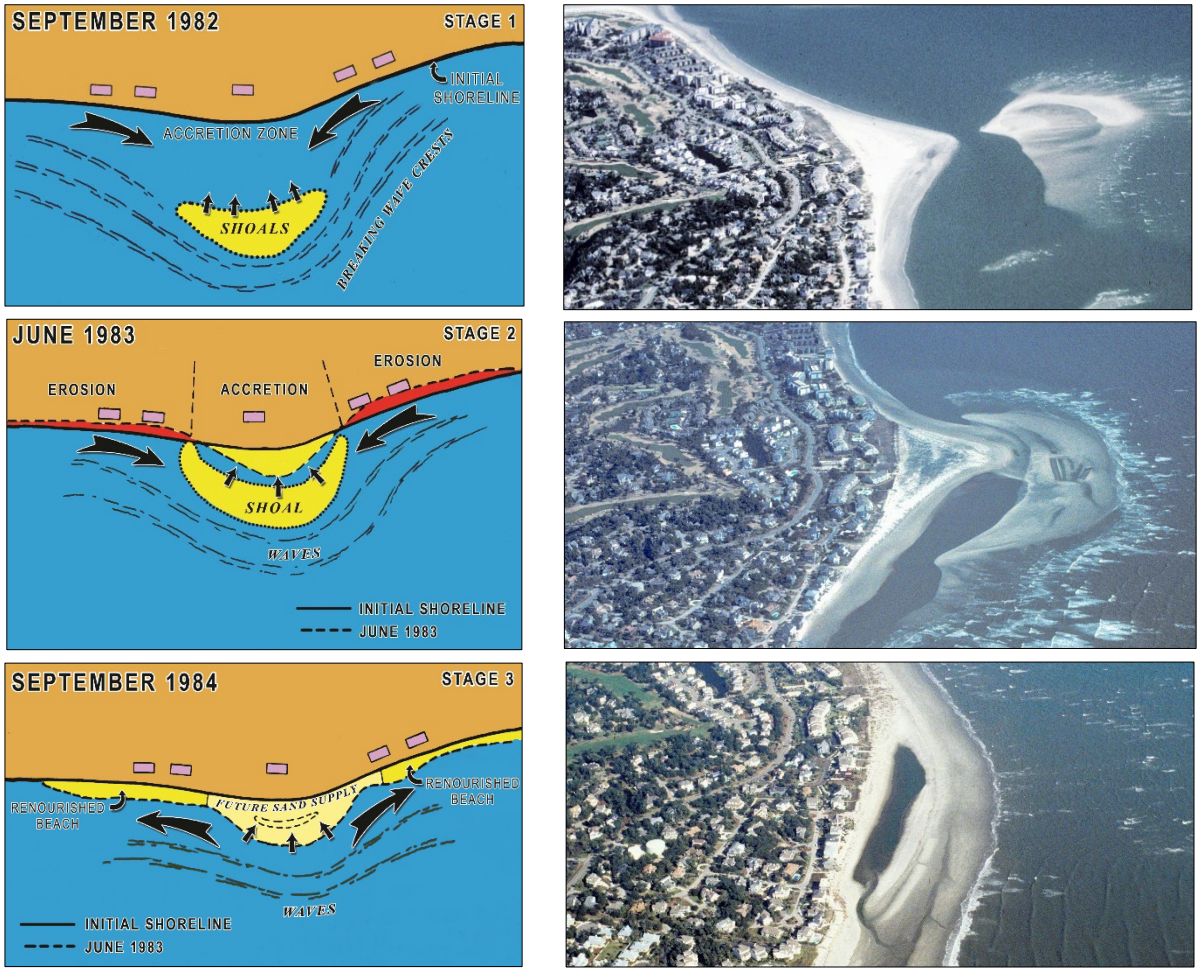


FIGURE 2.3. **[LEFT]** Schematic of the shoal-bypass cycle originally modeled from a bypass event at Isle of Palms. **[RIGHT]** A shoal-bypass event at northeastern Isle of Palms corresponding to the schematic. The upper photo shows a shoal in Stage 1 (1996). The middle image illustrates Stage 2 (1997). The bottom photo shows Stage 3 (1998).

The addition of sand from shoal bypassing at the east end of the island has contributed to relatively steady accretion along the central and western portions of the island, resulting in a wide setback for most properties west of 58th Avenue. In the 1970s, properties along 46th Ave to 53rd Ave installed a seawall, and several groins were installed by 1984, as shown in Figure 2.4. Since 1984, the beach has accreted continuously, and all groins and seawalls have been buried.

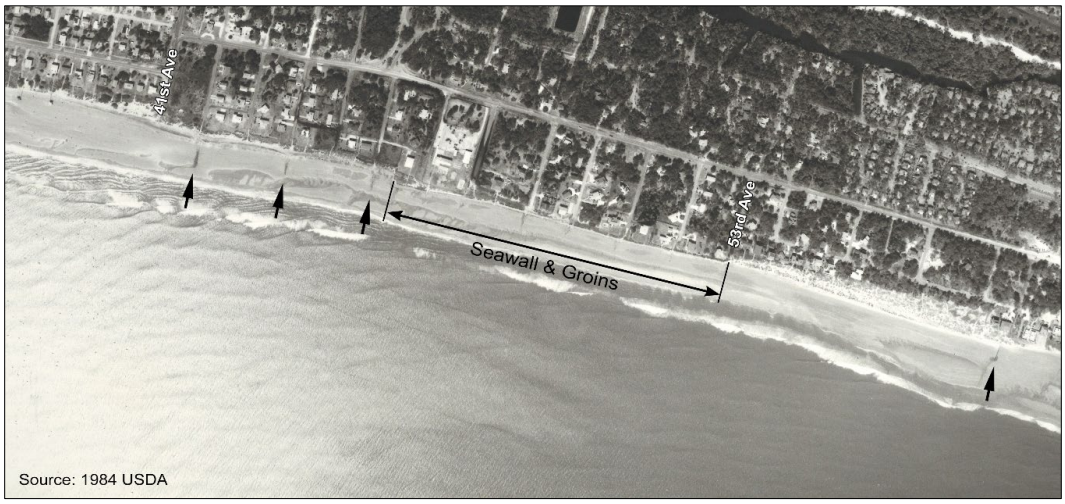


FIGURE 2.4. A seawall and groins were in place in 1984 between 46th Ave to 53rd Ave. Today, due to continuous accretion, these groins and seawalls have been buried.

2.2 Previous Projects

As mentioned in the previous section, erosion mitigation measures at Isle of Palms began in the 1970s with the construction of seawalls and groins between 41st Ave and 53rd Ave. Another groin was visible in 1973 near present-day 58th Avenue. In 1981, a concrete-filled geotextile bag groin was built near the tee of the 17th hole of the Links Course to reduce the erosion threat along the Dewees Inlet shoreline. In 1983, in response to a shoal attachment event, homeowners along Seagrove and Beach Club Villas constructed a rubble mound seawall (Kana et al 1985). Sand scraping was also attempted but proved insufficient to maintain a dry-sand beach under the localized but extreme erosion pressure. In late 1983, the first nourishment project along Isle of Palms was completed using sand dredged from the new marina at 41st Ave. Approximately 350,000 cy of sand was added to the erosional zones adjacent to the shoal as the shoal was beginning stage three of the bypass cycle. This resulted in a dramatic increase in beach width along Seagrove Villas, Beach Club Villas, and Mariners Walk, where erosion was most severe, augmenting the accretional shoal sand (Lana et al 1985).

From 1984 to 2007, sand scraping from accretional areas was the only mitigation attempted to combat shoal-induced erosion. CSE and its predecessors documented scraping efforts circa 1983, 1987, and 1998 (Figure 2.3) that attempted to move sand from accreting areas to erosional arcs. From 2004–2007, sandbags were installed to protect several structures from Shipwatch to Ocean Club and prevent additional shoreline retreat (Figure 2.5).



FIGURE 2.5. To prevent additional erosion, sandbags were installed along several structures from Shipwatch to Ocean Club from 2004 to 2007.

Erosion reached such severe conditions in 2007 that there was little to no beach along portions of the east end of the island, even at low tide (Figure 2.6). The Wild Dunes Community Association contracted with CSE to evaluate the causes of erosion and prepare a feasibility study outlining restoration alternatives (CSE 2007). CSE recommended nourishing the beach with sand from an offshore borrow area and began the process of obtaining a permit for the work. The City of Isle of Palms then took ownership of the project and served as the permit applicant. Permits were obtained (P/N 2007–02631–2IG), and the City contracted with Weeks Marine for a project involving the nourishment of 847,000 cy of sand over 10,200 lf (linear feet) of beach. The project extended from 200 ft north of 53rd Avenue to the 17th green of the Links Course.



FIGURE 2.6. Isle of Palms in 2007 prior to beach nourishment.

The 2008 project was completed between 15 May and 15 July 2008 (Figure 2.7). As part of the project, Weeks Marine removed all sandbags from the project area, which totaled ~9,400 bags. Homeowners removed an additional 4,680 bags from under buildings. Averaging ~25,000 cy of sand per day, the dredge *RS Weeks* pumped sand from three borrow areas 2–3 miles from the beach. The nourishment was placed in three reaches and included ~270,000 cy between 53rd Ave and Dune Crest Ln (Reach A), 552,400 cy from Mariners Walk to the 18th fairway (Reach B), and 25,000 cy from the 18th tee to the 17th fairway (Reach C). Figure 2.8 shows the layout of the 2008 project. Figure 2.9 shows a post-project aerial photo (2008) that compares to the project area before renourishment (2007).

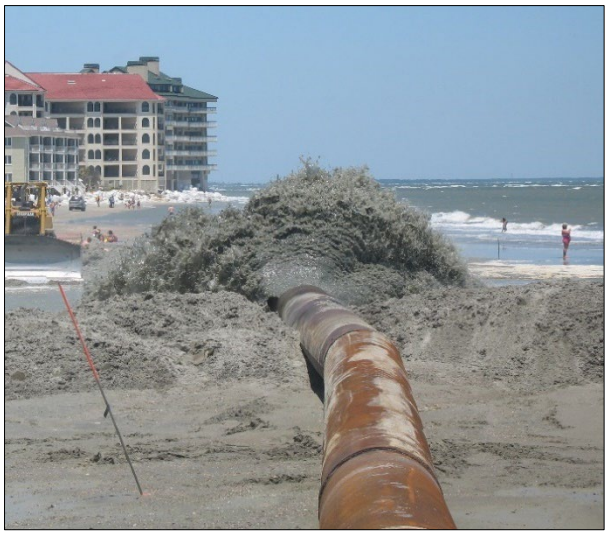


FIGURE 2.7. [ABOVE] 2008 beach nourishment project (completed on 15 July 2008).



FIGURE 2.8. [RIGHT] 2008 nourishment project map.



FIGURE 2.9. [LEFT] Isle of Palms in 2007 prior to nourishment. **[RIGHT]** The project area in 2008 following nourishment.

Following the 2008 project, CSE monitored the beach at least annually to document beach volume changes and project performance. Two shoal-bypass events occurred in 2009 and 2010, and another larger event began to emerge offshore in 2010. Anticipating the need for potential remediation (and after observing an erosional hotspot forming near the Ocean Club/Seascape area), the City sought a permit to manipulate the accretional shoal area, expedite attachment, and move sand to the erosional hotspots. An initial project was completed in 2012 that transferred ~80,000 cy of sand from the central portion of Wild Dunes to the east end near the Ocean Club. A larger project was completed in late 2014 through early 2015, which moved ~280,000 cy from two accretional areas (an attaching shoal centered near Beach Club Villas and from 53rd to 56th Avenues) to the beach fronting Beachwood East (~70,000 cy) and the area fronting Seascape/Ocean Club/18th hole (~210,000 cy). The project sought to transfer as much sand as possible from the shoal to the beach (Figure 2.10).



FIGURE 2.10. January 2015 aerial image of the 2014–2015 shoal management project showing equipment transferring sand from an attaching shoal to the eroded beach.

2.3 2018 Project

From 2015 to 2018, the beach along the eastern end of the island continued to respond to a shoal attachment event. Erosional hotspots were present along Beachwood East and near the 18th hole of the Links Course. In 2016, the City opted to pursue a permit for another large-scale renourishment project. CSE was retained to provide engineering services necessary to complete a permit application package with associated reports and documents. The project design called for the addition of 1,676,000 cy of sand along the eastern end of the island, with maximum fill densities of over 300 cubic yards per foot (cy/ft). The design fill would add over 600 ft of dry-sand beach in the largest fill areas.

Engineering for the project began with analyses to determine the volume of sand required to restore the beach to a desired condition. CSE initially prepared a fill plan based on the beach condition in 2015, when a recent shoal attachment created a bulge in the shoreline near the center of the project area. Following hurricane impacts in 2015, 2016, and 2017, as well as erosion of the attached shoal, CSE modified the fill template to account for erosion occurring in the center of the project area and substantial accretion at the eastern end. Table 2.1 lists the final fill plan, and Figure 2.11 shows it graphically. The data reflect the final design before a change order issued during the project placed additional sand along the center of the project area. The fill density averaged 161.5 cy/ft over the length of the project area, with a maximum fill volume of ~325 cy/ft. The nourishment volume decreased along the center of the project area, with a minimum of 50 cy/ft added.

The fill template width varied based on the final design, reaching up to 600 ft in the highest-density areas. The berm width decreased along the central portion of the project area, as the pre-project beach was wider than adjacent areas. At either end of the project, the berm width tapered to the existing dune line (Figs 2.11 and 2.12).

Construction began on 16 January 2018 and was completed by 23 March 2018. Table 2.2 shows the design and actual fill volumes determined by TI Coastal, the independent surveyor retained by Great Lakes Dredge and Dock Company, the nourishment contractor. The 'Design Volume' column represents the volume of sand above the before-dredge (BD) condition and below the design template. Note that this volume is less than the final contract amount due to accretion between the pre-project design surveys and TI Coastal's BD survey. The 'Fill Volume' column represents the total amount of sand placed on the beach. The rows highlighted in yellow represent the area repumped following the Hurricane *Irma* change order. In total, 1,725,942 cy of sand was added to the project area. Of that total, 974,374 cy were pumped west of Station 280+00 (Property Owners Beach House), and 751,568 cy were placed east of Station 280+00. The 49,424 cy of sand placed above the pay quantity of 1,676,518 cy was not paid.

TABLE 2.1. The modified fill schedule designed to account for variable erosion and beach widths along the project area, as well as substantial accretion at the eastern end of the island.

Station	Pre-Project Unit Volume (cy/ft)	Design Fill Vol (cy/ft)	Post-Project Unit Volume (cy/ft)
230 (56th Ave)	321.6	**0.0**	351.6
232	338.9	**0.0**	379.0
234	298.4	**0.0**	349.0
236	262.7	**0.0**	329.7
238	258.3	**26.4**	358.5
240	272.2	**59.0**	399.6
242	255.7	**73.9**	415.9
244	295.9	**170.8**	499.0
246	283.7	**233.3**	526.5
248	289.5	**277.7**	562.6
250	306.2	**296.6**	587.9
252	283.8	**307.5**	554.5
254	267.2	**315.2**	539.7
256	228.9	**320.6**	524.7
258	251.7	**325.8**	544.6
260	275.5	**314.6**	547.9
262	306.5	**298.2**	563.4
264	333.8	**260.0**	595.7
266	382.5	**240.0**	620.5
268	376.4	**210.0**	543.5
270	359.2	**150.0**	549.8
272	372.9	**120.0**	537.1
274	355.6	**90.0**	515.2
276 (Beach Club Villas)	442.8	**75.0**	576.2
278	426.6	**60.0**	587.3
280	534.3	**60.0**	771.4
282	436.3	**60.0**	652.7
284	450.9	**50.0**	746.0
286	520.6	**50.0**	760.5
288	456.4	**50.0**	705.7
290 (Mariner's Walk)	444.9	**60.0**	657.8
292 (Shipwatch Villas)	479.3	**60.0**	672.8
294	526.0	**80.0**	686.2
296	511.1	**110.0**	655.5
298	498.4	**130.0**	634.5
300	487.0	**160.0**	630.9
302	472.4	**190.0**	622.6
304	436.9	**225.0**	597.7
306	442.7	**250.0**	614.1
308	392.2	**250.0**	571.3
310 (Seascape Villas)	376.4	**250.0**	560.2
312	361.0	**225.0**	546.5
314	320.2	**180.0**	488.9
316	415.6	**140.0**	560.5
318	427.6	**90.0**	529.7
320	449.0	**30.0**	526.7
322	449.8	**20.0**	495.5
324	418.4	**0.0**	450.9
326	415.0	**0.0**	434.3
328 (18th Fairway)	420.0	**0.0**	451.0

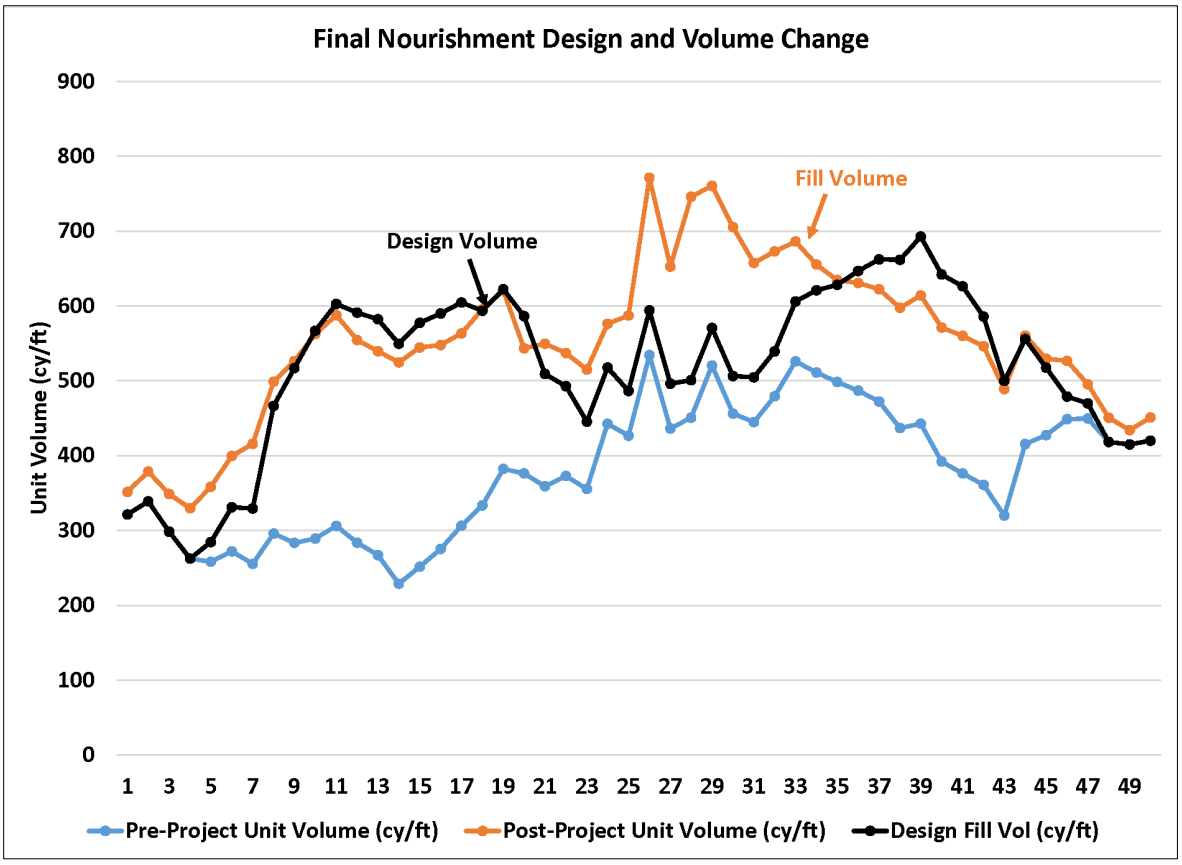


FIGURE 2.11. A graphic representation of the 2018 final fill template.

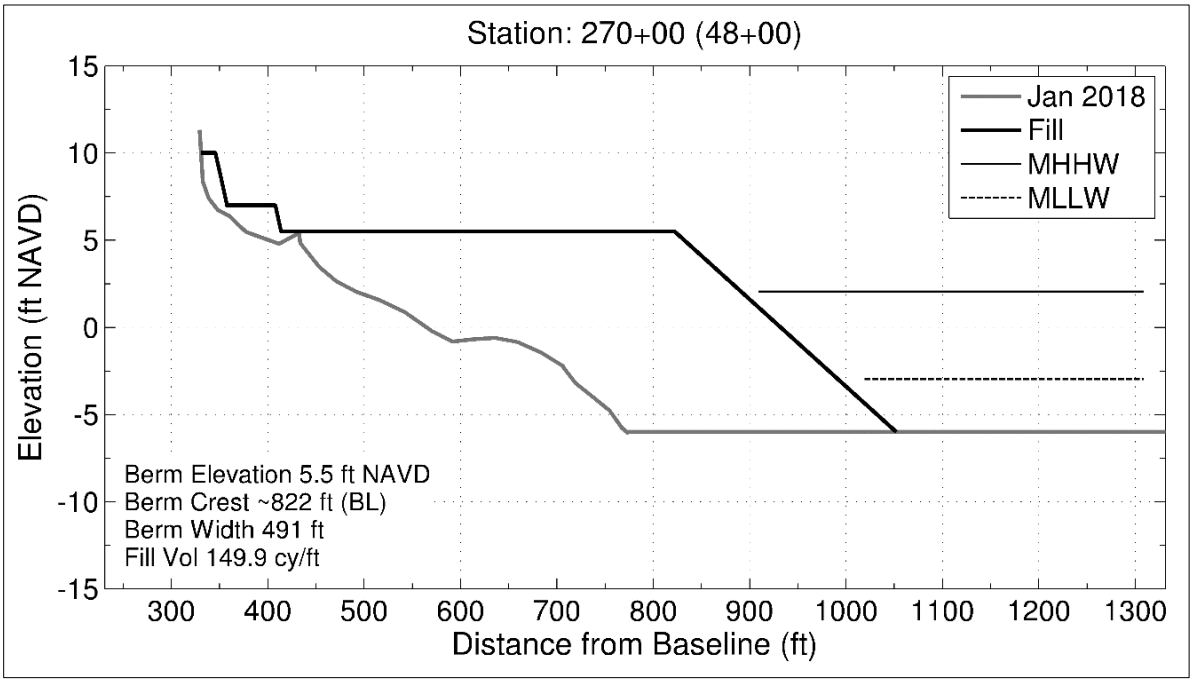


FIGURE 2.12. The 2018 design fill profile incorporated a dune, storm berm, wide fill berm, and sloping section.

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3.0 METHODS

Monitoring efforts for this report were conducted in June 2026. Sand volume changes in the active beach zone were evaluated by obtaining topographic and bathymetric data along shore-perpendicular transects at established locations along the beach (herein referred to as the survey reference line) (Fig 3.1). The present survey reference line spans from the center of the Breach Inlet Bridge (Station 0+00) and continues to Cedar Creek spit at the northeastern end of the island (Station 376+00). Stationing relates to the distance along the shore, with the number before the "+" symbol representing 100 feet (ft). Therefore, Station 36+00 is 3,600 ft from Station 0+00. The survey reference line is generally set landward of the active beach to allow for future erosion/accretion. In 2024, profiles were changed to a more regular interval along the western portion of the island. This includes adding 500-foot profile spacing between existing profiles 20+00 to 80+00.

Topographic data were collected via RTK-GPS (Trimble™ R10 and R12 GNSS), which provides position and elevation measurements at centimeter accuracy. Beach profiles were obtained by collecting data at low tide along the dunes, berm, and active beach to low-tide wading depth. Overwater work was then performed at high tide to overlap the land-based work (Fig 3.2) and was collected with RTK-GPS coupled with an Odom CV100™ precision echosounder mounted on CSE's survey vessel, the *RV Southern Echo*.

Profiles were collected from the most landward accessible point in the dune system to a minimum of 1,500 ft from the survey reference line. Profiles along the northeast end of the island extended up to 6,000 ft offshore to encompass the shoals associated with Dewees Inlet. Alongshore spacing of the profiles ranged from 200 ft to 500 ft, with the more closely spaced profiles north of 53rd Avenue and along Breach Inlet. Comparative profiles from CSE's monitoring efforts are shown in Appendix A. The complexity of areas impacted by inlets requires a more detailed analysis (closer profile spacing) to fully incorporate volume changes associated with shoal-bypassing events and inlet migration.

To better understand regional sand volume changes, seven reaches are defined along the Isle of Palms. These reaches represent different portions of the island, based upon prevailing wind/wave conditions, beach width, and developed properties. They range in length from ~1,200 ft to ~7,200 ft. Combining several profiles into reaches makes it easier to identify overall sediment gains and losses over sizable portions of the beach. In the project area, the monitoring reaches differ from those used during construction to encompass areas where no work was performed.

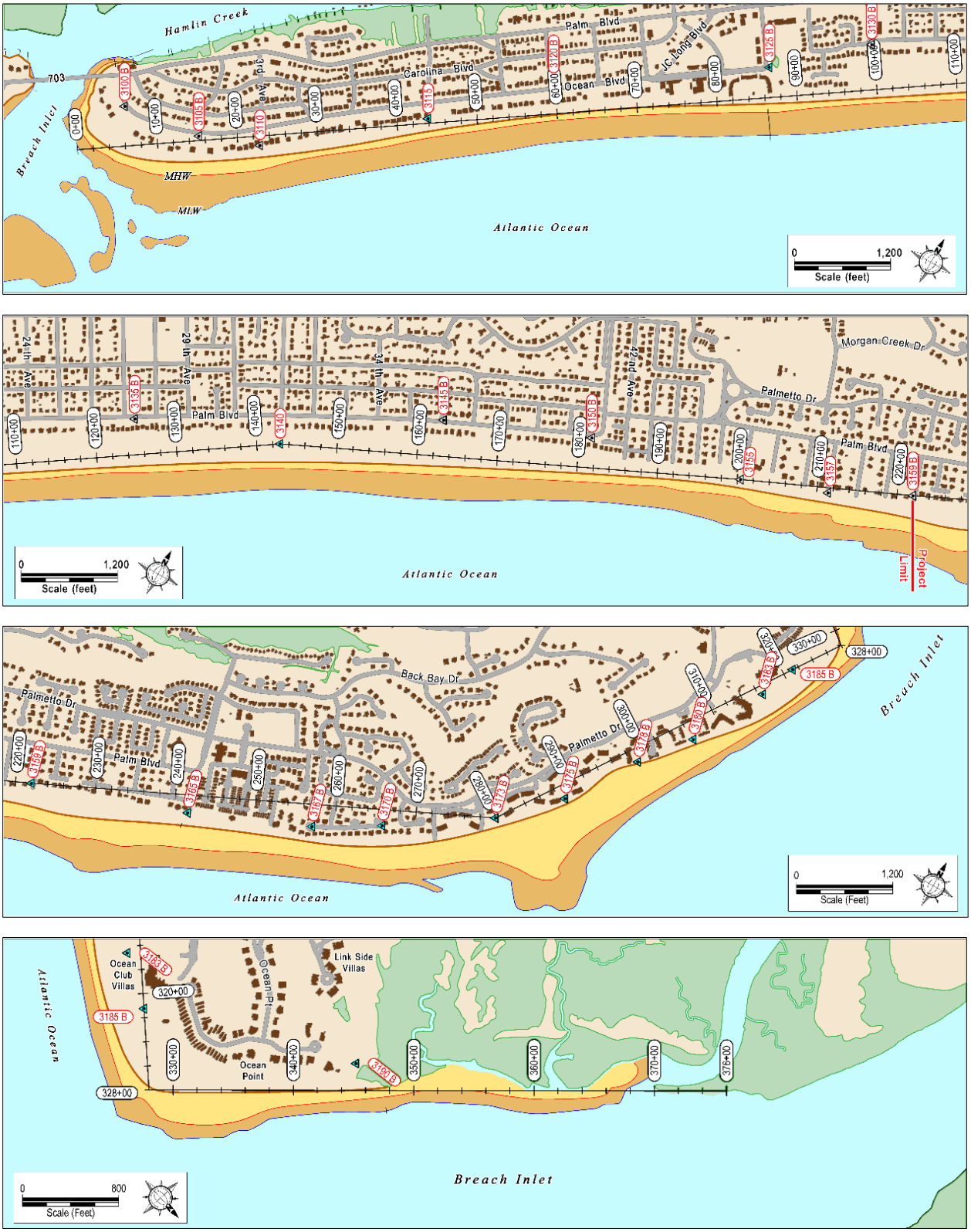


FIGURE 3.1. Survey Reference Line map of Isle of Palms showing the reference line used to establish monitoring profiles. Stationing increases to the north from Breach Inlet. Blue triangles mark SCDES-BCM reference stations.



FIGURE 3.2.
Surveying beach profiles involves collecting land-based data at low tide and hydrographic data overlapping the land-based work at high tide.

The reaches used for monitoring purposes are shown in Figure 3.3 and are defined as follows:

Reach 1	0+00 to 50+00	Breach Inlet to South of 6th Avenue
Reach 2	50+00 to 90+00	South of 6th Avenue to Beach Access 13
Reach 3	90+00 to 150+00	Beach Access 13 to 31st Avenue
Reach 4	150+00 to 222+00	31st Avenue to 53rd Avenue
Reach 5	222+00 to 280+00	53rd Avenue to Wild Dunes Property Owners Beach House
Reach 5a	222+00 to 240+00	53rd Avenue to 57th Avenue
Reach 5b	240+00 to 254+00	57th Avenue to Grand Pavillion Blvd
Reach 5c	254+00 to 280+00	Grand Pavilion Blvd to Wild Dunes Property Owners Beach House
Reach 6	280+00 to 330+00	Wild Dunes Property Owners Beach House to Dewees Inlet
Reach 6a	*280+00 to 290+00*	Wild Dunes Property Owners Beach House to Beach Club Villas
Reach 6b	*290+00 to 308+00*	Beach Club Villas to Seascape Villas
Reach 6c	*308+00 to 330+00*	Seascape Villas to Dewees Inlet
Reach 7	330+00 to 370+00	Dewees Inlet Shoreline



FIGURE 3.3. Reach limits used in the present monitoring report.

To determine changes in beach volume along Isle of Palms, beach profile data were entered into CSE's in-house custom software, Beach Profile Analysis System (BPAS), which converts 2D profile data in x–z (distance–elevation) format to 3D volumes. The software provides a quantitative, objective way to determine ideal minimum beach profiles and how the sand volume per unit length of shoreline compares with the desired condition. It also provides an accurate method for comparing historical profiles, as the volume method measures sand volumes in the active beach zone rather than extrapolating volumes based on a single-contour shoreline position (ie – from aerial photography). Unit-volume calculations can distinguish sediment quantity in the dunes, on the dry beach, in the intertidal zone to wading depth, and in the remaining area offshore to the approximate limit of profile change (closure depth).

Figure 3.4 depicts the profile volume concept. The reference boundaries are site-specific but, ideally, encompass the entire zone over which sand moves each year. Sand volume was calculated between the primary dune and between −10 ft and −18 ft NAVD. The lower calculation limit was site-specific, as profiles in the center of the island and along Dewees Inlet have deeper closure depths than areas in the unstable inlet/shoal zones. Comparative volumes and volume changes were computed using standard procedures (average-end-area method, in which the average of the area under the profiles computed at the ends of each cell is multiplied by the length of the cell to determine the cell's sand volume). Certain adjustments were made to account for changes in the survey reference line direction and for volumes at the turn in the survey reference line at Dewees Inlet.

For this report, several adjustments were made to the profile calculation limits to remain consistent with the minimum healthy beach standard set by the Isle of Palms Ad-Hoc Committee. This analysis uses the structure line for volume calculations. Profile volumes for all previous surveys were recomputed using these new limits to provide accurate comparisons. As a result, report volumes for a given year differ slightly from volumes reported in earlier reports.

Sand volumes for offshore areas were calculated from digital terrain models (DTMs) produced by MATLAB® and GlobalMapper®. DTMs are digital 3D representations of an area's topography and bathymetry and are useful for calculating changes in contour positions and sediment volumes. Position data were entered into the software as x–y–z coordinates and were processed to provide cross-section profiles and volumes. DTMs are compared with earlier collections to determine changes in shoal positions and volumes.

Shoreline position was assessed by evaluating the location of the +4.5 NAVD contour. This contour approximates the location of the boundary between the dry-sand "recreational" beach and the wet-sand intertidal beach under normal wave and tide conditions. The absolute distance measures are from the approximate line of oceanfront structures to the normal high tide line. Locations of state jurisdictional lines are shown to allow for comparison of the beach width relative to those lines. Storm events or spring tides will push the water line landward of the 4.5 contour, and storms can cause temporary shifts in the contour position as the beach profile changes during the storm event. Shoreline position measures are useful for quick assessments of beach condition but may not correspond to overall beach condition at all times. Recent weather and tide conditions should be considered when comparing linear shoreline positions extracted from contours or high-water lines. Figure 3.5 shows an example of the location of the +4.5 ft contour extracted from survey data.

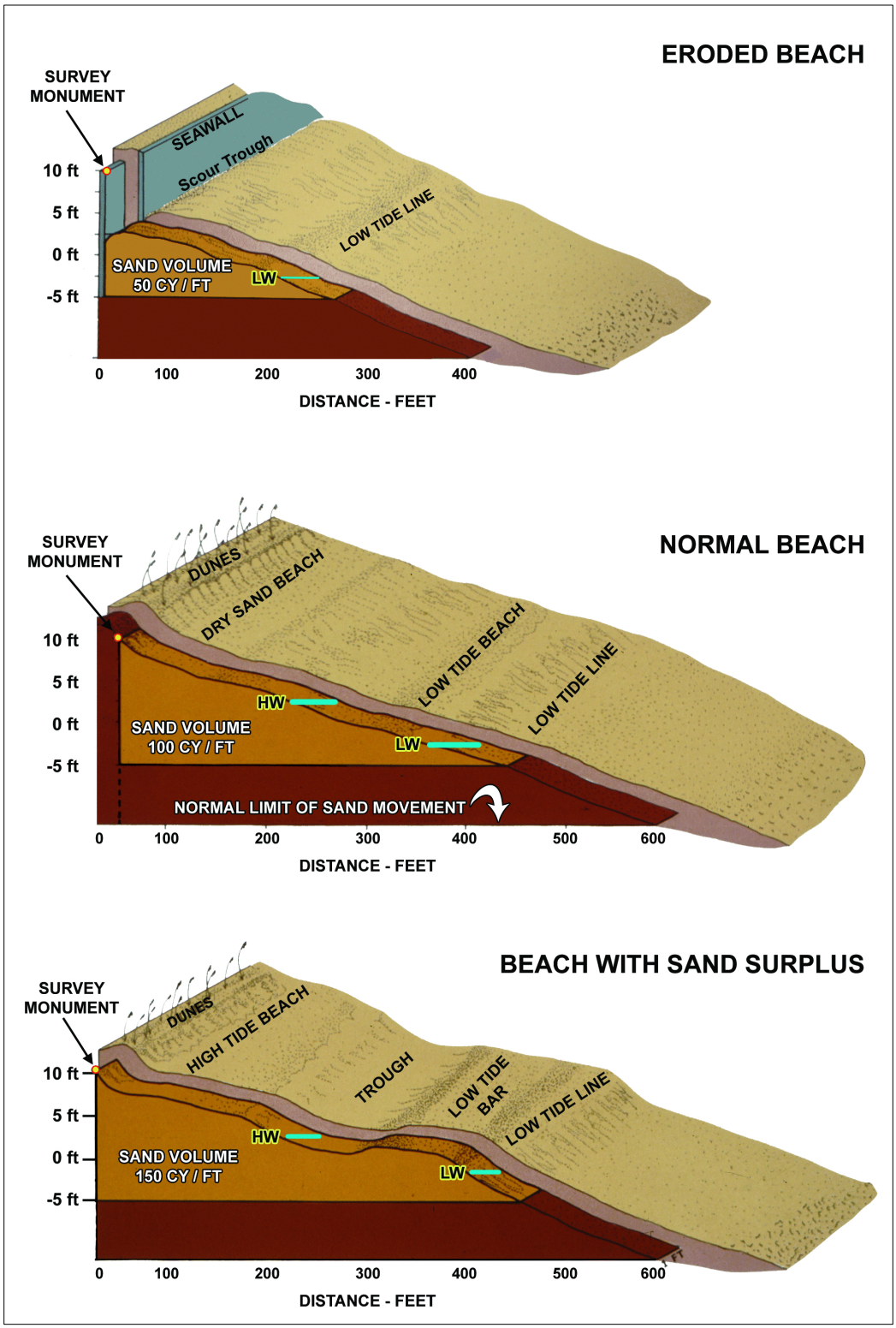


FIGURE 3.4. Illustration of the profile volume concept.

TABLE 3.1. Offsets of different reference lines compared to the CSE Survey Reference Line.

CSE Survey Reference Line Offsets

The offsets below are listed as the distance from the CSE Survey Reference Line in feet.
For volumes for this report CSE used the structure line offsets.
Offsets that are negative are lfet or landward of the Survey Reference Line.

Reach	Station	Structure Line	BCM Baseline 2018	BCM Setback Line 2018
1	0	-790.6	N/A	N/A
	4	-330.6	-102.2	-129.8
	8	-27.8	103.1	82.4
	12	107.4	154.2	133.8
	16	172.6	212.3	192.1
	20	175.9	238.5	218.5
	25	117.3	209.8	189.8
	30	57.3	180.8	160.8
	35	2.8	122.1	102.1
	40	-36.4	80.6	60.5
2	45	-68.5	37.9	17.9
	50	-91.9	0.6	-19.5
	55	-116.7	-42.2	-62.2
	60	-135.6	-60.2	-80.2
	65	-153.1	-94.1	-114.1
	70	-158.3	-109.1	-129.1
	75	-111.9	-81.1	-103.1
	80	-68.8	-45.4	-65.6
3	90	-57.2	30.9	10.6
	100	-441.2	63.7	36.0
	110	-365.2	68.4	48.4
	120	-302.2	69.9	49.9
	130	-257.2	66.1	46.1
	140	-223.3	102.2	81.8
4	150	-216.9	43.4	23.3
	160	-256.8	-23.9	-43.9
	170	-269.8	-101.0	-121.0
	180	-262.4	-109.2	-129.2
	190	-153.8	-22.2	-42.2
	200	-67.8	44.5	24.5
	202	-57.4	41.9	21.9
	204	-47.8	34.4	14.4
	206	-25.0	34.2	14.2
	208	3.2	50.0	30.0
	210	4.4	69.5	49.4
	212	5.6	88.0	67.9
	214	6.8	103.0	82.9
	216	61.4	112.8	92.8
	218	59.1	112.6	92.6
	220	56.9	116.8	96.8
5a	222	49.9	115.2	90.6
	224	25.6	74.3	54.3
	226	45.6	78.4	58.4
	228	69.0	91.6	71.5
	230	83.2	98.1	78.1
	232	93.9	103.0	82.9
	234	104.5	110.0	90.0
	236	160.0	115.7	95.6
	238	175.3	129.6	109.3
	240	190.6	134.1	114.1
5b	242	194.1	150.1	129.9
	244	193.4	161.7	141.6
	246	192.8	145.5	125.4
	248	200.8	134.6	114.6
	250	218.9	144.9	124.7
	252	247.0	153.1	133.0
	254	353.6	147.1	127.0

TABLE 3.2. Offsets of different reference lines compared to the CSE Survey Reference Line.

5c	256	396.1	155.4	113.7
	258	392.3	173.7	132.8
	260	373.3	199.8	157.4
	262	354.4	232.1	191.1
	264	335.4	242.3	210.9
	266	315.9	253.9	233.8
	268	296.1	241.1	221.0
	270	276.3	224.4	204.4
	272	256.4	207.5	186.8
	274	184.1	190.1	170.1
	276	177.5	160.5	140.0
	278	166.6	112.3	91.4
6a	280	62.1	66.7	46.1
	282	79.2	116.3	95.7
	284	102.4	154.5	134.2
	286	130.1	193.0	172.6
	288	189.4	230.7	210.3
	290	186.5	227.3	207.3
6b	292	179.7	194.5	172.9
	294	167.6	129.5	108.3
	296	155.5	119.0	99.0
	298	146.2	130.6	110.5
	300	199.7	139.9	116.2
	302	221.4	157.8	137.2
	304	197.8	188.5	168.5
	306	225.2	202.4	182.3
	308	244.5	232.9	212.5
6c	310	266.3	265.0	244.8
	312	288.9	264.8	244.3
	314	299.3	308.5	288.2
	316	151.6	174.9	154.6
	318	111.9	142.0	120.8
	320	67.4	72.5	51.7
	322	-16.2	20.6	-11.2
	324	-216.7	-14.2	-46.0
	326	-494.2	-79.7	-102.1
	328	-494.2	-79.7	-102.1
7	330	-405.9	-98.8	-118.7
	332	-269.9	-71.9	-91.9
	334	-174.0	-28.1	-50.2
	336	-186.8	33.7	9.7
	338	-190.2	28.5	-8.1
	340	-175.0	35.3	-22.1
	342	-133.0	45.8	-53.5
	344	-92.9	41.7	-59.1
	346	-58.5	25.2	-98.5
	348	-130.9	1.5	-131.5
	350	-157.5	-57.7	-187.9
	352	-182.4	-117.4	-263.5
	354	-210.8	N/A	N/A
	356	-211.6	N/A	N/A
	358	-207.6	N/A	N/A
	360	-229.8	N/A	N/A
	362	-258.6	N/A	N/A
	364	-285.5	N/A	N/A
	366	-309.3	N/A	N/A
	368	-336.8	N/A	N/A
	370	-362.0	N/A	N/A



FIGURE 3.5. Example of the +4.5 ft contour extracted from drone orthophotography. The contour can be generated from 3D surface models or beach profile data. The contour approximates the distance to the normal high-tide line.

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4.0 RESULTS

The results of the beach monitoring effort presented in the following sections focus on changes since the 2018 project but also address conditions relative to earlier periods, such as the pre-2008 project condition. CSE attempts to simplify the discussion of beach changes by focusing on larger reaches or areas rather than change measured at a single profile.

However, individual profiles are useful for visualizing how beach shape changes over time, how shoals migrate onshore, and how beach condition varies in front of specific properties or features. Volume change is first reported for the entire island, followed by localized changes in Reaches 1–7.

4.1 Island-wide Changes

The island gained ~187,400 cy and 42,075 cy of sand between August 2025 and February 2026 and February 2026 to June 2026, respectively. The total change for the year is a net gain of ~229,475. Most of the accretion in the first 6 months was due to shoal attachment near Beach Club Villas, along with the beach fill being conducted by the USACE (Fig 4.1) in Reach 1. In the second half of the year, the south end of the island benefited from downdrift movement of sand and USACE beneficial use projects, and the north end of the island continued to benefit from the shoal attachment. Despite the net accretion, erosional areas were present. Areas on either side of the shoal attachment zone eroded as wave energy focused on the margins of the shoal as it approached the beach, and erosion was observed along the central portion of the island. On average, the front beach gained an average of 17 ft of beach width over the past year, though localized change was highly variable and ranged from +255 ft to –95 ft.

The entire island holds ~665,625 cy more sand than the 2017 pre-nourishment condition and ~458,800 cy more sand than in 2009 (Figure 4.3). Before 2009, surveys were limited to the northern end of the Island, which restricts direct comparisons with pre-nourishment conditions. Assuming the southern and central portions of the Island remained generally consistent with 2009 conditions, the Island currently contains approximately 1.31 million cubic yards more sand than prior to the 2008 nourishment.

Tables 4.1 and 4.2 provide beach volume data for selected dates from 2008 through 2026 for each project reach and profile. Table 4.2 provides unit volumes for each station.

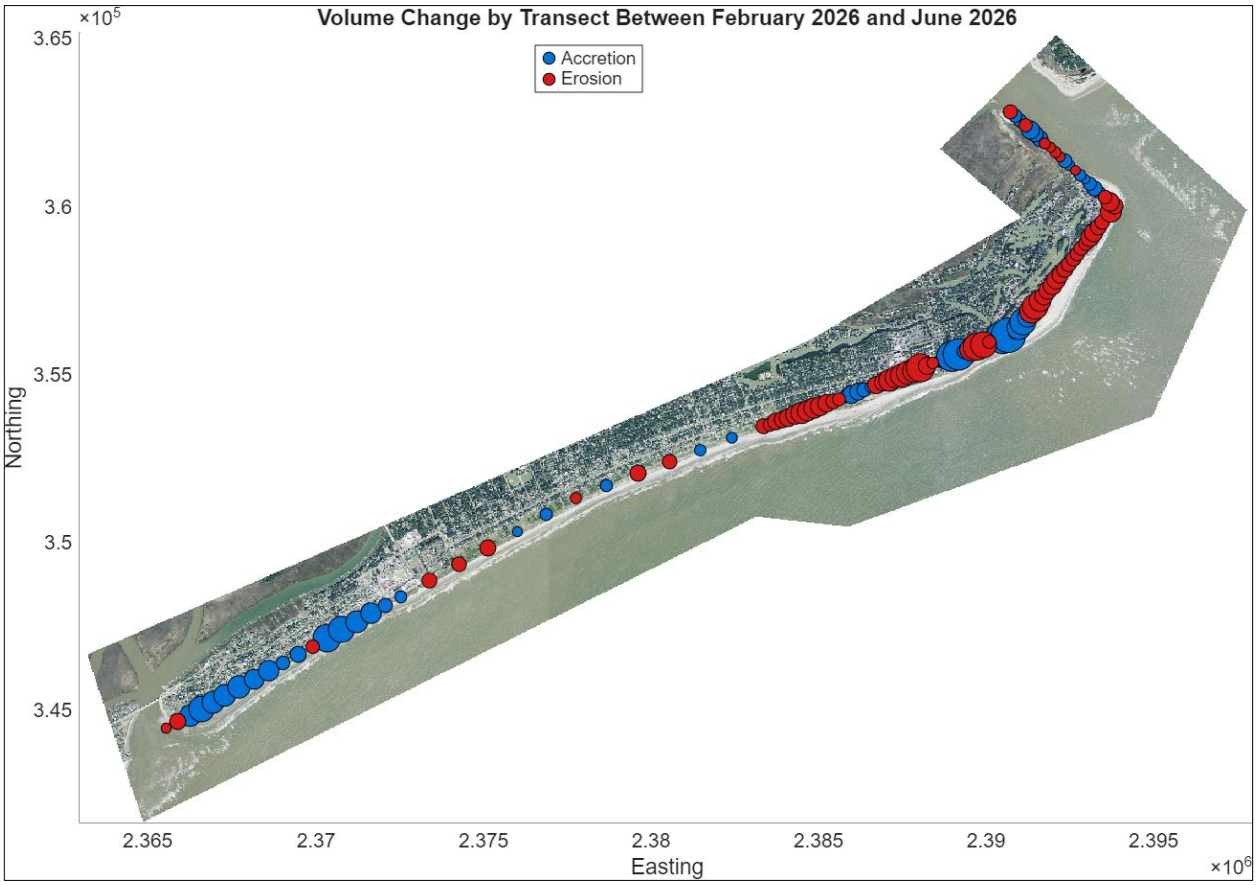


FIGURE 4.1. Image showing the volume change by station with accretion (blue) mostly seen in the south end of the Island and erosion (Red) shown in some of the erosion hotspots in Reaches 5 and 6. Larger dots signify larger rates of change.

Figure 4.1 visualizes the erosion and accretion rates from February 2026 to June 2026, with larger dots corresponding to larger changes in magnitude. Note the number and size of blue dots in the south end of Isle of Palms. The south end of the island has benefited from down-drift movement of sand from the center portion of the island as well as USACE beneficial use projects. The accretion in Reaches 1 and 2 is the largest natural gain of material since monitoring began. A portion of the gains around 6th and 7th Avenues is due to USACE work for the Breach Inlet channel maintenance. This project removed ~200,000 cy of sand and placed that material between 6th and 7th Ave in early 2026. CSE's February survey was completed during the project and captured a portion of the added sand volume in each of the two semi-annual monitoring intervals. A clear accretional wave from upcoast areas is present, indicating that total volume increase is due to a combination of USACE sand and natural sediment transport.

At the north end of the island, only a handful of accretional spots occur due to shoal attachment. However, accretion occurs at spots further downdrift in Subreach 5a as the shoal continues to spread. The shoal attachment has reached Stage 3, meaning that it has completely attached to the shore and sand has started to spread along the coast.

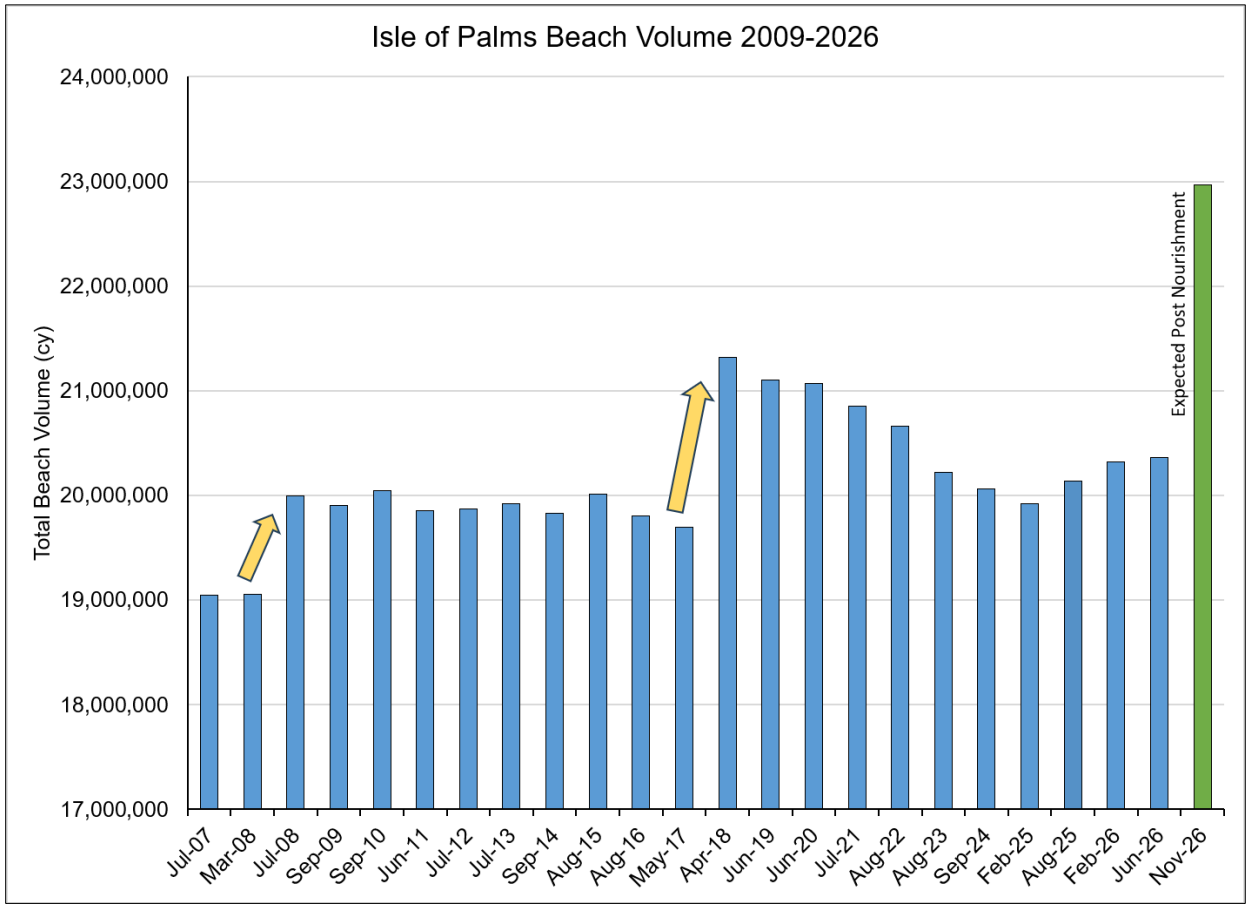


FIGURE 4.2. Island beach volume change from 2007 to 2026.

TABLE 4.1. Beach volume data for selected dates since 2008 by reach. Beach nourishment occurred prior to the July 2008 and 2018 conditional beach surveys.

Total Volume (cy)												
	Length (ft)	Apr-18	Jun-19	Jun-20	Jul-21	Aug-22	Aug-23	Sep-24	Feb-25	Aug-25	Feb-26	Jun-26
Reach 1	5,000	2,177,148	2,170,967	2,255,725	2,251,440	2,138,210	1,928,416	1,900,004	1,895,607	2,021,423	2,103,640	2,187,750
Reach 2	4,000	1,858,947	1,841,852	1,841,490	1,818,137	1,810,920	1,785,339	1,735,477	1,725,517	1,723,307	1,805,937	1,874,702
Reach 3	6,000	3,847,374	3,872,967	3,907,540	3,900,631	3,927,200	3,911,526	4,009,007	4,019,691	4,054,361	4,076,077	4,056,116
Reach 4	7,200	4,275,218	4,316,422	4,474,371	4,588,573	4,685,168	4,705,198	4,754,873	4,676,048	4,669,853	4,660,457	4,607,754
Reach 5a	2,000	1,058,725	1,131,443	1,088,275	1,020,906	1,002,300	967,517	925,608	896,401	894,196	881,815	875,186
Reach 5b	1,400	813,384	725,831	667,188	618,866	614,096	626,140	630,931	597,374	583,208	536,595	502,843
Reach 5c	2,400	1,418,909	1,275,983	1,169,507	1,076,583	988,465	893,369	880,828	925,720	1,053,856	1,117,006	1,155,044
Reach 6a	1,200	917,126	769,296	727,369	690,004	681,962	706,350	858,589	913,115	879,291	904,307	907,606
Reach 6b	1,800	1,094,774	1,068,397	1,012,068	984,540	962,165	898,817	800,857	753,291	715,111	723,520	697,895
Reach 6c	2,000	1,154,405	1,214,079	1,191,542	1,152,690	1,087,076	990,284	868,961	816,702	820,404	766,659	743,176
Reach 7	4,000	2,700,771	2,719,112	2,733,736	2,749,299	2,760,358	2,807,010	2,698,669	2,701,819	2,719,380	2,745,771	2,755,783
Reaches 5-6	10,800	6,457,322	6,185,029	5,855,949	5,543,590	5,336,065	5,082,477	4,965,775	4,902,603	4,946,067	4,929,900	4,881,750
Reaches 1-2	9,000	4,036,095	4,012,819	4,097,215	4,069,577	3,949,130	3,713,755	3,635,481	3,621,124	3,744,730	3,909,577	4,062,452
Total Island Volume	37,000	21,316,781	21,106,349	21,068,812	20,851,672	20,657,921	20,219,966	20,063,805	19,921,286	20,134,390	20,321,782	20,363,854
Unit Volume (cy/ft)												
	Length (ft)	Apr-18	Jun-19	Jun-20	Jul-21	Aug-22	Aug-23	Sep-24	Feb-25	Aug-25	Feb-26	Jun-26
Reach 1	5,000	483.8	482.4	501.3	500.3	475.2	428.5	422.2	421.2	449.2	467.5	486.2
Reach 2	4,000	413.1	409.3	409.2	404.0	402.4	396.7	385.7	383.4	383.0	401.3	416.6
Reach 3	6,000	641.2	645.5	651.3	650.1	654.5	651.9	668.2	669.9	675.7	679.3	676.0
Reach 4	7,200	593.8	599.5	621.4	637.3	650.7	653.5	660.4	649.5	648.6	647.3	640.0
Reach 5a	2,000	529.4	565.7	544.1	510.5	501.2	483.8	462.8	448.2	447.1	440.9	437.6
Reach 5b	1,400	581.0	518.5	476.6	442.0	438.6	447.2	450.7	426.7	416.6	383.3	359.2
Reach 5c	2,400	591.2	531.7	487.3	448.6	411.9	372.2	367.0	385.7	439.1	465.4	481.3
Reach 6a	1,200	764.3	641.1	606.1	575.0	568.3	588.6	715.5	760.9	732.7	753.6	756.3
Reach 6b	1,800	608.2	593.6	562.3	547.0	534.5	499.3	444.9	418.5	397.3	402.0	387.7
Reach 6c	2,000	577.2	607.0	595.8	576.3	543.5	495.1	434.5	408.4	410.2	383.3	371.6
Reach 7	4,000	675.2	679.8	683.4	687.3	690.1	701.8	674.7	675.5	679.8	686.4	688.9
Reaches 1-7	37,000	576.1	570.4	569.4	563.6	558.3	546.5	542.3	538.4	544.2	549.2	550.4
Profile Volume Change Since Last Survey (cy)												
	Length (ft)	Apr-18	Jun-19	Jun-20	Jul-21	Aug-22	Aug-23	Sep-24	Feb-25	Aug-25	Feb-26	Jun-26
Reach 1	5,000	34,720	-6,181	84,758	-4,285	-113,231	-209,793	-28,413	-4,397	125,816	82,217	84,110
Reach 2	4,000	7,250	-17,095	-362	-23,353	-7,217	-25,582	-49,861	-9,961	-2,210	82,631	68,765
Reach 3	6,000	3,428	25,593	34,573	-6,909	26,568	-15,674	97,482	10,684	34,670	21,716	-19,960
Reach 4	7,200	50,092	41,205	157,949	114,202	96,595	20,029	49,675	-78,825	-6,195	-9,396	-52,703
Reach 5a	2,000	65,240	72,718	-43,167	-67,369	-18,606	-34,784	-41,908	-29,207	-2,205	-12,382	-6,629
Reach 5b	1,400	340,444	-87,553	-58,643	-48,322	-4,770	12,044	4,791	-33,557	-14,166	-46,614	-33,751
Reach 5c	2,400	476,687	-142,926	-106,475	-92,924	-88,118	-95,096	-12,541	44,892	128,136	63,150	38,038
Reach 6a	1,200	170,019	-147,830	-41,927	-37,365	-8,043	24,388	152,239	54,526	-33,823	25,015	3,300
Reach 6b	1,800	269,976	-26,376	-56,329	-27,527	-22,376	-63,347	-97,961	-47,566	-38,180	8,409	-25,625
Reach 6c	2,000	229,945	59,673	-22,537	-38,852	-65,614	-96,793	-121,323	-52,258	3,702	-53,745	-23,483
Reach 7	4,000	-29,257	18,340	14,624	15,563	11,059	46,652	-108,341	3,150	17,560	26,391	10,012
Reaches 1-7	37,000	1,618,545	-210,432	-37,537	-217,140	-193,751	-437,955	-156,160	-142,520	213,104	187,392	42,073
Unit Volume Change Since Last Survey (cy/ft)												
	Length (ft)	Apr-18	Jun-19	Jun-20	Jul-21	Aug-22	Aug-23	Sep-24	Feb-25	Aug-25	Feb-26	Jun-26
Reach 1	5,000	7.7	-1.4	18.8	-1.0	-25.2	-46.6	-6.3	-1.0	28.0	18.3	18.7
Reach 2	4,000	1.6	-3.8	-0.1	-5.2	-1.6	-5.7	-11.1	-2.2	-0.5	18.4	15.3
Reach 3	6,000	0.6	4.3	5.8	-1.2	4.4	-2.6	16.2	1.8	5.8	3.6	-3.3
Reach 4	7,200	7.0	5.7	21.9	15.9	13.4	2.8	6.9	-10.9	-0.9	-1.3	-7.3
Reach 5a	2,000	32.6	36.4	-21.6	-33.7	-9.3	-17.4	-21.0	-14.6	-1.1	-6.2	-3.3
Reach 5b	1,400	243.2	-62.5	-41.9	-34.5	-3.4	8.6	3.4	-24.0	-10.1	-33.3	-24.1
Reach 5c	2,400	198.6	-59.6	-44.4	-38.7	-36.7	-39.6	-5.2	18.7	53.4	26.3	15.8
Reach 6a	1,200	141.7	-123.2	-34.9	-31.1	-6.7	20.3	126.9	45.4	-28.2	20.8	2.7
Reach 6b	1,800	150.0	-14.7	-31.3	-15.3	-12.4	-35.2	-54.4	-26.4	-21.2	4.7	-14.2
Reach 6c	2,000	115.0	29.8	-11.3	-19.4	-32.8	-48.4	-60.7	-26.1	1.9	-26.9	-11.7
Reach 7	4,000	-7.3	4.6	3.7	3.9	2.8	11.7	-27.1	0.8	4.4	6.6	2.5
Reaches 1-7	37,100	43.7	-5.7	-1.0	-5.9	-5.2	-11.8	-4.2	-3.9	5.8	5.1	1.1

TABLE 4.2a. Beach volume data for selected dates since 2007 for each project reach and each monitoring profile. Reaches run from Breach Inlet to Dewees Inlet.

	Station	Distance to Next	Jul-07	Mar-08	Jul-08	Sep-09	Sep-10	Jun-11	Jul-12	Jul-13	Sep-14	Aug-15	Aug-16	May-17	Apr-18	Jun-19	Jun-20	Jul-21	Aug-22	Aug-23	Sep-24	Feb-25	Aug-25	Feb-26	Jun-26
Reach 1	0	400				485.6	565.5	602.3	631.6	561.4	499.6	496.7	493.8	613.5	566.0	566.5	567.0	605.4	635.2	532.4	547.6	511.3	484.5	528.4	527.0
	4	400				563.3	597.4	569.0	550.7	513.0	527.1	569.3	520.6	543.7	558.9	527.5	537.4	573.9	551.8	522.7	495.1	524.7	508.1	516.0	504.2
	8	400				693.6	675.8	669.0	621.4	629.3	672.7	658.2	625.9	621.6	637.6	641.4	638.4	654.6	616.6	550.6	590.2	577.6	559.1	629.1	654.3
	12	400				644.3	641.0	607.2	570.1	597.2	613.3	568.2	546.3	561.1	552.3	570.5	597.4	587.4	554.8	461.0	492.1	500.2	510.2	544.5	582.5
	16	400				586.6	578.3	552.8	495.5	527.6	553.0	525.8	487.1	495.8	493.8	510.1	540.7	507.1	461.3	404.8	412.7	465.0	486.7	473.2	500.0
	20	500				521.8	525.0	508.9	467.2	450.6	488.1	491.4	442.0	435.7	451.7	450.7	484.7	466.8	428.4	392.3	377.2	375.8	435.8	438.4	463.6
	25	500				485.1	498.7	490.6	463.9	450.5	469.5	472.5	442.6	428.0	443.4	441.8	471.6	460.3	431.1	394.7	375.5	363.4	429.4	439.1	457.3
	30	500				448.5	472.4	472.4	460.6	450.4	451.0	453.6	443.3	420.3	435.1	432.8	458.5	453.8	433.8	397.2	373.7	351.0	430.9	425.9	446.6
	35	500				436.9	453.9	452.3	453.2	441.9	435.2	429.8	432.5	412.9	426.1	421.6	439.8	438.5	419.9	386.3	364.7	351.0	389.0	409.5	432.0
	40	500				425.3	435.5	432.1	445.9	433.5	419.4	406.0	421.6	405.6	417.1	410.4	421.2	423.3	405.9	375.4	355.6	351.1	363.7	406.5	413.2
Reach 2	45	500				418.4	429.7	421.3	434.5	430.7	408.3	400.1	414.7	405.5	411.4	407.1	412.3	412.6	396.9	371.9	359.8	356.2	365.7	399.5	411.1
	50	500				411.4	423.9	410.5	423.2	427.9	397.1	394.2	407.8	405.4	405.7	403.8	403.3	401.8	387.8	368.5	364.0	361.3	364.7	426.1	419.5
	55	500				403.3	414.4	403.8	416.5	423.6	401.3	396.2	407.7	406.5	402.4	401.8	403.9	402.6	395.9	383.9	372.2	370.2	364.0	372.1	416.9
	60	500				395.1	404.9	397.2	409.7	419.2	405.5	398.3	407.6	407.6	399.1	399.9	404.5	403.3	404.0	399.3	380.5	379.0	381.6	387.7	427.3
	65	500				402.6	402.7	399.7	413.9	427.4	413.9	406.4	412.3	412.4	409.2	405.0	406.7	404.6	408.8	406.2	389.2	386.9	388.8	404.7	431.4
	70	500				410.1	400.5	402.1	418.1	435.6	422.3	414.6	417.0	417.2	419.3	410.1	408.9	406.0	413.6	413.1	397.9	394.8	397.1	407.8	430.5
	75	500				399.0	399.5	396.1	412.0	429.1	423.3	412.4	417.3	411.8	418.0	410.3	407.0	400.5	404.6	405.9	390.5	387.2	382.5	391.0	398.6
	80	1000				387.8	398.4	390.1	406.0	422.6	424.4	410.2	417.5	406.4	416.7	410.4	405.2	395.1	395.5	398.8	383.2	379.7	379.9	393.6	397.8
Reach 3	90	1000				393.7	403.5	404.2	417.6	425.1	437.4	430.8	430.5	430.3	433.4	433.5	434.8	418.6	415.4	409.7	421.9	424.0	415.2	432.3	422.8
	100	1000				693.4	712.9	703.7	706.8	720.7	726.0	728.3	729.5	731.7	727.6	730.0	740.5	741.9	725.6	729.1	752.7	741.9	744.9	751.5	742.7
	110	1000				634.8	644.5	637.5	645.8	657.5	657.4	660.0	668.3	669.8	664.9	663.6	675.5	687.3	676.7	682.4	697.0	692.1	700.2	694.6	683.1
	120	1000				602.2	615.7	609.8	629.3	634.5	624.3	643.5	647.7	641.8	644.6	648.8	660.3	663.4	665.2	661.9	687.4	687.8	693.6	672.6	673.7
	130	1000				594.2	605.3	601.9	604.2	633.1	607.3	627.7	622.7	629.1	633.9	640.2	639.2	632.0	652.5	644.2	659.2	669.4	677.5	684.7	689.4
	140	1000				612.1	622.6	616.8	623.6	642.3	634.7	645.3	632.7	643.9	645.3	654.4	655.2	646.5	673.6	661.0	668.4	680.1	691.8	709.1	706.3
Reach 4	150	1000				575.8	591.5	587.3	591.6	612.4	614.5	628.6	624.3	625.0	628.9	638.3	638.8	640.3	651.9	656.2	666.9	673.0	677.3	694.8	699.1
	160	1000				574.6	574.5	581.2	595.9	612.0	617.4	647.2	638.2	637.2	669.9	646.7	645.8	648.4	650.7	669.1	697.8	707.7	695.2	732.2	720.5
	170	1000				578.9	581.3	577.8	607.9	627.8	628.7	654.3	653.4	654.8	680.6	655.4	651.8	649.1	668.4	668.7	691.6	685.7	690.5	696.2	687.8
	180	1000				558.1	579.6	576.6	600.2	620.2	622.0	636.0	632.7	652.4	640.7	646.5	641.0	653.7	684.5	676.3	703.3	686.0	707.5	684.2	687.4
	190	1000				481.8	500.4	513.5	535.6	538.7	531.0	542.7	530.6	541.0	536.7	533.7	559.8	582.6	599.7	609.3	596.4	587.7	598.1	580.5	583.0
	200	200				480.9	502.8	510.2	529.5	534.5	534.7	532.0	521.1	517.5	519.8	524.8	567.0	609.2	623.8	644.3	639.7	614.6	611.4	595.5	586.1
	202	200			462.6	497.2	517.8	518.6	534.0	543.7	539.8	547.0	532.9	528.8	529.4	535.4	586.5	624.6	644.5	655.2	640.8	620.0	606.0	601.6	594.3
	204	200			474.7	519.4	530.9	531.1	543.8	549.8	549.7	552.7	547.3	531.9	537.8	547.1	610.7	648.3	660.9	670.9	655.9	639.9	617.3	618.6	605.5
	206	200			471.6	516.2	524.5	525.4	538.3	544.5	545.0	546.7	536.5	532.2	531.8	548.7	626.0	662.2	667.2	666.6	670.2	623.0	604.9	606.9	594.3
	208	200			459.1	496.7	511.4	513.4	531.7	548.3	537.1	536.5	533.1	522.7	517.2	552.7	636.7	661.5	661.4	662.1	656.0	613.6	598.6	606.3	590.8
	210	200			471.0	511.0	526.0	530.0	542.6	555.0	558.8	552.4	542.7	535.6	537.3	579.3	653.0	679.0	681.5	682.9	671.0	626.2	617.7	623.5	605.0
	212	200			478.0	516.9	533.1	535.6	559.9	562.8	562.6	559.8	550.6	539.9	534.4	591.6	655.2	685.8	689.7	668.7	653.7	647.2	637.3	635.2	609.7
	214	200			474.8	527.6	530.1	545.0	562.8	569.5	544.3	563.7	537.6	534.2	539.5	605.9	658.2	685.5	685.7	667.2	663.5	658.9	638.5	634.3	613.1
	216	200			450.9	498.2	500.5	513.0	534.7	548.1	524.6	528.0	514.1	511.9	519.8	576.0	623.5	639.8	638.3	629.1	625.9	616.6	603.3	591.0	568.7
	218	200			463.5	505.6	513.2	526.7	539.9	551.1	544.9	541.6	528.6	529.2	531.1	576.8	618.0	630.0	631.0	619.6	612.7	601.4	587.7	570.4	551.7
	220	200			479.2	523.7	532.1	540.4	560.8	575.0	575.0	563.5	546.2	542.7	547.5	591.5	613.4	632.1	638.3	618.8	601.8	590.0	577.5	558.3	543.4
Reach 5a	222	200	492.2	494.8	503.2	530.4	549.1	563.4	580.4	578.4	584.2	560.5	551.6	550.1	557.4	590.5	601.6	593.2	616.4	592.3	580.6	563.3	552.7	534.9	525.9
	224	200	499.7	506.4	518.3	561.0	560.4	577.3	598.9	596.1	597.2	574.3	565.0	567.4	569.7	615.9	617.0	589.7	604.8	580.0	549.7	533.7	525.8	514.4	508.6
	226	200	514.4	518.1	525.5	588.3	578.2	584.9	604.2	594.8	601.5	574.8	559.9	561.8	559.5	599.6	598.0	550.3	570.9	550.4	525.6	484.3	483.8	470.6	476.2
	228	200	538.5	535.2	563.3	610.0	588.3	594.1	602.4	592.0	599.9	564.8	556.9	548.9	549.7	592.6	575.4	512.4	535.1	522.8	497.5	441.8	445.3	434.1	448.8
	230	200	594.6	570.4	623.0	637.4	615.9	592.2	602.9	609.7	608.1	582.7	558.7	553.2	554.0	595.4	577.8	508.4	510.7	502.6	463.6	437.4	445.7	438.6	451.9
	232	200	559.3	568.6	602.7	615.2	616.6	615.5	614.8	601.5	592.7	568.0	545.0	532.5	544.7	587.0	542.6	498.9	490.1	481.1	454.9	466.5	464.8	445.0	452.7
	234	200	495.3	511.3	584.8	592.1	584.3	582.1	567.2	564.2	545.9	523.6	494.7	486.1	514.0	558.7	527.8	494.3	482.6	466.5	453.7	419.3	409.0	412.7	415.4
	236	200	446.3	456.5	537.9	542.9	539.3	536.7	526.5	511.4	493.3	477.5	448.2	433.3	476.1	519.2	480.2	477.0	436.0	429.7	384.2	387.5	386.9	389.8	375.4
	238	200	430.1	428.8	521.2	526.5	521.9	520.4	506.1	493.9	473.3	459.6	430.4	416.0	487.9	518.7	484.6	462.5	430.0	403.7	392.5	393.2	397.6	400.7	386.5
	240	200	411.1	405.0	499.5	508.6	506.5	508.2	490.7	473.4	454.9	441.3	412.7	399.8	499.2	515.9	486.8	471.0	425.4	396.0	399.8	417.3	419.1	424.6	398.1
Reach 5b	242	200	389.1	395.4	490.3	501.0	499.6	497.2	477.4	458.6	440.7	436.3	402.0	386.7	520.3	517.7	500.8	486.7	435.7	417.5	432.8	438.8	433.4	422.4	398.8
	244	200	401.1	396.2	491.2	506.1	498.1	489.2	475.8	454.5	440.2	442.5	397.7	375.3	555.3	536.4	505.0	485.5	437.9	438.4	471.1	457.4	448.6	428.8	398.1
	246	200	416.7	413.1	502.2	503.2	497.4	493.7	471.3	447.6	444.6	450.7	393.6	373.1	583.7	541.9	506.0	455.8	439.4	449.7	504.7	470.6	460.2	430.7	400.3
	248	200	443.7	447.1	529.1	522.0	511.6	506.5	482.0	475.2	480.7	469.9	400.5	376.7	622.8	569.1	515.7	476.0	461.7	485.2	563.4	524.8	486.2	445.8	412.3
	250	200	419.5	426.5	519.2	497.8	490.8	482.2	455.8	464.4	460.2	438.5	363.3	342.3	610.9	538.6	497.7	456.1	443.3	484.3	483.6	477.1	457.3	419.6	372.6
	252	200	429.6	423.6	516.6	489.3	476.0	467.9	447.6	479.4	426.9	393.9	338.9	326.2	612.4	523.5	477.8	434.4	457.5	480.2	451.4	421.4	417.3	356.4	342.1
	254	200	379.3	354.9	455.6	423.7	398.5	389.2	380.5	403.9	332.8	297.2	259.3	252.3	547.1	446.1	393.2	344.3	403.1	392.0	317.8	284.8	302.8	265.6	262.0

TABLE 4.2b. Beach volume data for selected dates since 2008 for each project reach and each monitoring profile.

	Station	Distance to Next	Jul-07	Mar-08	Jul-08	Sep-09	Sep-10	Jun-11	Jul-12	Jul-13	Sep-14	Aug-15	Aug-16	May-17	Apr-18	Jun-19	Jun-20	Jul-21	Aug-22	Aug-23	Sep-24	Feb-25	Aug-25	Feb-26	Jun-26
Reach 5c	256	200	422.2	375.9	474.8	433.7	397.8	387.4	403.5	399.8	315.7	282.3	264.0	250.9	549.3	429.5	380.5	397.8	419.5	384.3	292.5	262.9	253.7	249.8	254.7
	258	200	453.3	397.3	490.2	443.0	403.3	403.2	427.4	383.0	327.6	285.2	269.9	256.5	549.9	437.2	423.5	409.4	422.0	346.1	271.3	239.4	238.0	243.4	265.3
	260	200	474.3	442.3	512.5	465.2	425.2	427.5	426.2	360.6	318.9	289.9	275.8	276.5	558.7	454.8	469.2	420.5	404.8	320.6	257.0	205.7	216.6	257.8	313.6
	262	200	517.8	483.2	548.4	500.3	476.9	455.2	436.2	414.8	312.5	337.8	312.5	310.1	583.4	524.9	492.0	461.8	407.3	349.1	228.1	225.2	303.0	370.3	429.8
	264	200	546.6	528.4	578.8	530.7	507.9	447.5	448.0	405.6	353.1	370.2	333.1	332.0	599.1	535.6	502.2	475.8	407.3	341.1	249.8	325.0	379.0	451.8	460.2
	266	200	582.3	548.4	610.0	552.8	532.2	493.9	470.2	405.2	387.9	391.6	364.2	359.6	630.9	549.7	508.0	466.6	397.8	351.0	311.8	363.5	452.2	505.1	476.4
	268	200	550.6	545.8	591.0	518.4	503.3	485.0	463.5	353.7	391.4	392.7	367.0	379.6	569.1	524.3	474.0	422.6	375.3	323.9	281.2	348.2	452.2	497.8	454.4
	270	200	574.4	570.4	600.0	519.6	515.4	473.4	417.7	390.6	426.8	429.6	403.7	432.2	564.2	531.5	475.3	431.2	376.4	329.4	343.5	402.9	498.5	518.6	479.2
	272	200	630.3	589.4	602.4	534.3	535.7	504.3	448.3	373.1	448.7	472.9	448.8	422.9	569.2	541.7	475.6	412.2	378.8	348.6	425.7	445.2	512.0	525.6	519.4
	274	200	579.6	566.7	575.2	515.3	538.3	519.3	453.1	391.3	442.9	460.4	457.6	437.1	557.1	544.0	477.4	421.3	391.3	366.4	411.2	415.2	491.4	494.6	511.2
	276	200	703.7	678.5	675.6	615.8	653.0	636.9	548.4	539.8	584.0	563.4	552.1	531.5	631.6	604.5	538.3	489.1	471.7	471.8	579.6	580.4	617.3	596.7	662.7
	278	200	660.5	667.9	618.5	575.1	641.1	630.5	501.1	500.1	549.5	528.9	532.3	517.2	609.9	576.6	502.6	471.6	408.1	428.1	530.8	534.2	581.8	572.1	645.8
Reach 6a	280	200	821.2	737.7	703.5	860.0	822.8	727.4	613.2	670.1	691.8	711.6	733.0	660.7	793.6	680.6	638.3	604.0	583.2	597.1	735.8	824.6	801.1	852.4	859.6
	282	200	872.0	797.9	724.8	911.8	847.9	717.5	637.4	668.7	718.8	765.3	742.7	678.9	817.7	682.7	657.9	631.9	597.8	599.1	758.8	943.3	824.2	860.4	893.1
	284	200	839.6	755.0	749.8	896.8	814.9	732.8	647.7	674.8	744.0	813.3	776.8	678.7	821.1	678.3	658.9	619.0	604.0	625.2	823.1	908.7	828.4	852.4	892.3
	286	200	693.1	707.4	720.7	824.6	764.2	721.6	645.9	655.4	755.8	837.4	766.8	689.0	811.7	670.1	632.4	616.6	612.7	632.6	835.3	828.1	802.6	835.5	857.6
	288	200	415.2	494.9	585.5	615.8	607.6	604.4	543.7	550.5	614.5	699.0	641.6	552.6	712.2	592.7	542.9	509.9	516.1	546.2	649.4	636.7	653.2	657.6	625.8
	290	200	363.5	414.9	519.4	554.1	557.3	578.5	529.1	543.9	601.9	681.5	623.5	534.9	686.1	583.4	542.7	505.0	520.8	549.8	579.5	570.4	611.8	607.2	570.0
Reach 6b	292	200	337.4	386.3	493.6	530.0	519.0	569.4	546.5	558.4	615.6	688.3	632.5	542.0	680.0	597.9	565.8	531.1	533.9	560.5	558.1	532.3	551.4	564.6	539.1
	294	200	321.6	361.0	489.5	509.6	502.2	529.9	546.2	547.3	560.1	641.3	633.9	551.0	660.4	614.6	583.5	554.9	562.0	568.1	541.1	517.2	491.4	516.9	501.1
	296	200	295.2	335.7	475.3	476.6	474.1	495.3	517.6	488.1	495.7	527.6	592.5	515.8	633.2	611.9	575.6	549.0	562.5	546.1	506.8	483.9	451.3	469.7	453.7
	298	200	293.1	322.2	486.1	473.7	469.5	488.2	492.9	481.7	448.0	469.7	563.9	513.9	636.2	630.7	588.6	570.4	581.5	550.3	495.9	471.2	445.5	457.3	439.5
	300	200	253.7	272.9	444.1	424.0	418.2	437.1	451.8	414.2	393.9	366.7	484.1	459.3	591.1	589.2	547.7	538.5	536.6	493.9	433.6	408.7	388.7	396.1	377.9
	302	200	237.8	242.6	431.8	398.8	393.5	406.9	419.6	399.9	362.2	329.5	425.2	435.1	579.1	582.9	550.2	537.3	525.3	473.6	407.2	384.0	362.0	364.6	352.0
	304	200	258.8	265.3	456.7	413.5	405.1	413.8	435.2	397.9	360.5	350.5	389.3	436.3	603.0	604.3	575.1	566.7	535.3	483.6	416.1	389.7	369.8	366.2	353.9
	306	200	246.9	245.4	432.1	376.6	372.2	380.2	393.6	369.7	336.4	320.2	348.9	399.9	585.8	580.4	556.2	549.2	507.7	454.5	391.9	361.1	341.2	328.9	319.5
	308	200	241.4	244.9	426.2	369.9	344.9	349.0	364.8	313.5	286.1	296.5	312.4	370.8	569.5	557.1	537.5	534.2	497.8	436.8	365.7	332.8	310.9	299.8	290.3
Reach 6c	310	200	229.8	243.8	403.0	330.8	324.5	334.1	328.0	277.5	237.9	260.6	277.3	342.1	550.9	544.0	526.3	513.7	470.7	414.0	333.9	303.5	278.1	271.8	263.9
	312	200	213.2	220.6	385.7	321.7	297.9	295.1	310.7	272.2	223.2	232.3	248.6	319.7	533.7	519.0	503.6	485.0	445.0	388.6	303.5	269.8	253.8	244.1	235.4
	314	200	204.0	192.7	349.2	273.1	274.5	261.5	280.1	221.0	204.9	207.8	220.6	286.6	489.5	469.9	452.2	436.2	385.8	337.4	255.4	227.0	220.0	211.9	203.1
	316	200	323.1	282.0	453.5	395.7	392.1	375.8	368.9	338.2	306.9	326.5	333.9	401.1	580.8	575.2	569.5	544.3	507.0	443.0	373.5	331.8	324.6	304.8	287.8
	318	200	309.8	263.5	445.4	387.1	376.0	357.4	372.5	305.6	292.1	332.8	345.0	410.5	546.9	567.3	555.2	524.1	483.4	432.3	359.2	321.4	319.6	302.0	285.6
	320	200	320.4	265.0	443.8	392.2	379.4	349.5	365.1	328.3	301.2	347.4	368.9	420.0	530.5	557.9	548.6	527.6	488.7	429.7	362.0	325.7	330.2	305.6	294.3
	322	200		300.8	469.2	421.6	413.7	386.3	368.9	363.2	331.8	372.1	405.2	450.7	530.0	584.6	568.5	539.5	504.0	451.5	410.3	362.0	377.5	338.9	330.5
	324	200		402.7	562.3	542.7	525.1	493.3	471.7	467.7	446.6	486.2	515.1	550.0	606.9	668.8	657.9	628.4	603.2	548.8	512.1	477.5	487.0	446.0	448.7
	326	200		544.7	665.3	682.6	668.4	638.6	624.9	633.9	621.9	658.4	667.4	697.9	733.7	816.7	805.2	783.2	760.4	716.3	679.0	655.2	672.7	633.7	609.3
	328	200		524.0	574.3	619.1	606.4	566.2	561.7	599.8	562.0	615.7	607.5	632.0	668.5	748.8	731.9	721.0	691.2	654.8	641.2	616.8	627.9	584.3	571.9
Reach 7	330	200	496.7	481.1	511.3	540.4	582.3	600.3	604.1	603.2	581.9	584.8	577.0	565.4	552.1	580.4	603.9	634.7	662.7	684.1	563.3	689.1	699.4	652.2	634.8
	332	200	857.1	875.7	931.1	944.5	989.2	1002.4	1020.7	1040.7	1055.0	1044.6	1076.9	1035.3	1000.3	1026.8	1051.9	1066.6	1092.6	1128.7	993.0	1020.9	1028.6	1028.8	1022.0
	334	200	722.1	730.3	785.3	785.2	831.1	844.2	867.6	890.8	908.6	904.3	916.4	889.4	861.9	882.3	905.2	911.6	928.4	953.4	978.4	1009.5	1018.6	1037.9	1042.4
	336	200	732.9	733.4	792.5	790.9	799.8	825.8	841.2	861.4	886.8	885.4	886.9	884.2	858.7	884.5	894.9	895.2	906.9	923.0	810.9	954.7	967.2	976.3	985.9
	338	200	729.0	728.7	784.7	753.8	751.7	764.3	790.9	809.7	834.9	843.3	855.5	848.9	832.5	846.7	852.0	858.7	869.0	883.2	1048.5	902.4	910.1	920.0	926.3
	340	200	700.2	700.2	753.0	707.4	699.5	717.6	732.2	752.8	772.7	780.4	786.3	782.8	770.5	774.9	780.5	788.9	804.8	815.1	819.6	828.2	833.6	838.5	839.3
	342	200	635.3	631.8	653.1	631.6	621.4	634.9	656.8	666.0	679.4	685.9	687.5	680.0	670.8	667.4	667.2	676.9	693.0	707.3	653.4	655.4	715.2	720.7	724.2
	344	200	567.8	563.5	576.5	565.3	552.2	559.3	578.8	590.2	600.1	608.8	600.0	594.7	583.8	580.2	579.3	583.4	596.3	604.4	630.4	610.1	609.6	616.4	615.8
	346	200	513.9	515.5	512.6	507.0	494.6	502.8	513.9	524.0	528.2	543.7	533.7	526.9	521.8	516.3	510.5	513.4	516.0	527.8	530.3	521.4	517.2	523.2	524.9
	348	200	518.9	526.8	524.0	525.4	512.7	524.7	521.9	526.3	532.7	544.2	547.9	541.1	535.9	538.2	529.5	533.4	530.8	532.1	531.5	526.0	519.6	518.3	525.6
	350	200	534.2	533.1	533.7	529.4	528.0	529.8	535.7	543.0	549.5	557.7	560.8	557.0	556.5	558.8	551.8	546.5	547.9	547.8	546.5	542.7	536.1	527.2	522.0
	352	200	554.4	555.1	599.5	549.9	554.0	555.9	553.0	563.7	571.9	578.2	577.7	578.2	580.2	584.4	578.2	567.4	567.3	562.6	557.5	543.9	533.7	533.7	530.9
	354	200	591.2	581.3	597.0	587.5	594.6	596.7	589.4	606.6	610.2	613.4	611.1	605.8	607.9	613.2	608.7	600.6	596.0	592.9	579.4	553.4	553.7	551.5	550.5
	356	200	602.0	591.6	607.3	597.5	604.3	610.8	596.5	611.6	613.8	612.6	604.1	602.1	602.3	607.4	608.3	597.8	595.0	582.3	556.9	536.2	541.0	540.7	538.1
	358	200	618.8	611.3	619.3	608.2	621.2	627.0	621.5	620.7	608.3	605.2	601.2	588.6	585.3	587.6	591.6	591.5	585.4	568.6	553.7	533.3	529.2	545.7	556.9
	360	200	651.3	650.6	660.1	649.3	664.4	674.8	667.0	658.5	641.8	632.4	625.9	614.0	611.6	613.2	616.8	618.1	607.5	591.7	574.6	573.7	574.3	597.8	608.9
	362	200	681.1	670.5	673.2	701.5	710.9	697.3	690.5	687.3	671.8	663.5	660.5	623.1	632.0	628.8	646.0	645.1	632.3	625.3	603.8	598.1	605.9	621.0	637.0
	364	200	712.9	708.4	714.9	744.3	750.3	708.9	701.1	707.9	700.1	690.0	685.0	662.5	666.4	661.9	660.7	671.1	664.4	669.0	617.4	619.4	626.9	667.8	661.7
	366	200	700.4	683.2	695.9	710.7	705.3	686.6	689.6	700.0	710.3	699.6	702.4	697.7	675.8	691.4	686.0	692.9	683.7	749.4	641.8	649.1	640.6	644.2	649.9
	368	200	660.6	664.8	671.7	671.8	650.4	643.4	654.7	657.8	683.2	688.4	691.1	692.2	700.8	694.8	702.2	716.3	709.5	748.2	653.6	662.7	665.6	662.5	668.8
	370	0		809.8		657.6	663.8	655.6	767.7	629.5	690.9	706.1	720.0	726.0	745.4	693.3	690.9	704.7	687.3	763.1	668.7	660.2	659.1	671.4	663.6

TABLE 4.2c. Beach volumetric change for selected dates for each project reach and each monitoring profile.

	Station	Distance to Next	Apr 18 - Jun 19	Jun 19 - Jun 20	Jun 20 - Jul 21	Jul 21 - Aug 22	Aug 22 - Aug 23	Aug 23 - Sep 24	Sep 24 - Feb 25	Feb 25 - Aug 25	Aug 25 - Feb 26	Feb 26 - Jun 26	Sep 09-Jun 26	May 17 - Jun 26
Reach 1	0	400	0.5	0.5	38.4	29.8	-102.9	15.3	-36.3	-26.8	43.8	-1.4	41.4	-86.6
	4	400	-31.5	9.9	36.5	-22.0	-29.1	-27.7	29.6	-16.6	7.9	-11.8	-59.1	-39.5
	8	400	3.8	-3.0	16.1	-37.9	-66.0	39.6	-12.6	-18.5	70.1	25.1	-39.4	32.7
	12	400	18.3	26.9	-10.0	-32.6	-93.8	31.2	8.1	10.0	34.3	37.9	-61.8	21.4
	16	400	16.3	30.7	-33.7	-45.8	-56.5	7.8	52.3	21.7	-13.5	26.8	-86.6	4.2
	20	500	-1.0	34.0	-17.9	-38.5	-36.1	-15.1	-1.5	60.0	2.6	25.2	-58.2	27.9
	25	500	-1.6	29.8	-11.3	-29.2	-36.3	-19.3	-12.1	75.8	-9.8	27.9	-27.8	29.3
	30	500	-2.3	25.6	-4.7	-20.0	-36.6	-23.5	-22.8	79.9	-5.0	20.7	-1.8	26.3
	35	500	-4.5	18.2	-1.3	-18.7	-33.6	-21.6	-13.7	38.0	20.5	22.5	-4.9	19.1
	40	500	-6.7	10.8	2.1	-17.4	-30.6	-19.7	-4.6	12.6	42.8	6.7	-12.1	7.6
Reach 2	45	500	-4.3	5.2	0.3	-15.7	-25.0	-12.1	-3.6	9.5	33.8	11.7	-7.2	5.7
	50	500	-2.0	-0.5	-1.5	-14.0	-19.4	-4.5	-2.7	3.3	61.4	-6.6	8.1	14.2
	55	500	-0.6	2.1	-1.3	-6.6	-12.0	-11.6	-2.1	-6.2	8.1	44.9	13.7	10.5
	60	500	0.8	4.6	-1.2	0.7	-4.7	-18.8	-1.5	2.6	6.0	39.6	32.1	19.6
	65	500	-4.2	1.7	-2.1	4.2	-2.6	-17.0	-2.3	1.9	15.9	26.7	28.8	19.0
	70	500	-9.2	-1.3	-2.9	7.6	-0.5	-15.2	-3.1	2.3	10.7	22.7	20.4	13.3
	75	500	-7.7	-3.3	-6.5	4.1	1.4	-15.4	-3.3	-4.7	8.4	7.7	-0.3	-13.1
	80	1000	-6.2	-5.3	-10.1	0.5	3.2	-15.6	-3.5	0.2	13.8	4.2	10.0	-8.6
Reach 3	90	1000	0.2	1.3	-16.2	-3.2	-5.7	12.2	2.1	-8.8	17.1	-9.5	29.2	-7.4
	100	1000	2.4	10.5	1.4	-16.3	3.6	23.5	-10.8	3.0	6.6	-8.8	49.3	11.0
	110	1000	-1.2	11.9	11.8	-10.7	5.7	14.6	-4.9	8.2	-5.6	-11.5	48.3	13.3
	120	1000	4.2	11.6	3.1	1.8	-3.3	25.5	0.4	5.9	-21.1	1.1	71.5	31.9
	130	1000	6.3	-1.0	-7.1	20.5	-8.3	15.0	10.2	8.1	7.2	4.7	95.2	60.2
	140	1000	9.2	0.7	-8.7	27.1	-12.6	7.4	11.7	11.7	17.3	-2.8	94.1	62.3
Reach 4	150	1000	9.4	0.5	1.4	11.6	4.3	10.7	6.1	4.3	17.5	4.3	123.2	74.1
	160	1000	-23.2	-0.9	2.6	2.3	18.4	28.7	9.9	-12.5	37.0	-11.7	145.8	83.2
	170	1000	-25.2	-3.7	-2.6	19.3	0.2	22.9	-5.9	4.7	5.7	-8.4	108.9	33.0
	180	1000	5.8	-5.5	12.8	30.7	-8.2	27.1	-17.3	21.5	-23.4	3.2	129.2	35.0
	190	1000	-3.0	26.1	22.8	17.1	9.6	-12.9	-8.8	10.4	-17.5	2.5	101.2	42.1
	200	200	5.0	42.3	42.2	14.5	20.5	-4.6	-25.1	-3.2	-16.0	-9.4	105.2	68.6
	202	200	5.9	51.2	38.1	19.9	10.7	-14.4	-20.8	-14.0	-4.4	-7.4	97.0	65.5
	204	200	9.3	63.5	37.6	12.6	10.0	-14.9	-16.0	-22.6	1.3	-13.0	86.1	73.7
	206	200	17.0	77.3	36.2	5.0	-0.6	3.6	-47.2	-18.2	2.0	-12.6	78.1	62.2
	208	200	35.5	84.1	24.8	-0.1	0.7	-6.1	-42.4	-15.0	7.8	-15.5	94.1	68.1
	210	200	42.0	73.7	26.0	3.9	-1.4	-10.6	-44.8	-8.6	5.9	-18.5	94.0	69.4
	212	200	57.2	63.6	30.6	4.0	-21.1	-15.0	-6.5	-9.9	-2.1	-25.5	92.7	69.7
	214	200	66.4	52.3	27.3	0.2	-18.4	-3.7	-4.6	-20.4	-4.2	-21.2	85.5	78.9
	216	200	56.2	47.5	16.3	-1.4	-9.2	-3.2	-9.3	-13.4	-12.2	-22.3	70.5	56.8
	218	200	45.6	41.2	12.1	0.9	-11.4	-6.9	-11.3	-13.7	-17.3	-18.7	46.2	22.5
	220	200	44.0	21.9	18.7	6.2	-19.5	-17.0	-11.8	-12.5	-19.2	-14.9	19.7	0.7

TABLE 4.2d. Beach volumetric change for selected dates for each project reach and each monitoring profile.

	Station	Distance to Next	Apr 18 - Jun 19	Jun 19 - Jun 20	Jun 20 - Jul 21	Jul 21 - Aug 22	Aug 22 - Aug 23	Aug 23 - Sep 24	Sep 24 - Feb 25	Feb 25 - Aug 25	Aug 25 - Feb 26	Feb 26 - Jun 26	Sep 09-Jun 26	May 17 - Jun 26
Reach 5a	222	200	33.2	11.0	-8.4	23.2	-24.1	-11.7	-17.3	-10.6	-17.8	-9.0	-4.6	-24.3
	224	200	46.3	1.0	-27.2	15.0	-24.8	-30.3	-16.0	-7.9	-11.5	-5.8	-52.4	-58.8
	226	200	40.1	-1.6	-47.7	20.7	-20.6	-24.8	-41.3	-0.5	-13.3	5.6	-112.1	-85.6
	228	200	42.9	-17.2	-63.0	22.6	-12.3	-25.3	-55.8	3.5	-11.2	14.7	-161.2	-100.1
	230	200	41.4	-17.6	-69.4	2.3	-8.0	-39.1	-26.2	8.3	-7.1	13.3	-185.5	-101.2
	232	200	42.3	-44.4	-43.7	-8.8	-9.0	-26.2	11.7	-1.8	-19.8	7.7	-162.5	-79.8
	234	200	44.7	-31.0	-33.4	-11.8	-16.1	-12.8	-34.4	-10.4	3.7	2.7	-176.7	-70.7
	236	200	43.1	-39.0	-3.2	-41.0	-6.2	-45.5	3.3	-0.5	2.9	-14.4	-167.5	-57.9
	238	200	30.8	-34.1	-22.1	-32.5	-26.3	-11.2	0.7	4.4	3.1	-14.2	-140.0	-29.5
	240	200	16.8	-29.1	-15.8	-45.7	-29.4	3.8	17.5	1.8	5.5	-26.6	-110.5	-1.8
Reach 5b	242	200	-2.6	-16.9	-14.1	-51.0	-18.2	15.3	6.1	-5.4	-11.0	-23.6	-102.2	12.2
	244	200	-18.9	-31.4	-19.5	-47.6	0.5	32.7	-13.7	-8.7	-19.9	-30.6	-108.0	22.8
	246	200	-41.8	-35.9	-50.2	-16.4	10.2	55.0	-34.1	-10.4	-29.4	-30.4	-102.9	27.2
	248	200	-53.7	-53.4	-39.7	-14.2	23.5	78.2	-38.6	-38.6	-40.4	-33.5	-109.7	35.5
	250	200	-72.3	-41.0	-41.5	-12.9	41.1	-0.8	-6.5	-19.8	-37.7	-47.0	-125.2	30.3
	252	200	-88.9	-45.7	-43.3	23.0	22.7	-28.8	-30.0	-4.1	-60.9	-14.3	-147.2	15.9
	254	200	-101.0	-52.9	-48.9	58.9	-11.1	-74.2	-33.1	18.0	-37.2	-3.6	-161.7	9.7
Reach 5c	256	200	-119.8	-49.0	17.3	21.7	-35.2	-91.7	-29.7	-9.1	-3.9	4.9	-179.0	3.8
	258	200	-112.7	-13.7	-14.1	12.6	-75.9	-74.8	-31.9	-1.4	5.5	21.9	-177.6	8.8
	260	200	-103.8	14.4	-48.7	-15.7	-84.2	-63.6	-51.4	10.9	41.2	55.7	-151.6	37.1
	262	200	-58.5	-32.9	-30.3	-54.4	-58.2	-121.0	-2.9	77.8	67.4	59.4	-70.5	119.6
	264	200	-63.5	-33.4	-26.4	-68.5	-66.2	-91.3	75.2	54.0	72.9	8.4	-70.5	128.3
	266	200	-81.2	-41.6	-41.5	-68.8	-46.8	-39.2	51.7	88.7	52.8	-28.7	-76.4	116.8
	268	200	-44.8	-50.3	-51.4	-47.2	-51.4	-42.7	67.0	104.0	45.7	-43.4	-64.0	74.8
	270	200	-32.7	-56.2	-44.1	-54.9	-47.0	14.1	59.5	95.6	20.1	-39.4	-40.4	46.9
	272	200	-27.5	-66.2	-63.4	-33.3	-30.2	77.1	19.5	66.8	13.6	-6.2	-14.8	96.5
	274	200	-13.1	-66.6	-56.1	-30.0	-24.8	44.7	4.0	76.2	3.2	16.6	-4.1	74.1
	276	200	-27.1	-66.2	-49.2	-17.3	0.0	107.8	0.9	36.9	-20.6	66.0	46.9	131.2
	278	200	-33.3	-74.1	-30.9	-63.5	20.0	102.7	3.4	47.6	-9.6	73.7	70.7	128.6
Reach 6a	280	200	-113.1	-42.3	-34.3	-20.8	13.9	138.7	88.8	-23.6	51.4	7.2	-0.4	198.9
	282	200	-135.0	-24.8	-26.0	-34.1	1.4	159.7	184.5	-119.1	36.1	32.8	-18.6	214.2
	284	200	-142.9	-19.4	-39.9	-15.1	21.3	197.8	85.6	-80.3	24.0	39.9	-4.6	213.6
	286	200	-141.5	-37.7	-15.8	-3.9	19.9	202.7	-7.2	-25.5	32.9	22.1	33.0	168.5
	288	200	-119.5	-49.8	-32.9	6.1	30.2	103.2	-12.8	16.5	4.4	-31.8	9.9	73.1
	290	200	-102.6	-40.7	-37.7	15.8	29.0	29.7	-9.1	41.4	-4.7	-37.2	15.9	35.1
Reach 6b	292	200	-82.1	-32.1	-34.7	2.8	26.7	-2.5	-25.8	19.1	13.2	-25.6	9.0	-3.0
	294	200	-45.8	-31.1	-28.5	7.1	6.1	-27.0	-23.9	-25.7	25.5	-15.8	-8.5	-49.9
	296	200	-21.3	-36.3	-26.5	13.4	-16.3	-39.3	-22.9	-32.5	18.4	-15.9	-22.8	-62.1
	298	200	-5.5	-42.1	-18.2	11.1	-31.2	-54.4	-24.7	-25.7	11.8	-17.8	-34.2	-74.4
	300	200	-1.9	-41.5	-9.1	-1.9	-42.7	-60.3	-25.0	-19.9	7.4	-18.2	-46.1	-81.4
	302	200	3.8	-32.7	-12.9	-12.0	-51.7	-66.4	-23.2	-22.0	2.6	-12.6	-46.8	-83.1
	304	200	1.3	-29.2	-8.4	-31.4	-51.7	-67.5	-26.4	-19.9	-3.6	-12.3	-59.6	-82.3
	306	200	-5.5	-24.2	-6.9	-41.6	-53.2	-62.6	-30.8	-19.9	-12.3	-9.4	-57.1	-80.4
	308	200	-12.5	-19.6	-3.3	-36.4	-61.0	-71.1	-32.8	-21.9	-11.1	-9.4	-79.6	-80.4
Reach 6c	310	200	-6.9	-17.7	-12.6	-43.0	-56.6	-80.1	-30.4	-25.4	-6.3	-7.9	-66.9	-78.2
	312	200	-14.7	-15.3	-18.6	-40.0	-56.4	-85.1	-33.6	-16.1	-9.6	-8.8	-86.4	-84.3
	314	200	-19.6	-17.7	-16.0	-50.3	-48.5	-81.9	-28.4	-7.0	-8.1	-8.8	-70.0	-83.5
	316	200	-5.6	-5.7	-25.1	-37.3	-64.0	-69.5	-41.7	-7.2	-19.8	-17.0	-108.0	-113.4
	318	200	20.4	-12.1	-31.1	-40.7	-51.1	-73.1	-37.8	-1.8	-17.6	-16.4	-101.4	-124.9
	320	200	27.4	-9.3	-21.1	-38.9	-59.1	-67.7	-36.3	4.5	-24.6	-11.3	-98.0	-125.7
	322	200	54.6	-16.1	-29.0	-35.5	-52.5	-41.2	-48.3	15.5	-38.6	-8.3	-91.1	-120.2
	324	200	61.9	-10.9	-29.5	-25.3	-54.4	-36.8	-34.6	9.5	-41.0	2.7	-94.1	-101.3
	326	200	83.1	-11.6	-22.0	-22.8	-44.1	-37.3	-23.8	17.6	-39.0	-24.4	-73.2	-88.6
	328	200	80.3	-17.0	-10.9	-29.8	-36.4	-13.6	-24.4	11.1	-43.7	-12.3	-47.1	-60.1

4.2 Shoreline Analysis

As part of this report, CSE mapped shoreline positions across the Isle of Palms using previous topographic survey data spanning 2009–2026. The shoreline analysis focuses on the historical dry sand beach, represented by the 4.5-foot NAVD88 elevation contour. As discussed previously in this report, the +4.5-ft contour generally corresponds to the seaward extent of the dry sand beach on the Isle of Palms and provides a consistent reference for evaluating long-term shoreline change.

The apparent width of the dry sand beach can vary considerably from day to day due to the spring-neap tide cycle and the impact of short-term weather events on water levels on the South Carolina coast. As a result, shoreline positions interpreted directly from aerial imagery can fluctuate significantly depending on the stage of the tide at the time the imagery was collected. By using a survey-derived elevation contour instead of a visually interpreted shoreline, CSE can establish a consistent and repeatable shoreline position throughout the historical survey record, minimizing the influence of tidal variability and improving the accuracy of long-term shoreline change analyses.

To evaluate current beach conditions within the context of historical shoreline behavior, CSE compared the June 2026 shoreline to four representative historical datasets. These include the September 2009 and April 2018 shorelines, which document beach conditions immediately following the two most recent large-scale nourishment projects, and the May 2017 shoreline, which represents pre-nourishment conditions prior to the 2018 beach fill. In addition, the August 2025 shoreline was evaluated to quantify shoreline change over the most recent year and assess short-term beach evolution following the latest monitoring period.

In the south end of the island, the beach width north of 2nd Ave is similar to or better than it was in 2009 and 2018 (Fig 4.3 and Fig 4.4). This is especially evident in Reach 2 where downdrift sand and the USACE beneficial use project have built up over the past year. Further south in Reach 1, conditions have improved significantly; however, the beach width is still ~100 ft narrower than the healthiest condition south of 2nd Ave. This is mainly centered around the southern tip of Isle of Palms, where the heavy erosion from 2021 to 2024 was particularly damaging.

Figure 4.3 shows the position of the high-tide line over the nearly 20-year monitoring history at Isle of Palms. The BCM setback line location is included for reference. The shoreline has recovered from the 2024 eroded condition, gaining between 100 and 150 ft along most areas north of 2nd Ave (compare the black line and green line in the figure). Most of the gains have occurred since August 2025.

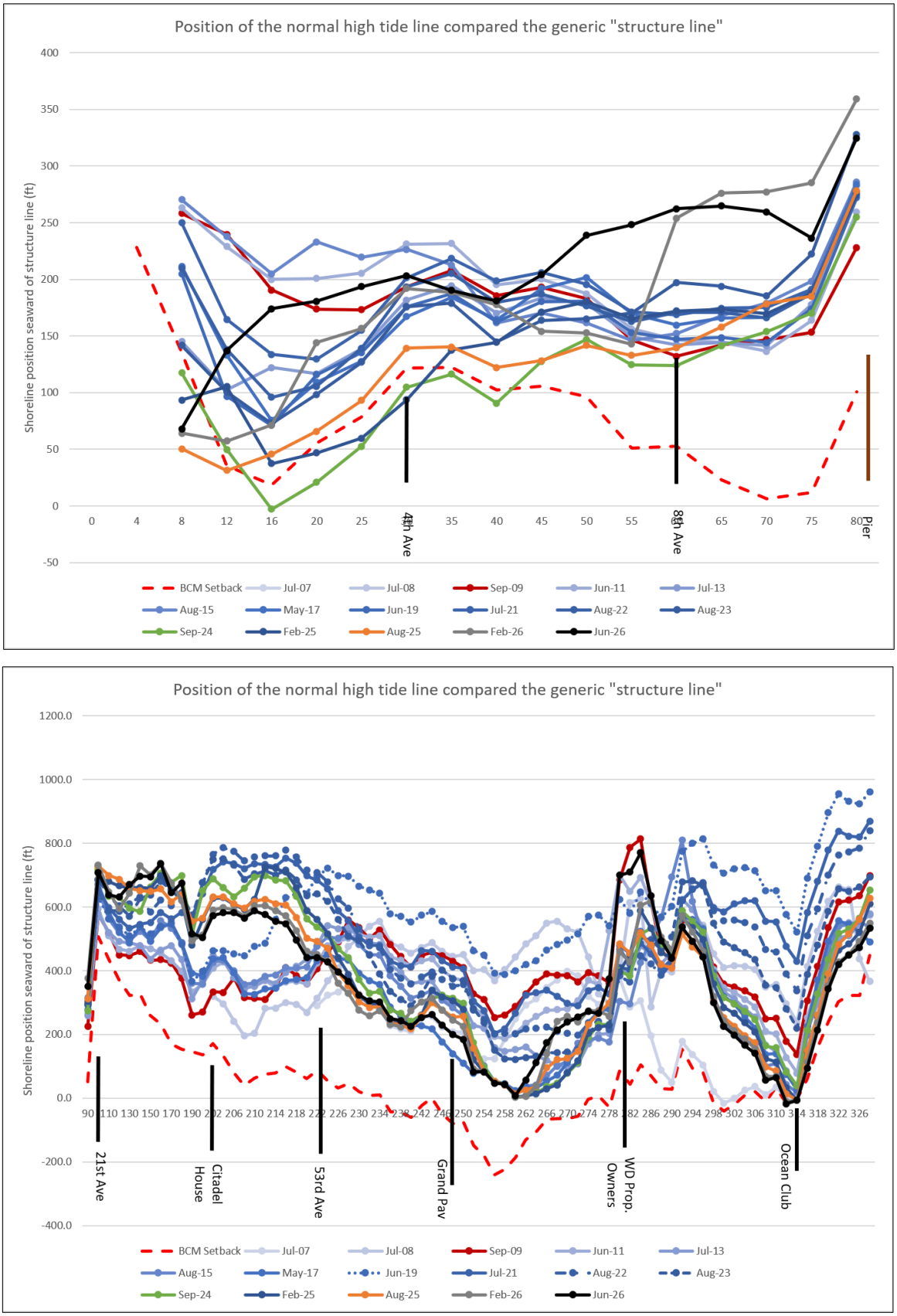


FIGURE 4.3. Position of the normal high tide line (+4.5 ft contour).



FIGURE 4.4. Shoreline position of Reach 2. Note that most of the reach is accretional (green) compared to the prior year and exceeds historical conditions. A significant amount of growth in Reach 2 is attributed to the downdrift movement of sand from the center of the island. It is likely that this sand is from previous nourishment projects.

The center of the island varied between beach width gains and losses, mainly driven by erosion of the north end of Reach 4. Over the past year, the shoreline position changed between gains of 78 ft and losses of 72 ft. Overall, the average shoreline position change was –20 ft along Reaches 3 and 4. The area between 42nd and 53rd Avenues accreted significantly following the prior two nourishment projects, and that sand is now spreading further downcoast. The current shoreline position in Reaches 3 and 4 is an average of 181 ft seaward of the 2009 position.

CSE anticipates significant accretion in Reach 4 following the 2026 nourishment project, beginning at the north end of the reach and moving south in following years.

The growth of the dry sand beach and the dune system is one of the indirect benefits of beach nourishment. Sand being placed in Reach 5 generally moves further south toward the center of the island. Over time, this resulted in the growth of Reaches 3 and 4, and now some of the sand from the 2018 project has been noted in the accretion south of the pier.

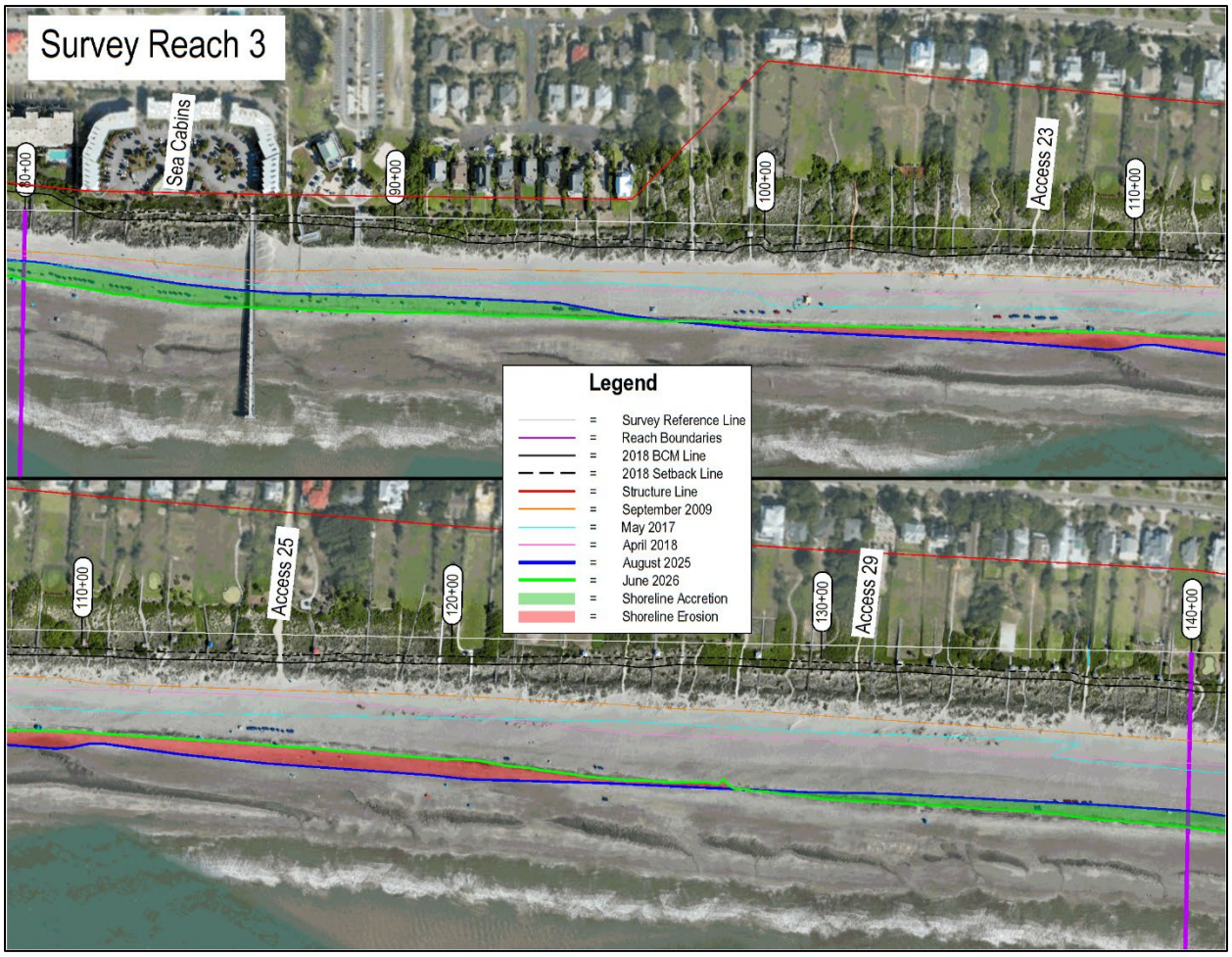


FIGURE 4.5. Shoreline position of Reach 3. Reach 3 was split between erosion and accretion, with the ends of the reach gaining dry sand beach. A pocket of slight erosion occurred around Access 23 and 25. Note the historical position of the dry sand beach is significantly further landward.

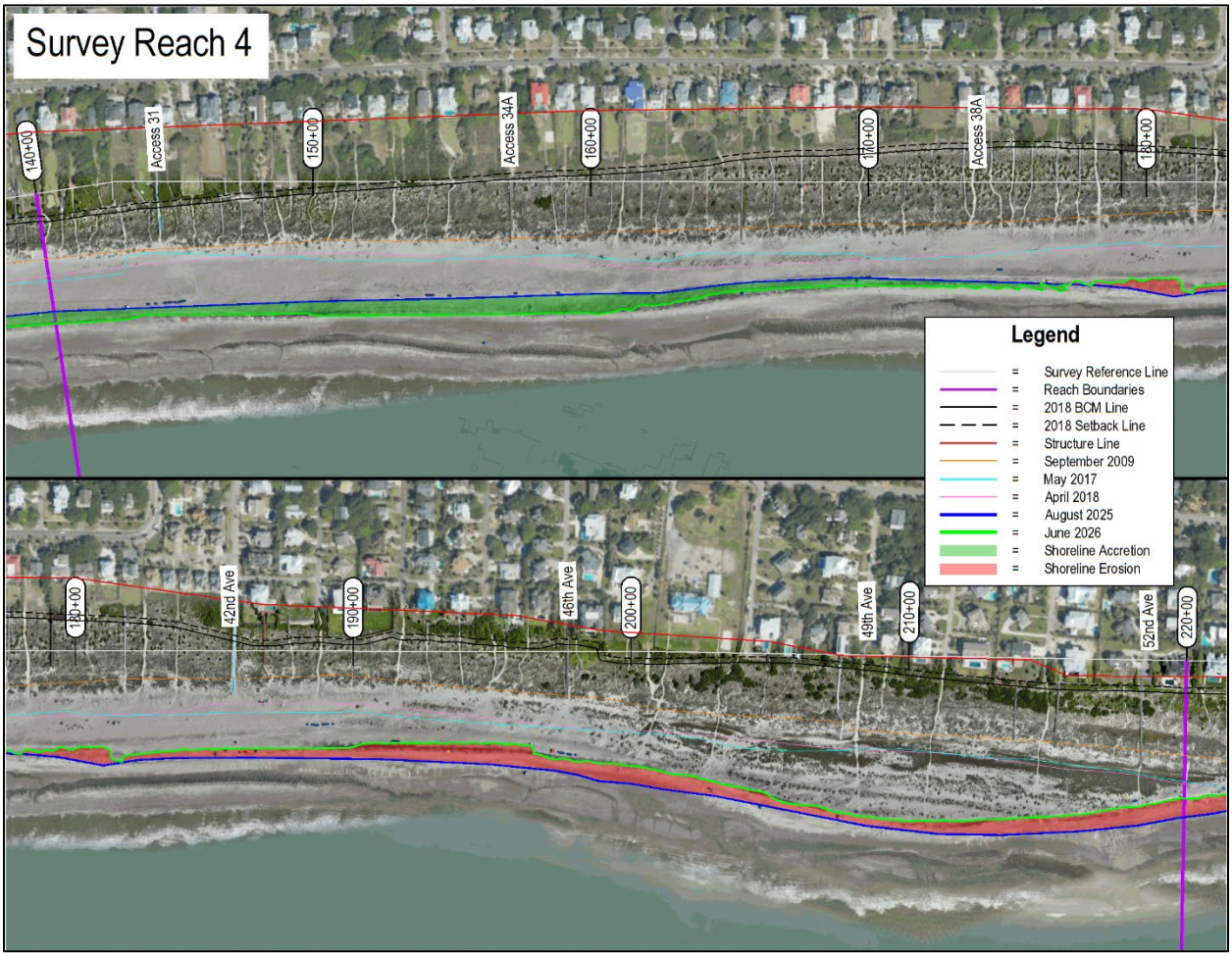


FIGURE 4.6. Shoreline position of Reach 4. The southern end of Reach 4 has been accretional due to receiving sand from the northern part of the reach; however, the northern part of the reach is erosional due to an interruption in the northern sand supply.

Shoreline position change was highly variable along the north end of the island. The area between 53rd Ave and Seagrove is near the most eroded condition observed since 2009; however, there was relatively little change over the past year. Gains were observed from Seagrove to Mariners Walk due to shoal attachment, and the east end of Wild Dunes saw recession of around 30–60 ft (increasing at the very northeastern end).

In Reach 6, most of the beach has eroded back since last year's survey, except for the area near Beach Club Villas. Accretion is mainly in the area nearest to the shoal attachment in Subreach 6a. The rest of the reach is erosional, with the area from Port O'Call to the Links Course being the most erosional. This is especially evident in front of Ocean Club, where all of the dry sand beach has been lost. This is likely due to the sand from the shoal not spreading as quickly to the boundaries of Reach 6 as it did in Reach 5. While some shoal sand has made it down to Subreaches 6b and 6c, evident in the reduced

erosion rates along the center of the reach, it has not been enough to combat significant erosion around Ocean Club. It is also possible that the emergence of the new shoal offshore has limited the recovery in this area by drawing some of the sediment from the current shoal attachment toward it. The upcoming project will focus on adding significant amounts of sand to the heavily eroded areas. This includes pumping a large berm in front of Port O'Call, Seascape, and Ocean Club. Some material will also be placed updrift to help prevent significant losses years after the project.

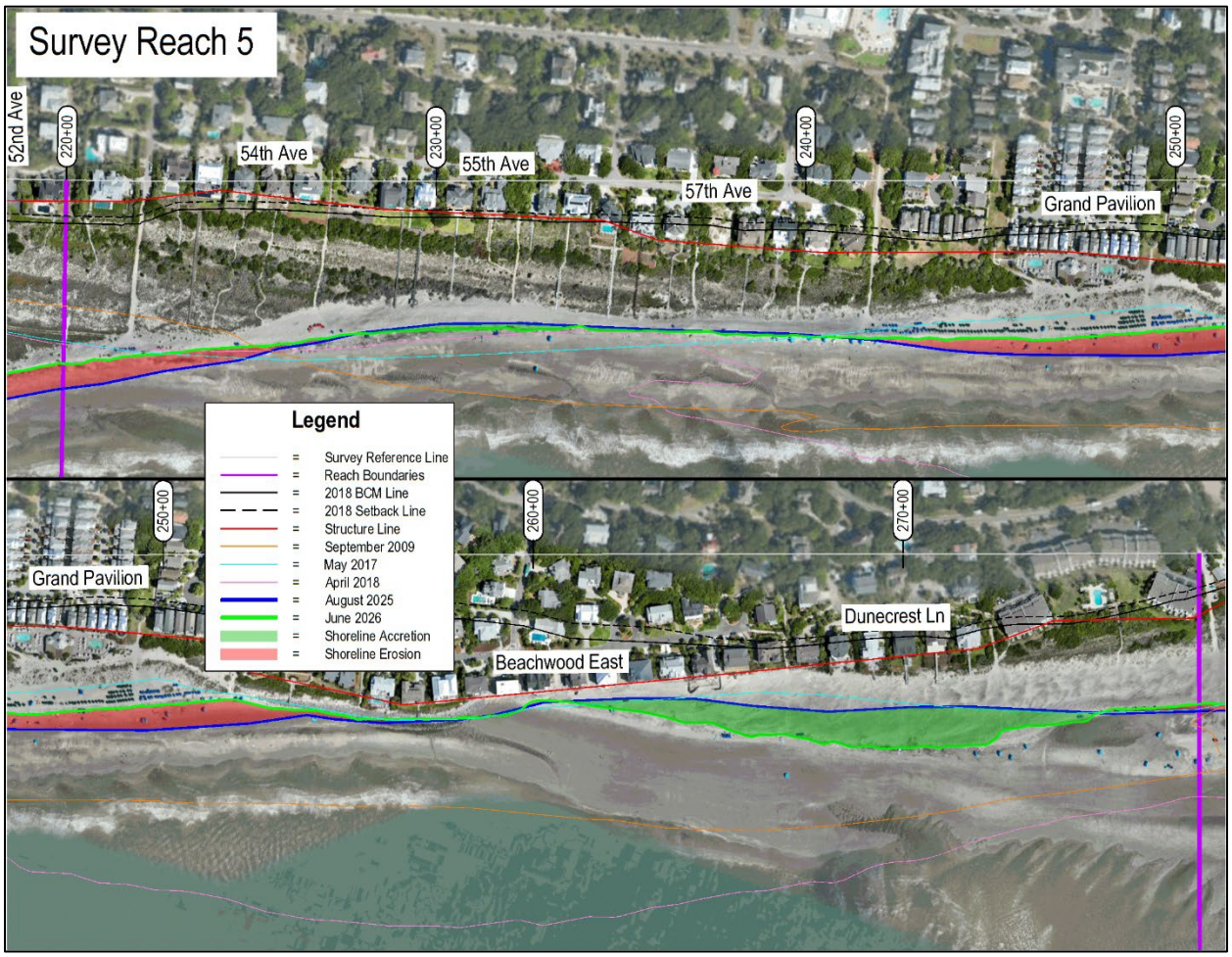


FIGURE 4.7. Shoreline position of Reach 5. There are areas of erosion and accretion compared to last year's survey due to the spreading of sand down the beach and the movement of an erosional wave further south.

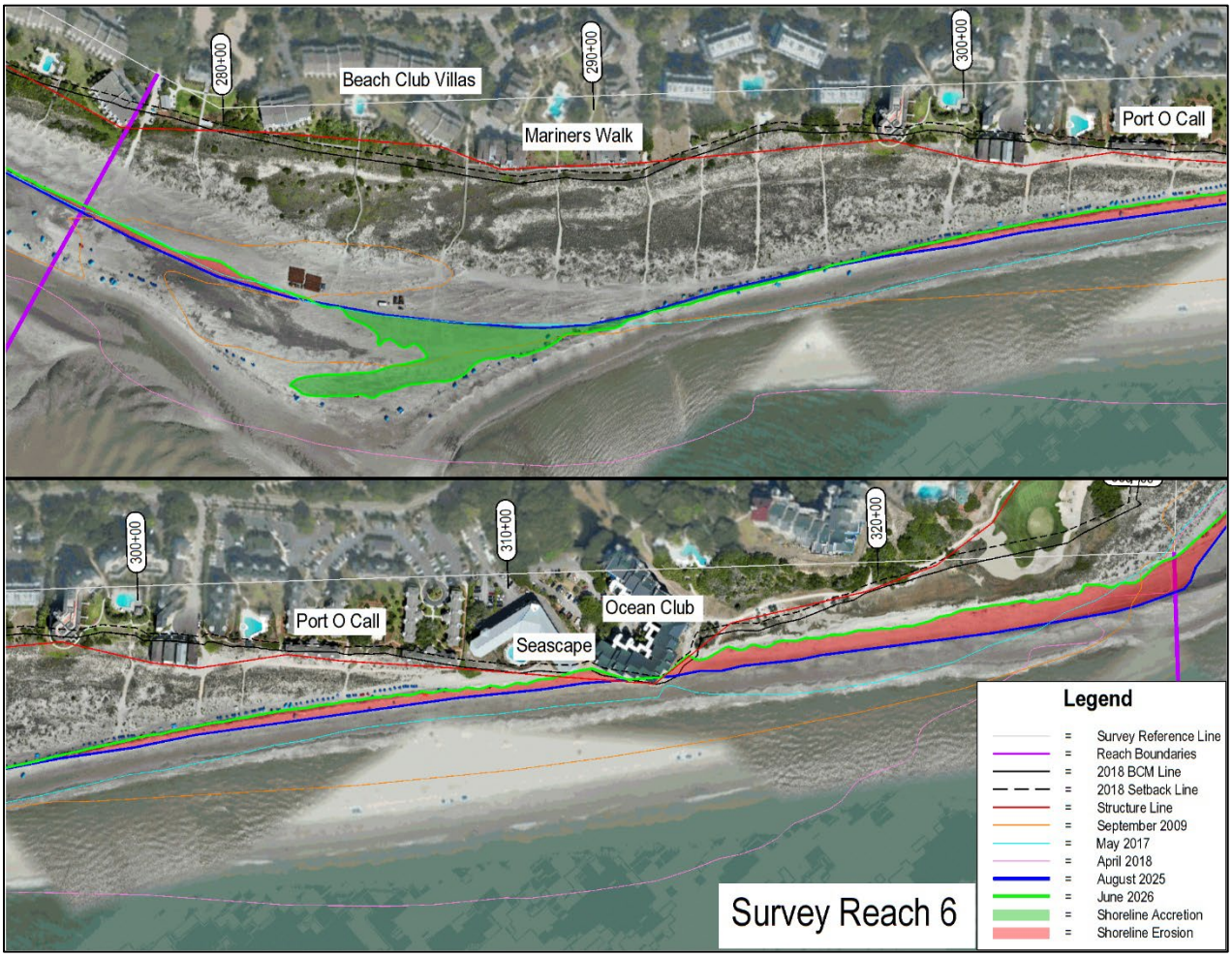


FIGURE 4.8. Shoreline position of Reach 6. Most of Reach 6 is eroded compared to previous surveys, especially around Ocean Club.

4.3 Project Area Reach Volume Change

The 2018 nourishment project placed sand along most of Reaches 5 and 6 at the eastern end of the island. This section includes Reach 7 because a portion of it was nourished in the 2008 project.

4.3.1 Reach 7

Reach 7 encompasses 4,000 ft between Lines 328 and 370 that span the shoreline fronting the Dewees Inlet channel (Figure 4.9). The inlet shoals shelter this portion of beach from the largest open-water waves, so the profile features a narrow, dry-sand berm and a steep beach face. The steep beach face reduces the total profile volume needed for a stable profile compared to oceanfront areas. The seaward end of the reach was included in the 2008 nourishment project and has traditionally exhibited relative stability in beach volumes.

Since monitoring began in 2007, Reach 7 has been one of the most stable reaches on Isle of Palms. The reach initially benefited from nourishment from the 2008 project and has since experienced periods of erosion and accretion. Overall, since monitoring began, Reach 7 has gained ~246,500 cy, with ~52,000 cy of sand accreting after the 2018 project (Fig 4.10).



FIGURE 4.9. Survey reference line stationing along Reach 7, encompassing the length of the beach between Lines 330 and 370.

Within the past year, from August 2025 to June 2026, the reach was accretional and gained ~26,400 cy (6.6 cy/ft). Over the past 4 months, from February to June, this section of beach gained ~10,000 cy (2.5 cy/ft). Reach 7 has experienced an inter-annual pattern of erosional and accretional 'waves' moving northwest (inland) and southeast (seaward) along Reach 7. Fortunately, these profiles are located along the undeveloped portion of the beach well within Dewees Inlet. This means that any minor to moderate chronic erosion does not represent a significant threat to life or property.

The long-term trend along Reach 7 is that of accretion as sand is eroded from the convex-shaped shoreline along the 'corner' of the island, where open-ocean wave energy is refracted across the inlet channels and concentrated on the corner.

While Reach 7 has been accretional over the past year, there are pockets of erosion with varying rates. Station 330 (18th hole), which is directly adjacent to Reach 6, has had an average erosion rate of –32.3 cy/ft over the past year. There is also a small pocket of erosion over 600 feet of beach from Station 350 to 356 (Cedar Creek Wetland) averaging –1.9 cy/ft. This is similar to the background erosion rate along many beaches in South Carolina and is natural given its proximity to a small tidal stream.

Ground photos from the reach reflect continued stability along the backshore, as shown by maturing dune grass plant communities. Ground photos highlight the continued maturation of dune habitat in areas east of the groin and scarping in stations west of the groin (Fig 4.11). As the profile in Figure 4.11 shows, the main channel of Dewees Inlet has not migrated toward Isle of Palms and remains positionally stable. Accretion along the upper profile has moved the channel margin seaward despite its direct exposure to storms from the northeast. This is an important result of nourishment spreading from the oceanfront project area.

Following the completion of the 2026 nourishment project in Reaches 5 and 6, CSE expects that Reach 7 will benefit from downdrift movement of sand. After the 2018 project, Reach 7 experienced increased accretion at the east end of the reach. Sand moved westward across the reach in the years following the project. Given that the scope of the upcoming project is relatively similar in this area, Reach 7 can be expected to gain sand along the beach fronting the golf course.

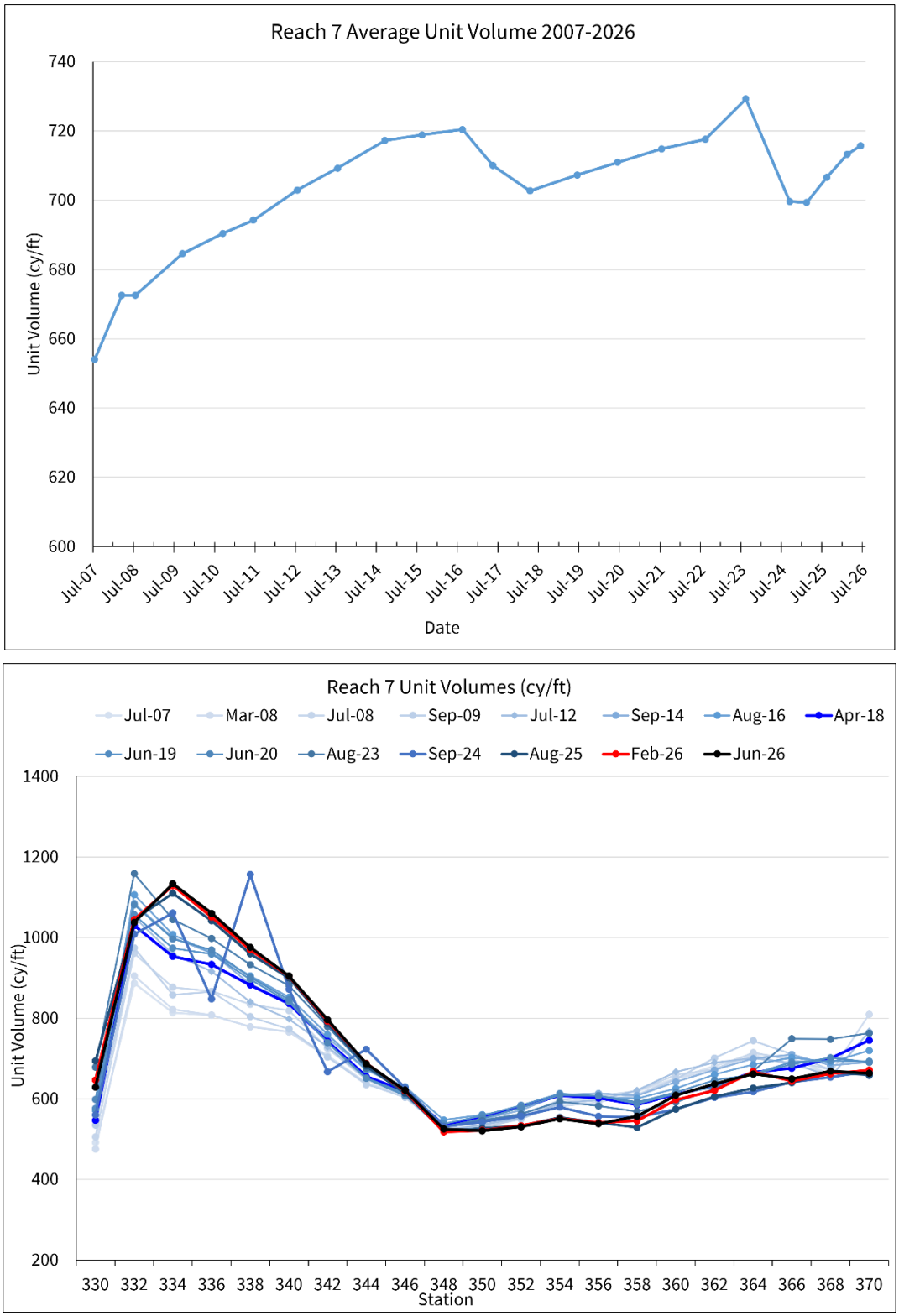


FIGURE 4.10. **[UPPER]** Average beach volume in Reach 7 since 2007. **[LOWER]** Profile unit volumes for each monitoring line in Reach 7.



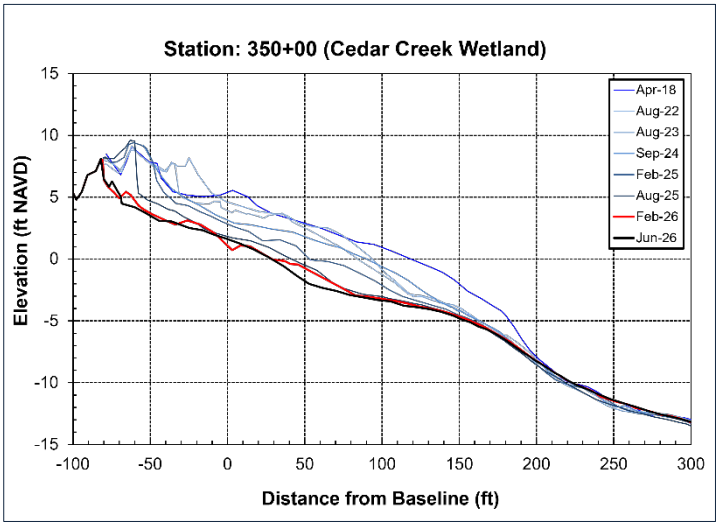




FIGURE 4.11.
[UPPER] Aerial photo of Reach 7 in June 2026 **[LEFT]** and Beach profile from Reach 7 **[RIGHT]**.

[MIDDLE] Aerial photo of Reach 7 collected July 2026.

[LOWER] Ground photos from Station 350 in August 2025 **[LEFT]** and in June 2026 **[RIGHT]**.





4.3.2 Reach 6

Reach 6 encompasses ~5,000 linear feet of beach between the Wild Dunes Property Owners Beach House (Station 280) and the 18th hole of the Links Course (Station 328) (Figure 4.12). This area is along the 'corner' of the shoreline between Dewees Inlet and the open ocean and is where shoals attach as part of cyclical bypass events from the inlet. Depending on the location and magnitude of the bypass, the shoreline can move hundreds of feet landward or seaward over the course of just a few months (Kana et al 1985, Gaudiano 1998).



FIGURE 4.12. Survey reference line stationing along Reach 6 encompassing ~5,000 lf of beach between Wild Dunes Property Owners Beach House and the 18th hole of the Links Course.

Reach 6 experiences regular shoal attachment (bypass) cycles. The time between these events varies with the size and speed of an individual shoal; however, since the 1940s, these events have tended to occur about once every seven to ten years. (Gaudiano and Kana 2001) Due to the natural internal dynamics of these shoal bypass events (see Fig 2.3), Reach 6 often experiences dramatic erosion and accretion simultaneously. As a shoal approaches, volumes increase in the immediate vicinity of the attachment area between the shoal and beach. Wave refraction around the shoal concentrates erosion on either side, often just a few hundred feet up or downcoast. As the shoal attaches to the beach, sand spreads laterally and fills in the erosional arcs cut on either side of the attachment zone.

Since the 2008 project, CSE surveys have identified multiple attachment events along Reach 6. These events have led to variable rates of erosion and accretion along every profile in the reach, with the current shoal attachment continuing to impact the beach now. Since 2025, the shoal attachment has started to reach its final stage. Sand has started to spread to adjacent areas. This has not resulted in accretion in all areas of Reach 6, but it has decreased erosion rates.

To that point, Reach 6 lost ~20,325 cy (–4.1 cy/ft) from August 2025 to February 2026 and lost an additional ~45,800 cy (–9.2 cy/ft) from February 2026 to June 2026. This resulted in a yearly net loss of ~66,125 cy (–13.2 cy/ft) from 2025 to 2026. This is significantly less than the erosion reported in the last monitoring interval, where Reach 6 lost ~116,050 cy from 2024 to 2025 (–23.2 cy/ft).

Despite the reduction in erosion, Reach 6 has lost a total of ~817,625 cy following the completion of the 2018 project. Reach 6a, spanning the Wild Dunes Property Owners Beach House to Mariners Walk, is in better condition than prior to the 2018 project, holding ~160,000 cy more sand than in 2017. Overall, Reach 6 holds 412,000 cy more sand than the 2007 condition, though the area near Seascape, Ocean Club, and the Links Course remains critically eroded.

Reaches 5 and 6 are two of the most dynamic developed beachfront areas in South Carolina, with periods of high erosion and accretion tied to shoal bypass and coupled with chronic background erosion. While shoal bypass events occur elsewhere in South Carolina, no other event is as dynamic or affects a developed area as in Isle of Palms. Because of this dynamic nature, Reach 6 was broken up into subreaches in 2025 to further evaluate the changes within this area. Reach 6a covers the area from around the Wild Dunes Property Owners Beach House to around Beach Club Villas. It includes the area of initial shoal attachment, which was highly accretional last year, and is still accretional this year from August 2025 to June 2026. The accretion rate has significantly decreased as the shoal moves from its attachment stage to its sand spreading stage. This section of beach accreted ~28,325 cy in the past year, with most gains occurring during the first part of the survey period.

The next subreach to the northwest is Reach 6b, from the Beach Club Villas to around the Seascape Villas. Reach 6b has experienced a significant reduction in erosion rates in both semi-annual surveys, displaying sand from the shoal starting to spread alongshore. Reach 6b lost ~17,225 cy of sand this year, which is significantly less than last year's loss of ~88,025 cy.

Reach 6c spans from Seascape Villas to Dewees Inlet, and it has remained erosional, losing a total of 77,000 cy of sand over the past year. Erosion was greatest at Ocean Club and along the Links Course (Fig 4.15).

Aerial and ground photos of the reach taken in June 2026 document recent variability in beach and dune volumes (Figs 4.15). The western portion of the reach contains relatively healthy and continuous vegetation along the upper dry-sand beach and dunes, whereas vegetation along the eastern portions of the reach is sparse to nonexistent. Around the Ocean Club, there is little to no dry-sand beach protecting the buildings.

Directly following the completion of the 2026 nourishment project, there will be an additional ~600 feet of berm added to Subreaches 6b and 6c. Additionally, a new dune will be placed along ~2,700 feet of highly eroded beach to offer more protection to homeowners. At the time of writing this report, Marinex Construction has completed nourishment along Reach 6. To maximize the project's performance and longevity, CSE analyzed erosion following the 2008 and 2018 projects. As a result, sand in the template will be placed farther south toward Reach 5. This was done because CSE noted that most of the

erosion following the project was not due to a large “bulge” built out from the shore, but a result of a lack of sand supply updrift of the reach. By placing more sand updrift or south of places like Seascape and Ocean Club, this material is expected to supply the beach downdrift for years following the project.

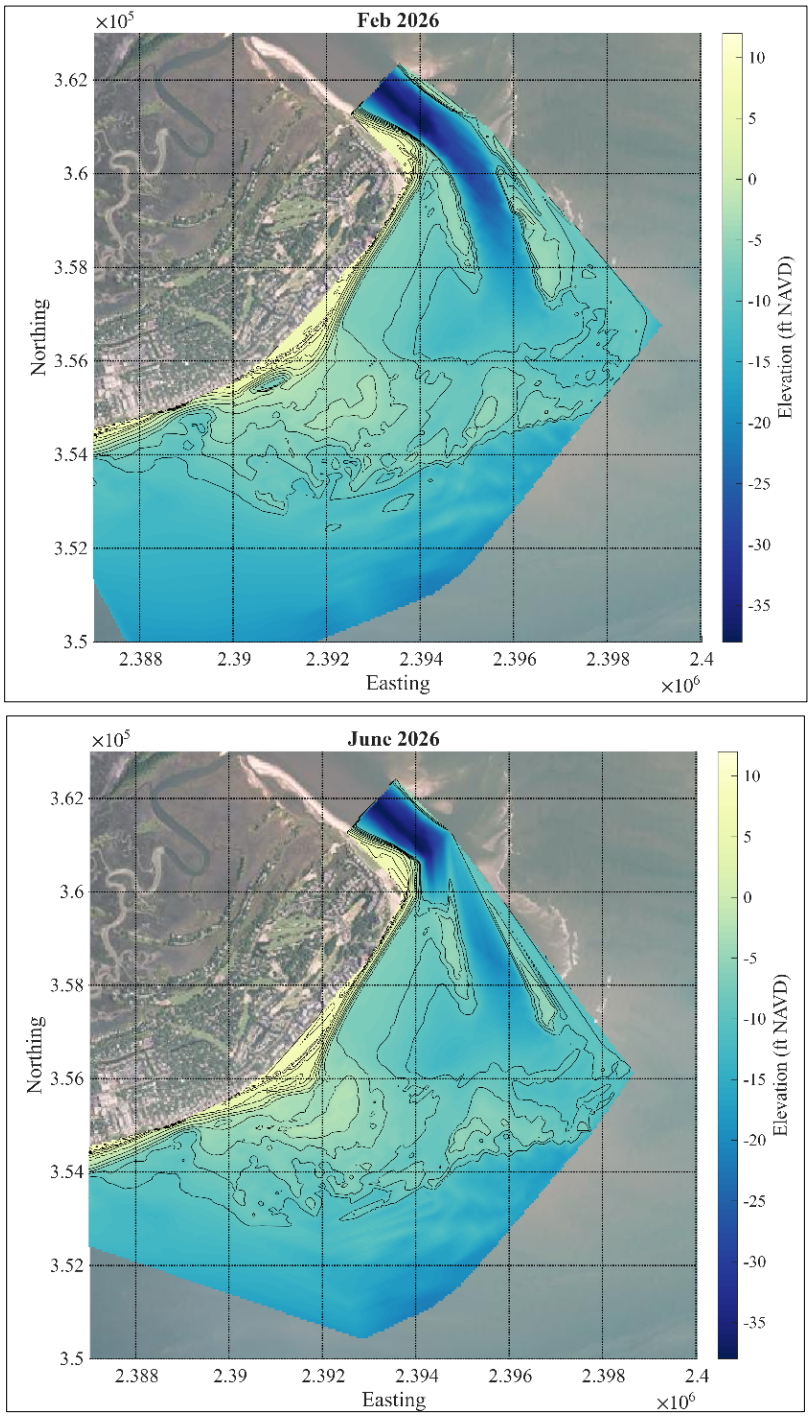


FIGURE 4.13. Contour map of offshore Wild Dunes showing another shoal moving onshore. It is possible that the presence of this shoal may limit the natural recovery of the beach at the north end of the island. The oncoming shoal does not contain as much sand as the prior shoal did but may draw sand off the beach and/or effect wave refraction.

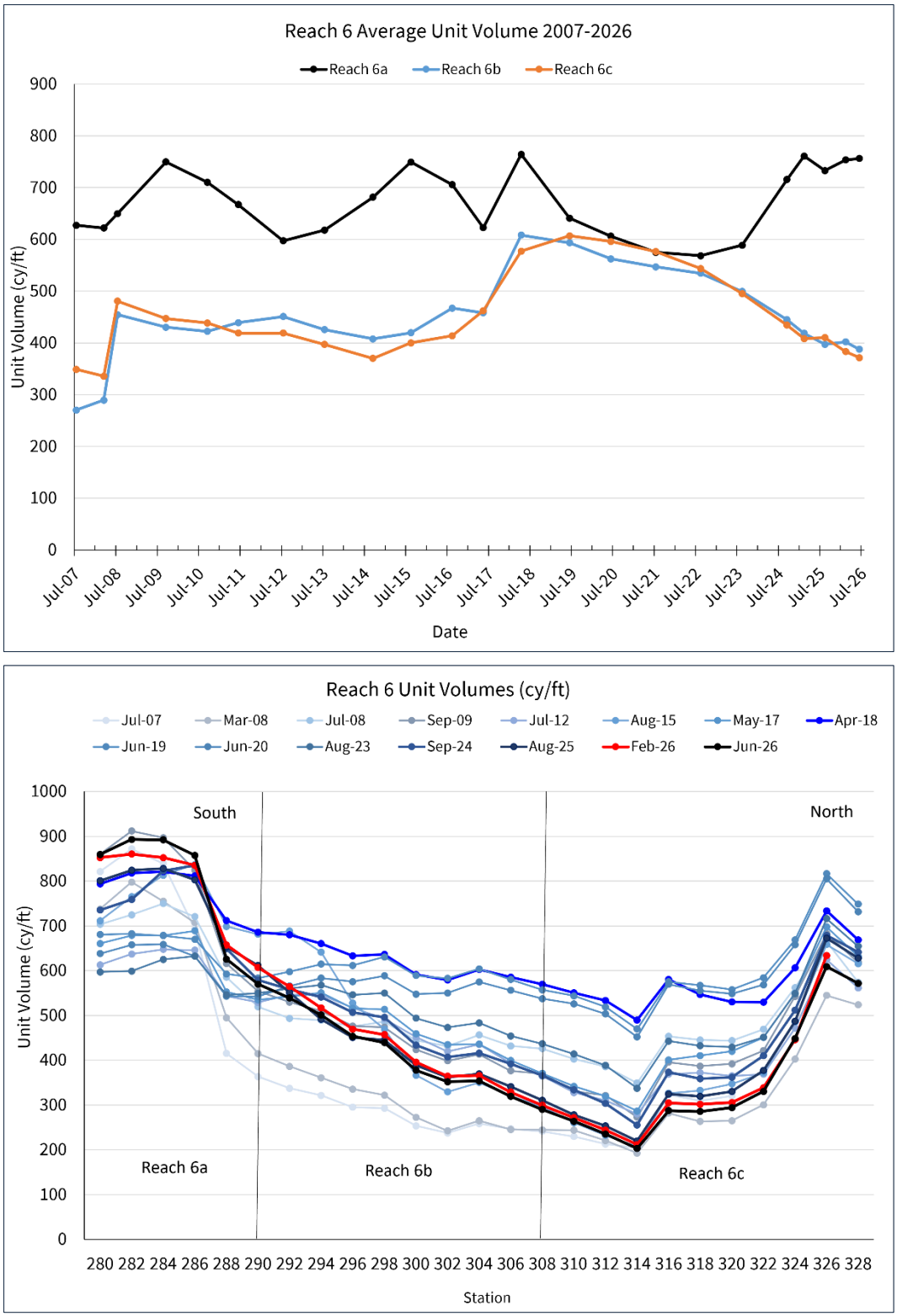
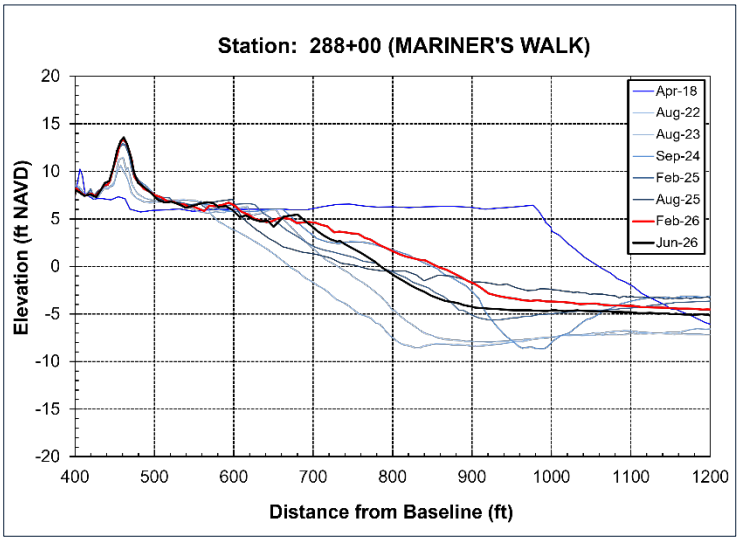


FIGURE 4.14. [UPPER] Average beach volume in Reach 6 since 2007. Note the significant increase in volume in Reach 6a starting in 2022 due to the incoming shoal. **[LOWER]** Profile unit volumes for each monitoring line in Reach 6. Stations closer to the shoal attachment (Beach Club Villas) tend to hold more volume per foot than those further away (Ocean Club).





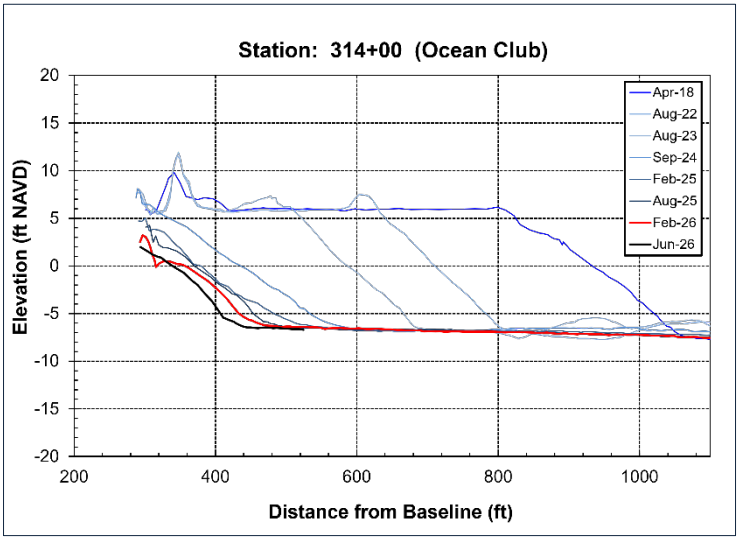




FIGURE 4.15. **[LEFT]** Reach 6 profiles. Subreaches 6b and 6c have continued to erode over the past year, but those rates have decreased. Some areas, such as Ocean Club, are in their most eroded state since the 2018 project and will receive the most amount of material in the 2026 nourishment project. **[RIGHT]** Aerial photos collected in June 2026.

4.3.3 Reach 5

Reach 5 includes ~5,800 lf of beach between 53rd Avenue and the Wild Dunes Property Owners Beach House (Stations 222–280 – Figure 4.16). The central and eastern portions of Reach 5 are strongly influenced by shoal-bypass events, much like Reach 6. Reach 5 tends to experience waves of erosion and accretion during and after each shoal bypass event. Portions of the reach have experienced critically eroded conditions requiring emergency protective measures over the past 50 years.

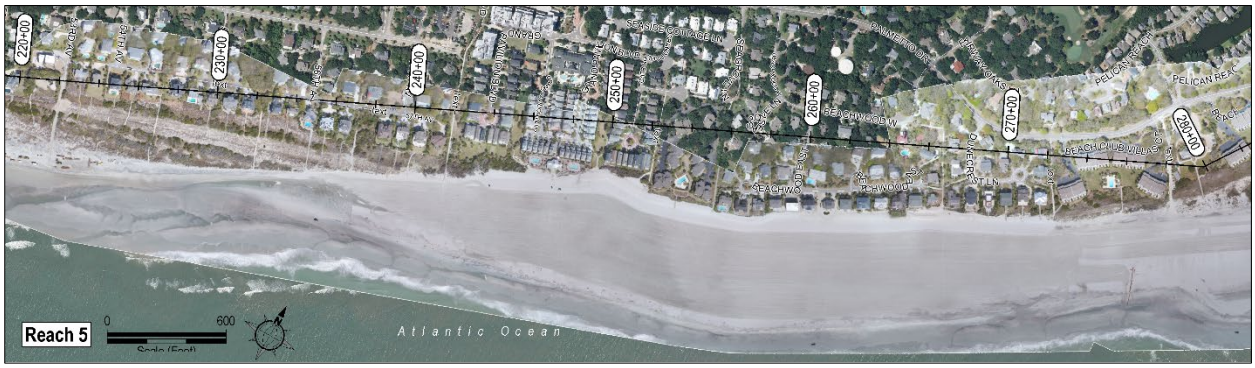


FIGURE 4.16. Survey reference line stationing along Reach 5, which spans ~5,800 lf of beach between 53rd Avenue and Wild Dunes Property Owners Beach House. The background photo is from just after the 2018 nourishment project.

Reach 5 has benefitted from multiple large nourishment projects, including in 2008, when ~318,000 cy of sand were added, and the 2018 project that added ~909,000 cy of sand. Erosion accelerated in Reach 5 between the 2008 and 2018 projects, likely due to a combination of higher storm frequency and sea level rise. Reaches 5 and 6 lost an average of ~100,000 cy per year between 2008 and 2017, but over 200,000 cy between 2018 and 2026. As mentioned before, this area of Isle of Palms is one of the most dynamic developed shorelines in South Carolina. This is particularly true along Beachwood East, which has experienced periods of significant erosion and accretion from migrating shoals.

As shoals move ashore at the east end of Reach 5 and at the Wild Dunes Grand Pavilion, a gap in the main shoal along Beachwood East allows higher waves to pass through. This leads to concentrated wave energy along that section of beach and accelerated erosion along the open section of beach.

Multiple attempts have been made to curb the effects of shoal-related erosion, including a small project sponsored by the City in November 2025. This project connected the shoal with the beach, which has expedited the attachment and spreading process and allowed accretion to occur. Previous shoal management projects have been completed to mitigate erosion along Beachwood East.

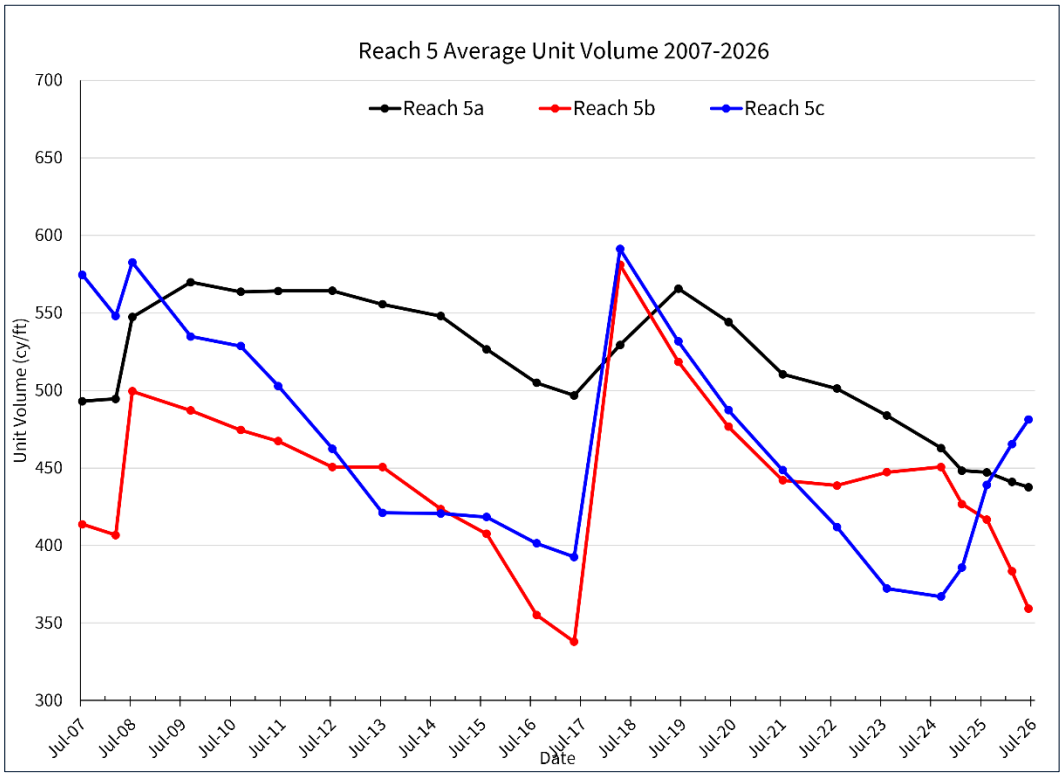


FIGURE 4.17a. Average beach volume in Reach 5 since 2007. Note the increase in volume in Subreach 5c due to the oncoming shoal. At the same time, erosion is occurring in Subreaches 5b and 5c due to sand being drawn toward the shoal and a change in wave refraction.

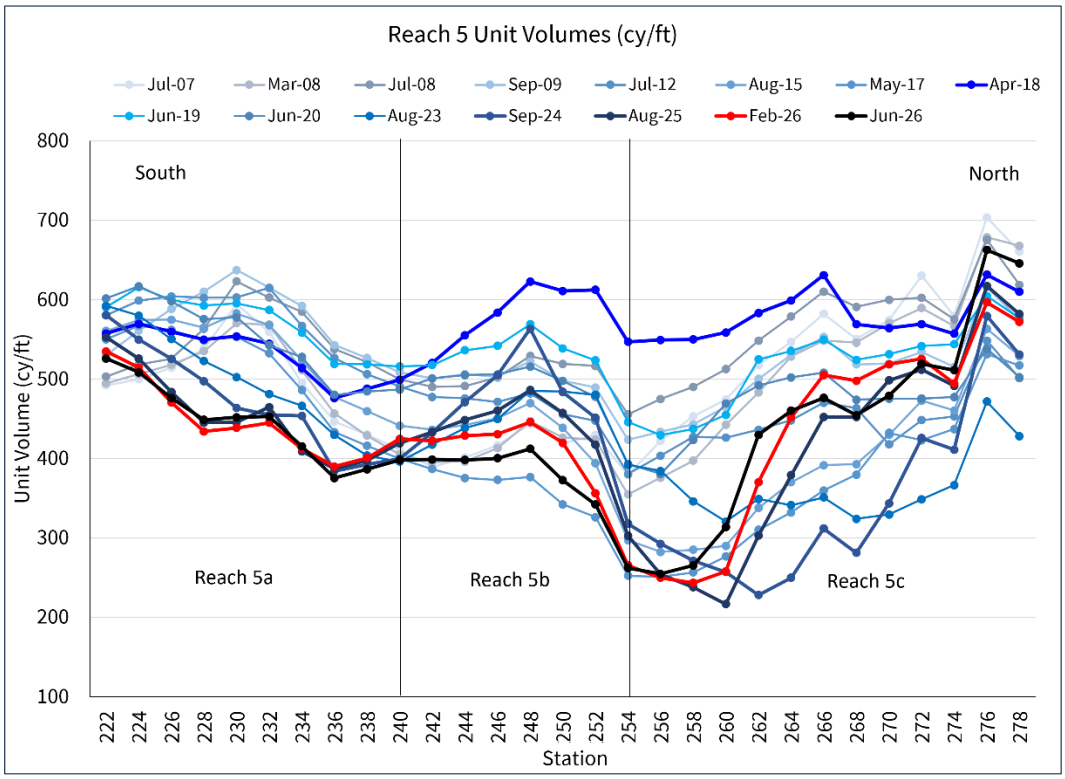


FIGURE 4.17b. Profile unit volumes for each monitoring line in Reach 5.

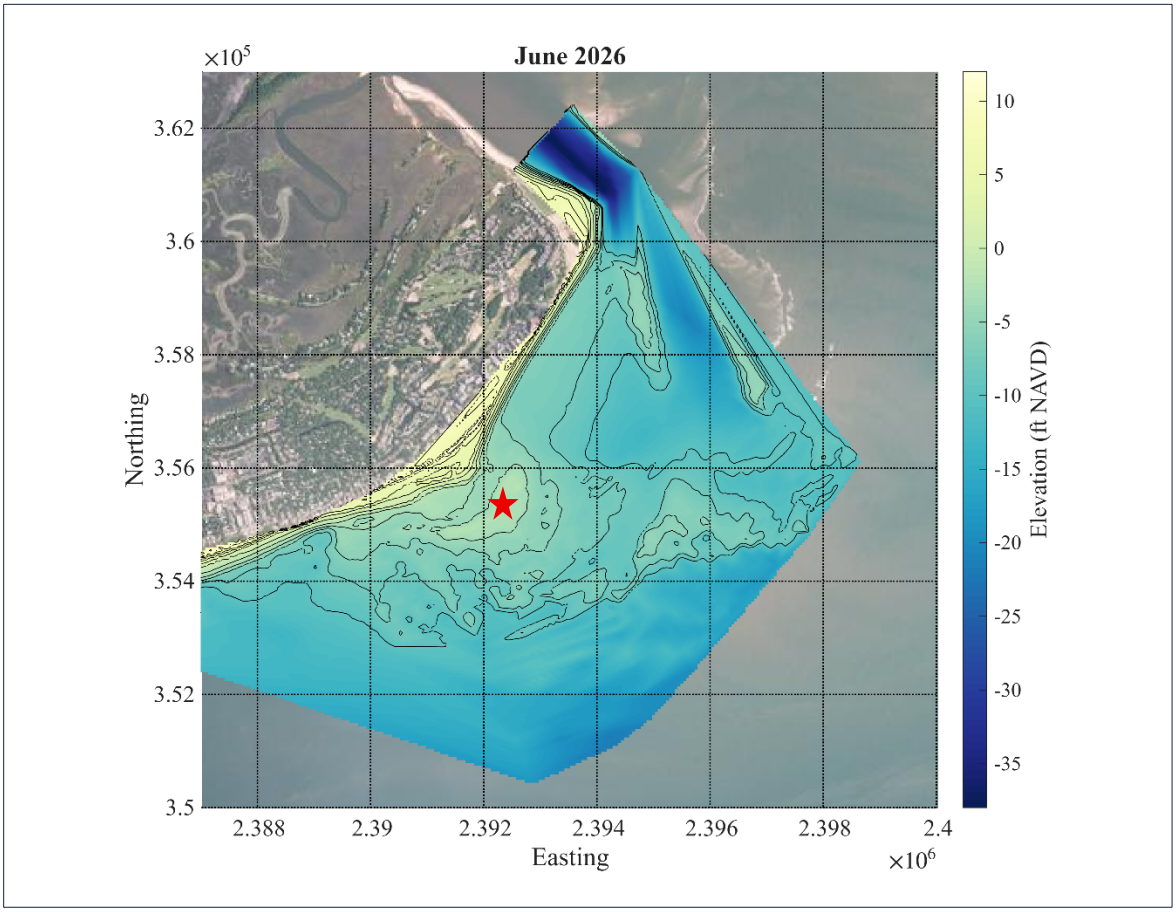


FIGURE 4.18. Shoal attachment in June 2026. Note the incoming shoal (red star) is a second emergent shoal that has formed from the larger sand bypassing event.

Reach 5 accreted ~4,150 cy (0.7 cy/ft) from August 2025 to February 2026; however, it lost –2,350 cy (0.4 cy/ft) from February 2026 to June 2026. This resulted in a net gain of 1,800 cy (0.3 cy/ft) in the past year. Sand continues to attach to the beach around Subreach 5c; sand has started to spread downcoast, reducing erosion rates across the reach. Figure 4.18 depicts the shoal position in June 2026, where it has continued to weld itself on Reaches 5 and 6.

The variability in erosion and accretion rates along Reach 5 is worth noting, as it highlights the range of beach conditions and volume changes along relatively small lengths of beach due to shoal bypass events. Within the reach, changes from 2025 to 2026 along individual profiles ranged from –60.9 cy/ft to +73.7 cy/ft. The Beachwood East area was the most accretional, while the area between 57th Ave and Grand Pavilion was most erosional.

Reach 5 was also partitioned into subreaches this year to better evaluate variability in erosion and accretion. Reach 5a is from around 57th Avenue to 53rd Avenue and experienced erosion during both semi-annual monitoring periods, totaling approximately –19,000 cy (–9.5 cy/ft). However, this year's erosion rate is the lowest annualized rate since 2019. When projects do occur further east, Reach 5a benefits greatly from sand spreading alongshore. CSE expects Reach 5a to benefit greatly from downcoast spreading of nourishment sand following the 2026 project.

Subreach 5b covers the area from 53rd Avenue to Grand Pavilion Boulevard. Similar to Reach 5a, this subreach was erosional; however, at a greater magnitude, totaling a loss of roughly –80,375 cy (–57.4 cy/ft. Table 4.1 highlights an erosional wave moving from Subreach 5c to Subreach 5b over the past two years.

Subreach 5c extends from the Grand Pavilion to the Wild Dunes Property Owners Beach House. Reach 5c continued to gain material in both semi-annual periods due to continued shoal attachment. Over the year, the reach accreted ~101,200 cy (42.2 cy/ft), with most of that occurring in the first half of the year. Accretion rates have slowed over the past 4 months, with 63,150 cy accreted from August 2025 to February 2026 and 38,050 cy from February 2026 to June 2026. This indicates that the amount of sand coming onshore from the shoal is slowing down and starting to spread.

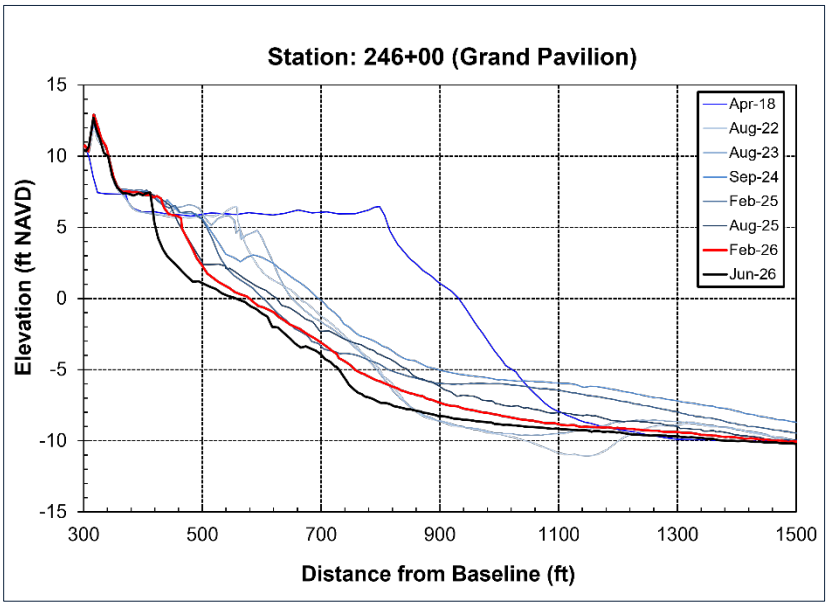
TABLE 4.3. Beach volume change between surveys from 2018 to 2026 for Reaches 5–6. Note that moving from top to bottom in the table represents movement from south to north on the beach, and movement from left to right shows change over time. The arrows show an accretional (blue) and erosional (red) wave moving south over time from the center of Wild Dunes. The recent shoal-induced accretion is shown in the blue circle, with sand spreading north and south indicated by the arrows from the circle. The time period begins just after the 2018 nourishment, which also coincided with the completion of a shoal attachment. This created a surplus of sand in central Wild Dunes that spread laterally for several years after 2018.

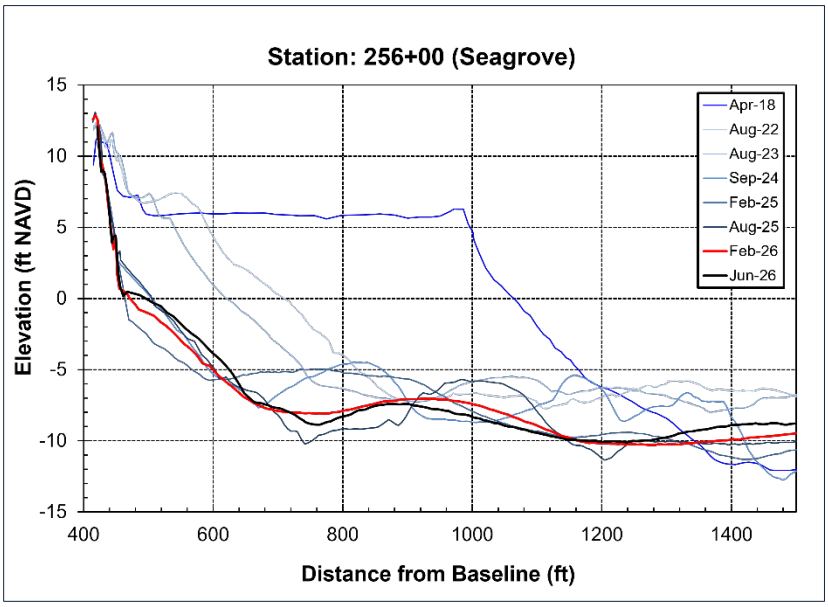
	Station	Distance to Next	Apr 18 - Jun 19	Jun 19 - Jun 20	Jun 20 - Jul 21	Jul 21 - Aug 22	Aug 22 - Aug 23	Aug 23 - Sep 24	Sep 24 - Feb 25	Feb 25 - Aug 25	Aug 25 - Feb 26	Feb 26 - Jun 26	Sep 09-Jun 26	May 17 - Jun 26
Reach 5a	222	200	33.2	11.0	-8.4	23.2	-24.1	-11.7	-17.3	-10.6	-17.8	-9.0	-4.6	-24.3
	224	200	46.3	1.0	-27.2	15.0	-24.8	-30.3	-16.0	-7.9	-11.5	-5.8	-52.4	-58.8
	226	200	40.1	-1.6	-47.7	20.7	-20.6	-24.8	-41.3	[illegible]	-13.3	5.6	-112.1	-85.6
	228	200	42.9	-17.2	-63.0	22.6	-12.3	-25.3	-55.8	3.5	-11.2	[illegible]	-161.2	-100.1
	230	200	41.4	-17.6	-69.4	2.3	-8.0	-39.1	[illegible]	8.3	-7.1	13.3	-185.5	-101.2
	232	200	42.3	-44.4	-43.7	-8.8	-9.0	-26.2	11.7	-1.8	[illegible]	7.7	-162.5	-79.8
	234	200	44.7	-31.0	-33.4	-11.8	-16.1	[illegible]	-34.4	-10.4	3.7	2.7	-176.7	-70.7
	236	200	43.1	-39.0	-3.2	-41.0	-6.2	-45.5	3.3	[illegible]	2.9	-14.4	-167.5	-57.9
	238	200	30.8	-34.1	-22.1	-32.5	-26.3	-11.2	0.7	4.4	3.1	-14.2	-140.0	-29.5
	240	200	16.8	-29.1	-15.8	-45.7	-29.4	3.8	[illegible]	1.8	5.5	-26.6	-110.5	-1.8
Reach 5b	242	200	-2.6	-16.9	-14.1	-51.0	-18.2	15.3	6.1	-5.4	-11.0	-23.6	-102.2	12.2
	244	200	-18.9	-31.4	-19.5	[illegible]	0.5	[illegible]	-13.7	-8.7	-19.9	[illegible]	-108.0	22.8
	246	200	-41.8	-35.9	-50.2	-16.4	10.2	[illegible]	-34.1	-10.4	-29.4	-30.4	-102.9	27.2
	248	200	-53.7	-53.4	[illegible]	-14.2	23.5	78.2	-38.6	-38.6	[illegible]	-33.5	-109.7	35.5
	250	200	-72.3	-41.0	-41.5	-12.9	[illegible]	-0.8	-6.5	-19.8	-37.7	-47.0	-125.2	30.3
	252	200	-88.9	[illegible]	-43.3	23.0	22.7	-28.8	-30.0	[illegible]	-60.9	-14.3	-147.2	15.9
	254	200	-101.0	-52.9	-48.9	[illegible]	-11.1	-74.2	-33.1	18.0	-37.2	-3.6	-161.7	9.7
Reach 5c	256	200	[illegible]	-49.0	17.3	21.7	-35.2	-91.7	-29.7	-9.1	-3.9	4.9	-179.0	3.8
	258	200	-112.7	-13.7	-14.1	12.6	-75.9	-74.8	[illegible]	-1.4	5.5	21.9	-177.6	8.8
	260	200	-103.8	14.4	-48.7	-15.7	-84.2	-63.6	-51.4	10.9	41.2	[illegible]	-151.6	37.1
	262	200	-58.5	-32.9	-30.3	-54.4	-58.2	[illegible]	-2.9	77.8	67.4	59.4	-70.5	119.6
	264	200	-63.5	-33.4	-26.4	-68.5	-66.2	-91.3	75.2	54.0	72.9	8.4	-70.5	128.3
	266	200	-81.2	-41.6	-41.5	-68.8	[illegible]	-39.2	51.7	88.7	[illegible]	-28.7	-76.4	116.8
	268	200	-44.8	-50.3	-51.4	-47.2	[illegible]	-42.7	67.0	104.0	45.7	-43.4	-64.0	74.8
	270	200	-32.7	-56.2	-44.1	-54.9	-47.0	14.1	[illegible]	95.6	20.1	-39.4	-40.4	46.9
	272	200	-27.5	-66.2	-63.4	[illegible]	-30.2	77.1	19.5	[illegible]	13.6	-6.2	-14.8	96.5
	274	200	-13.1	-66.6	-56.1	-30.0	[illegible]	44.7	4.0	76.2	3.2	16.6	-4.1	74.1
	276	200	-27.1	-66.2	[illegible]	-17.3	0.0	107.8	0.9	86.9	-20.6	66.0	46.9	131.2
	278	200	-33.3	-74.1	-30.9	-63.5	20.0	102.7	[illegible]	[illegible]	-9.6	73.7	70.7	128.6
Reach 6a	280	200	-113.1	-42.3	-34.3	-20.8	[illegible]	138.7	88.8	[illegible]	51.4	7.2	-0.4	198.9
	282	200	-135.0	[illegible]	-26.0	-34.1	[illegible]	159.7	184.5	-119.1	36.1	32.8	-18.6	214.2
	284	200	-142.9	-19.4	-39.9	-15.1	[illegible]	197.8	85.6	[illegible]	24.0	39.9	-4.6	213.6
	286	200	[illegible]	-37.7	-15.8	-3.9	[illegible]	202.7	-7.2	[illegible]	32.9	22.1	33.0	168.5
	288	200	-119.5	-49.8	-32.9	6.1	30.2	103.2	[illegible]	16.5	4.4	-31.8	9.9	73.1
	290	200	-102.6	-40.7	-37.7	15.8	29.0	29.7	-9.1	41.4	-4.7	-37.2	15.9	35.1
Reach 6b	292	200	-82.1	-32.1	-34.7	2.8	26.7	[illegible]	[illegible]	19.1	13.2	-25.6	9.0	-3.0
	294	200	-45.8	-31.1	-28.5	7.1	6.1	-27.0	-23.9	-25.7	[illegible]	-15.8	-8.5	-49.9
	296	200	-21.3	-36.3	-26.5	13.4	-16.3	-39.3	-22.9	-32.5	18.4	-15.9	-22.8	-62.1
	298	200	-5.5	-42.1	-18.2	11.1	-31.2	-54.4	-24.7	-25.7	11.8	-17.8	-34.2	-74.4
	300	200	-1.9	-41.5	-9.1	-1.9	-42.7	-60.3	-25.0	-19.9	7.4	-18.2	-46.1	-81.4
	302	200	3.8	-32.7	-12.9	-12.0	-51.7	-66.4	-23.2	-22.0	2.6	-12.6	-46.8	-83.1
	304	200	1.3	-29.2	-8.4	-31.4	-51.7	-67.5	-26.4	-19.9	-3.6	-12.3	-59.6	-82.3
	306	200	-5.5	-24.2	-6.9	-41.6	-53.2	-62.6	-30.8	-19.9	-12.3	-9.4	-57.1	-80.4
	308	200	-12.5	-19.6	-3.3	-36.4	-61.0	-71.1	-32.8	-21.9	-11.1	-9.4	-79.6	-80.4
Reach 6c	310	200	-6.9	-17.7	-12.6	-43.0	-56.6	-80.1	-30.4	-25.4	-6.3	-7.9	-66.9	-78.2
	312	200	-14.7	-15.3	-18.6	-40.0	-56.4	-85.1	-33.6	-16.1	-9.6	-8.8	-86.4	-84.3
	314	200	-19.6	-17.7	-16.0	-50.3	-48.5	-81.9	-28.4	-7.0	-8.1	-8.8	-70.0	-83.5
	316	200	-5.6	-5.7	-25.1	-37.3	-64.0	-69.5	-41.7	-7.2	-19.8	-17.0	-108.0	-113.4
	318	200	20.4	-12.1	-31.1	-40.7	-51.1	-73.1	-37.8	-1.8	-17.6	-16.4	-101.4	-124.9
	320	200	27.4	-9.3	-21.1	-38.9	-59.1	-67.7	-36.3	4.5	-24.6	-11.3	-98.0	-125.7
	322	200	54.6	-16.1	-29.0	-35.5	-52.5	-41.2	-48.3	15.5	-38.6	-8.3	-91.1	-120.2
	324	200	61.9	-10.9	-29.5	-25.3	-54.4	-36.8	-34.6	9.5	-41.0	2.7	-94.1	-101.3
	326	200	83.1	-11.6	-22.0	-22.8	-44.1	-37.3	-23.8	17.6	-39.0	-24.4	-73.2	-88.6
	328	200	80.3	-17.0	-10.9	-29.8	-36.4	-13.6	-24.4	11.1	-43.7	-12.3	-47.1	-60.1

4.3.4 Summary of East End Changes

Overall, the 2018 project area reaches (5 and 6) lost approximately –1,575,575 cy (–145.9 cy/ft) of sand as of June 2026. This volume equates to an annual loss of ~18.2 cy/ft per year from 2018 to 2026. Historical erosion rates (pre-2000) along the eastern end of the island have been variable but generally average between 5–10 cy/ft per year (CSE 2007). As noted earlier, erosion has accelerated along the east end of the island compared to 2008–2018. Background losses have increased from 100,000 cy per year to just over 200,000 cy per year following the 2008 and 2018 projects. Both of these numbers are much greater than historical rates reported in the 1900s. Increased erosion rates during this period have been observed along several beaches in the Charleston area over the same period. This may result from increased storm events, higher regular wave energy, and sea level rise.

As of the time of writing this report, the City's and Wild Dune Community Association's nourishment project is underway. The project is scheduled to add around 1,700,00 cy of sandy material, which will restore the beach to a condition similar to or wider than the post-2018 project condition.





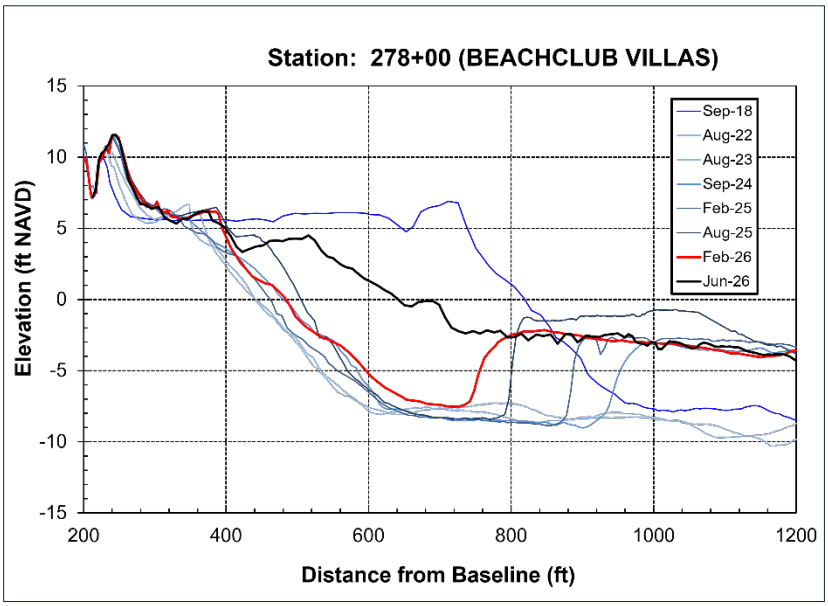


FIGURE 4.19. Reach 5 profiles. Note how significant amounts of sand have started to accumulate in the north of Eastwood East. Some of that has accumulated in Beachwood East in the past year; however, areas further south are still suffering from erosion.



FIGURE 4.20. Aerial photography of Reach 5 showing the movement of dry sand beach to some areas of Subreach 5b. However, erosion continues in some areas, particularly farther south in Subreach 5c, where the sediment supply has not yet reached the affected shoreline.

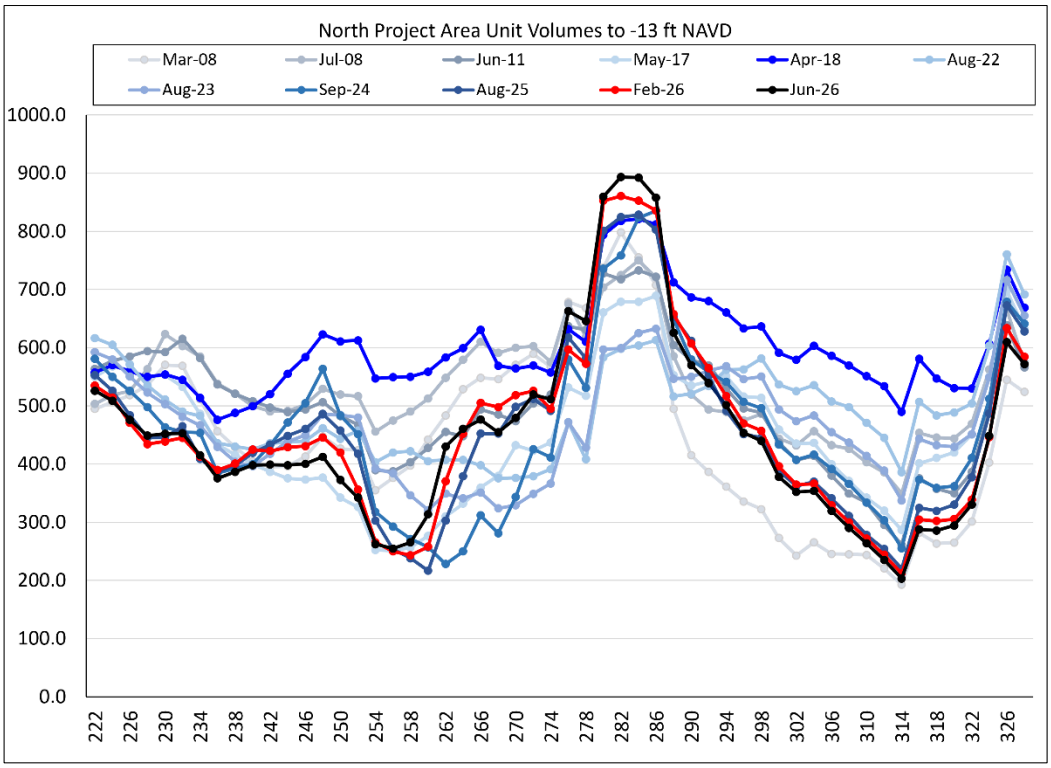


FIGURE 4.21a. Beach width changes along the area spanning from the Citadel House to the 18th hole of the Links Course. Note the greater losses around Stations 222–274 and 290–326.

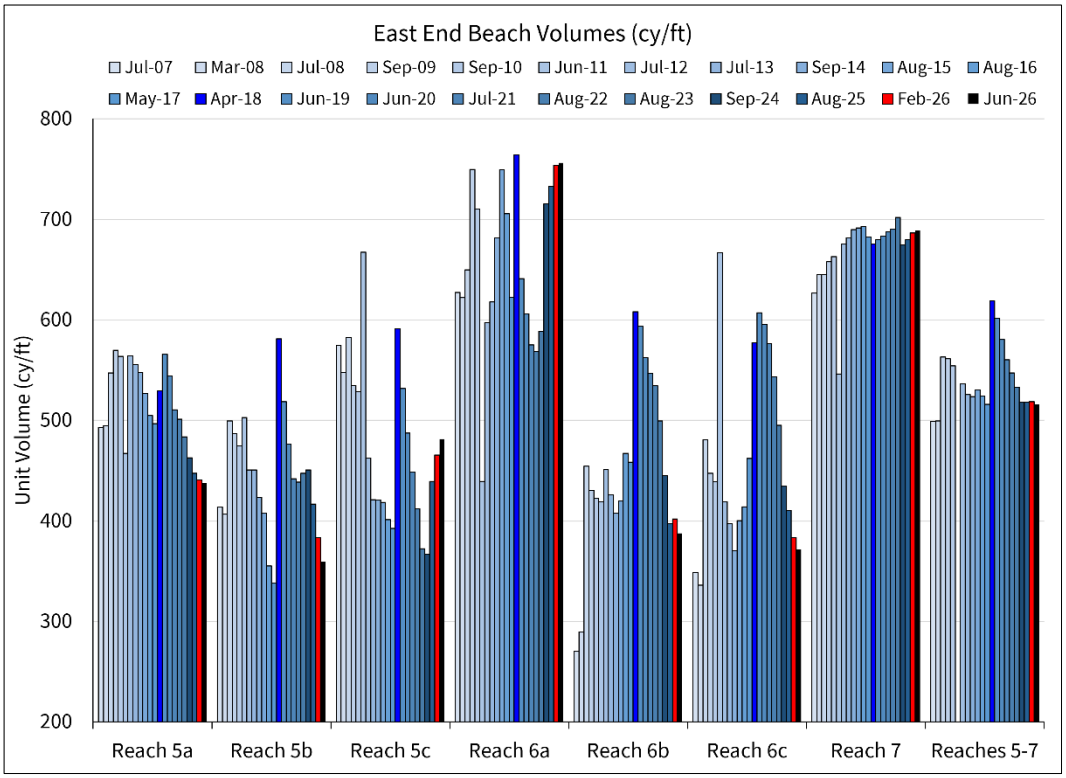


FIGURE 4.21b. The beach volume history of the eastern end of the island since 2007, with dates following nourishment indicated.

Figure 4.22 provides the beach volume history of the eastern end of the island since 2007. The overall erosional trend is evident along Reaches 5 and 6 between nourishment projects. Sand lost from Reaches 5 and 6 either moves south to provide sediment to the rest of Isle of Palms, or recycles to Dewees Inlet, which will eventually form a shoal and recycle back to the beach (as is currently happening). There has been a near doubling of erosion rate along Reaches 5 and 6 over the past 8 years, increasing from ~100,000 cy per year to nearly 200,000 cy per year. CSE believes this trend is due to a combination of factors including storm frequency, sea level rise, and timing of shoal attachment events.

Higher erosion rates may require adjusting the City's long-term planning strategies, as prior assumptions may no longer apply. Previous historical assumptions have driven the City's long-term plan, and if erosion rates do not return to the historical levels, future plans will need to address the additional erosion. This can include additional projects, construction of hard erosion control structures, and other alternatives.

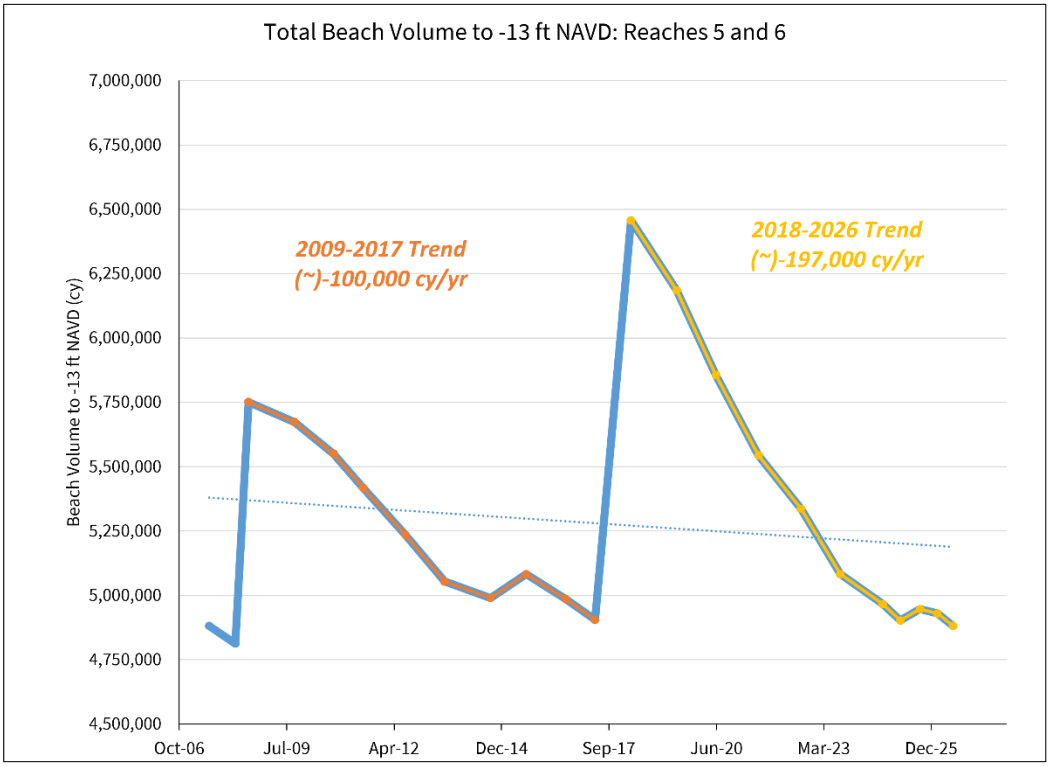


FIGURE 4.22. Total beach volume history of the eastern end of the island since 2007. The graph illustrates the overall erosional trend along Reaches 5 and 6 between nourishment projects.

4.3.5 Reach 4

Reach 4 includes the length of beach between 31st and 53rd Avenues (Stations 140 to 222 – Fig 4.23). This reach is ~7,200 ft long and immediately downdrift of the 2008 and 2018 project area. It is also outside Dewees Inlet's direct influence and maintains a more typical and consistent beach profile shape. By being downdrift of the nourishment area as well as the shoal bypass attachment zone, it receives nourishment sand spreading from the placement area as well as spreading shoal sand. There are periods of erosion mainly caused by the disruption of upcoast sand supply from further north. However, overall, the reach has been accretional since monitoring began in 2009.



FIGURE 4.23. Survey reference line stationing along Reach 4 spanning the length of beach between 31st Ave and 53rd Ave.

Reach 4 receives sand eroded from the island's east end, particularly Reaches 5 and 6, with that sand originating from shoal bypass events or nourishment. A significant influx of sand was observed along the reach following the 2018 project, with an accretional wave propagating south. The leading edge of the spreading sand is visible as a span of high accretion relative to adjacent areas. Over time, the magnitude of the accretion wave decreases as sand spreads at uneven rates. Eventually, erosion of this surplus sand occurs as the upcoast sand supply is depleted and not enough sand makes its way downdrift to offset losses further south in the reach. In the past, accretion from sand moving south from Reaches 5 and 6 led to the creation of a new dune ridge and wide dry-sand beach along the reach (Fig 4.24).

Reach 4 lost roughly –9,400 cy (–1.3 cy/ft) from August 2025 to February 2026, then lost an additional approximately –52,700 cy (–7.3 cy/ft) from February 2026 to June 2026. This resulted in a net loss of 62,100 cy (–8.6 cy/ft). The reach also lost ~85,000 cy from 2024–2025. Erosion in Reach 4 occurs when sand from upcoast is depleted or temporarily trapped in shoal attachment events. Typically, Reach 4 trends to be accretional years after a project further north and then slowly turns erosional as it approaches a maintenance event.

Despite the recent erosion, the beach in June 2026 contains nearly 762,350 cy more sand than the 2009 condition, including a net gain of 399,000 cy since 2017. This sand is a direct benefit of beach nourishment

in upcoast areas. This volume is equivalent to an $8–12 million nourishment investment. The dune growth over the past decade offers substantial storm protection to homes and infrastructure in this area and in Reach 3. In general, areas in the center of mixed-energy barrier islands tend to be more stable with low erosion rates and steadier sand transport away from inlets.

The relatively large swings between accretion and erosion that affect Reaches 5 and 6 are modulated along Reaches 3 and 4. Erosion this year is likely partly the result of an upstream pause in sediment supply, as sand from the east moved behind the attaching shoal instead of continuing south, thereby interrupting sediment transport. By June 2026, only a few stations in Reach 4 were accretional, with those being toward the south end of the reach. Volumetric change rates in Reach 4 range from –22.3 cy/ft to 4.3 cy/ft.



FIGURE 4.24. June 2026 aerial photo of Reach 4 (53rd Avenue is marked by the orange star). By being positioned downdrift of the nourishment area, Reach 4 receives nourishment sand spreading from the placement area, as well as spreading shoal sand. This reach has gained sand every year since 2009, except in recent surveys when more sediment has been moved to the south end of the island. As the vegetated dunes expand, sheltered locations (such as low-lying areas behind protective dune ridges) will gradually transform into a shrub habitat with larger areas of wax myrtle replacing dune grasses. The 2008 dune line is shown by the red arrow.

The average erosion of all stations in the past year was roughly –7.1 cy/ft, reflected in the reduction of dry-sand beach widths in this area. Reach 4 will benefit from the downdrift movement of sand following the 2026 nourishment project. This accretional trend is likely to continue for several years following the project, as it did after the 2008 and 2018 projects. It is important to note that sand eroding from the central portion of the island is being observed in Reaches 1 and 2. **Combined with Reach 3, there is a net gain of 1,196,925 cy of sand since monitoring began along the central downcoast areas of Isle of Palms (Sea Cabins Pier to 53rd Ave), which is a direct benefit of the 2008 and 2018 nourishment projects.**

4.3.6 Reach 3

Reach 3 extends 6,000 lf from Beach Access 13, just south of the Sea Cabins Pier, to 31st Avenue (Stations 80 to 140 – Fig 4.25). Like Reach 4, the long-term trend in this area is stable to accretional. Dwellings in the reach are well set back from the beach, generally between 400 ft and 500 ft, except at the western end, where Sand Dune Lane and the county park facilities are set back ~150 ft. The reach has performed similarly to Reach 4, with periods of erosion and accretion since CSE began island-wide monitoring in 2009. Also like Reach 4, Reach 3 has accreted a significant amount of material since 2009 and 2018. Variations in wave conditions from year to year and temporary changes in sediment supply lead to minor fluctuations in yearly volume change.



FIGURE 4.25. Survey reference line stationing along Reach 3, spanning the beach from the Sea Cabins Pier to 31st Ave.

From August 2025 to February 2026, Reach 3 gained ~21,725 cy (3.6 cy/ft) but lost approximately –19,950 (–3.3 cy/ft) between February and June 2026. This resulted in a net gain of ~1,750 cy (0.3 cy/ft) in the recent year. In the first half of the year, most of the reach was accretional except for a small portion in the center of the reach. As time progressed, more of the reach became erosional as sand moved toward Reaches 1 and 2. In the last four months, the erosion and accretion rates in Reach 3 ranged from –11.5 cy/ft to 4.7 cy/ft.

Since 2009, the reach has gained ~434,575 cy, about half of which (~227,900 cy) has accumulated since 2017. Beach growth in Reach 3 can be attributed to indirect benefits from beach nourishment at the north end of the island. CSE has been able to track an accretional wave from Reaches 5 and 6 moving further southward following the completion of both projects (Table 4.4). Over the past two years, sediment eroding from the center of the Island in Reaches 3 and 4 is moving farther south, contributing to accretion in Reaches 1 and 2.

TABLE 4.4. Beach volume change between surveys from 2018 to 2026 for Reaches 1–4. Note that moving from top to bottom in the table represents movement from south to north on the beach, and movement from left to right shows change over time. The arrows show an accretional (blue) and erosional (red) wave moving south over time from the east end of the island. The wave was a result of the downcoast spreading of the 2018 nourishment sand that is now evident south of the pier along Front Beach (Stations 70–80 around 9th–10th Ave). Circled areas show the locations and impacts of natural sand spreading and beach recovery from the sand moving from the center of the island. Note that distances between stations vary, so more data rows are present where beach profiles are spaced closer together.

	Station	Distance to Next	Apr 18 - Jun 19	Jun 19 - Jun 20	Jun 20 - Jul 21	Jul 21 - Aug 22	Aug 22 - Aug 23	Aug 23 - Sep 24	Sep 24 - Feb 25	Feb 25 - Aug 25	Aug 25 - Feb 26	Feb 26 - Jun 26	Sep 09-Jun 26	May 17 - Jun 26
Reach 1	0	400	0.5	0.5	38.4	29.8	-102.9	15.3	-36.3	-26.8	43.8	-1.4	41.4	-86.6
	4	400	-31.5	9.9	36.5	-22.0	-29.1	-27.7	29.6	-16.6	7.9	-11.8	-59.1	-39.5
	8	400	3.8	-3.0	16.1	-37.9	-66.0	39.6	-12.6	-18.5	70.1	25.1	-39.4	32.7
	12	400	18.3	26.9	-10.0	-32.6	-93.8	31.2	8.1	10.0	34.3	37.9	-61.8	21.4
	16	400	16.3	30.7	-33.7	-45.8	-56.5	7.8	52.3	21.7	-13.5	26.8	-86.6	4.2
	20	500	-1.0	34.0	-17.9	-38.5	-36.1	-15.1	-1.5	60.0	2.6	25.2	-58.2	27.9
	25	500	-1.6	29.8	-11.3	-29.2	-36.3	-19.3	-12.1	75.8	-9.8	27.9	-27.8	29.3
	30	500	-2.3	25.6	-4.7	-20.0	-36.6	-23.5	-22.8	79.9	-5.0	20.7	-1.8	26.3
	35	500	-4.5	18.2	-1.3	-18.7	-33.6	-21.6	-13.7	38.0	20.5	22.5	-4.9	19.1
	40	500	-6.7	10.8	2.1	-17.4	-30.6	-19.7	-4.6	12.6	42.8	6.7	-12.1	7.6
Reach 2	45	500	-4.3	5.2	0.3	-15.7	-25.0	-12.1	-3.6	9.5	33.8	11.7	-7.2	5.7
	50	500	-2.0	-0.5	-1.5	-14.0	-19.4	-4.5	-2.7	3.3	61.4	-6.6	8.1	14.2
	55	500	-0.6	2.1	-1.3	-6.6	-12.0	-11.6	-2.1	-6.2	8.1	44.9	13.7	10.5
	60	500	0.8	4.6	-1.2	0.7	-4.7	-18.8	-1.5	2.6	6.0	39.6	32.1	19.6
	65	500	-4.2	1.7	-2.1	4.2	-2.6	-17.0	-2.3	1.9	15.9	26.7	28.8	19.0
	70	500	-9.2	-1.3	-2.9	7.6	-0.5	-15.2	-3.1	2.3	10.7	22.7	20.4	13.3
	75	500	-7.7	-3.3	-6.5	4.1	1.4	-15.4	-3.3	4.7	8.4	7.7	-0.3	-13.1
	80	1000	-6.2	-5.3	-10.1	0.5	3.2	-15.6	-3.5	0.2	13.8	4.2	10.0	-8.6
Reach 3	90	1000	0.2	1.3	-16.2	-3.2	-5.7	12.2	2.1	-8.8	17.1	-9.5	29.2	-7.4
	100	1000	2.4	10.5	1.4	-16.3	3.6	23.5	-10.8	3.0	6.6	-8.8	49.3	11.0
	110	1000	-1.2	11.9	11.8	-10.7	5.7	14.6	-4.9	8.2	-5.6	-11.5	48.3	13.3
	120	1000	4.2	11.6	3.1	1.8	-3.3	25.5	0.4	5.9	-21.1	1.1	71.5	31.9
	130	1000	6.3	-1.0	-7.1	20.5	-8.3	15.0	10.2	8.1	7.2	4.7	95.2	60.2
	140	1000	9.2	0.7	-8.7	27.1	-12.6	7.4	11.7	11.7	17.3	-2.8	94.1	62.3
Reach 4	150	1000	9.4	0.5	1.4	11.6	4.3	10.7	6.1	4.3	17.5	4.3	123.2	74.1
	160	1000	-23.2	-0.9	2.6	2.3	16.4	28.7	9.9	-12.5	37.0	-11.7	145.8	83.2
	170	1000	-25.2	-3.7	-2.6	19.3	0.2	22.9	-5.9	4.7	5.7	-8.4	108.9	33.0
	180	1000	5.8	-5.5	12.8	30.7	-8.2	27.1	-17.3	21.5	-23.4	3.2	129.2	35.0
	190	1000	-3.0	26.1	22.8	17.1	9.6	-12.9	-8.8	10.4	17.5	2.5	101.2	42.1
	200	200	5.0	42.3	42.2	14.5	20.5	-4.6	-25.1	-3.2	-16.0	-9.4	105.2	68.6
	202	200	5.9	51.2	38.1	19.9	10.7	-14.4	-20.8	-14.9	-4.4	-7.4	97.0	65.5
	204	200	9.3	63.5	37.6	12.6	10.0	-14.9	-16.0	-22.6	1.3	-13.0	86.1	73.7
	206	200	17.0	77.3	36.2	5.0	-0.6	3.6	-47.2	-18.2	2.0	-12.6	78.1	62.2
	208	200	35.5	84.1	24.8	-0.1	0.7	-6.1	-42.4	-15.0	7.8	-15.5	94.1	68.1
	210	200	42.0	73.7	26.0	3.9	-1.4	-10.6	-44.8	-8.6	5.9	-18.5	94.0	69.4
	212	200	57.2	63.6	30.6	4.0	-21.1	-15.0	-6.5	-9.9	-2.1	-25.5	92.7	69.7
	214	200	66.4	52.3	27.3	0.2	-18.4	-3.7	-4.6	-20.4	-4.2	-21.2	85.5	78.9
	216	200	56.2	47.5	16.3	-1.4	-9.2	-3.2	-9.3	-13.4	-12.2	-22.3	70.5	56.8
	218	200	45.6	41.2	12.1	0.9	-11.4	-6.9	-11.3	-13.7	-17.3	-18.7	46.2	22.5
	220	200	44.0	21.9	18.7	6.2	-19.5	-17.0	-11.8	-12.5	-19.2	-14.9	19.7	0.7

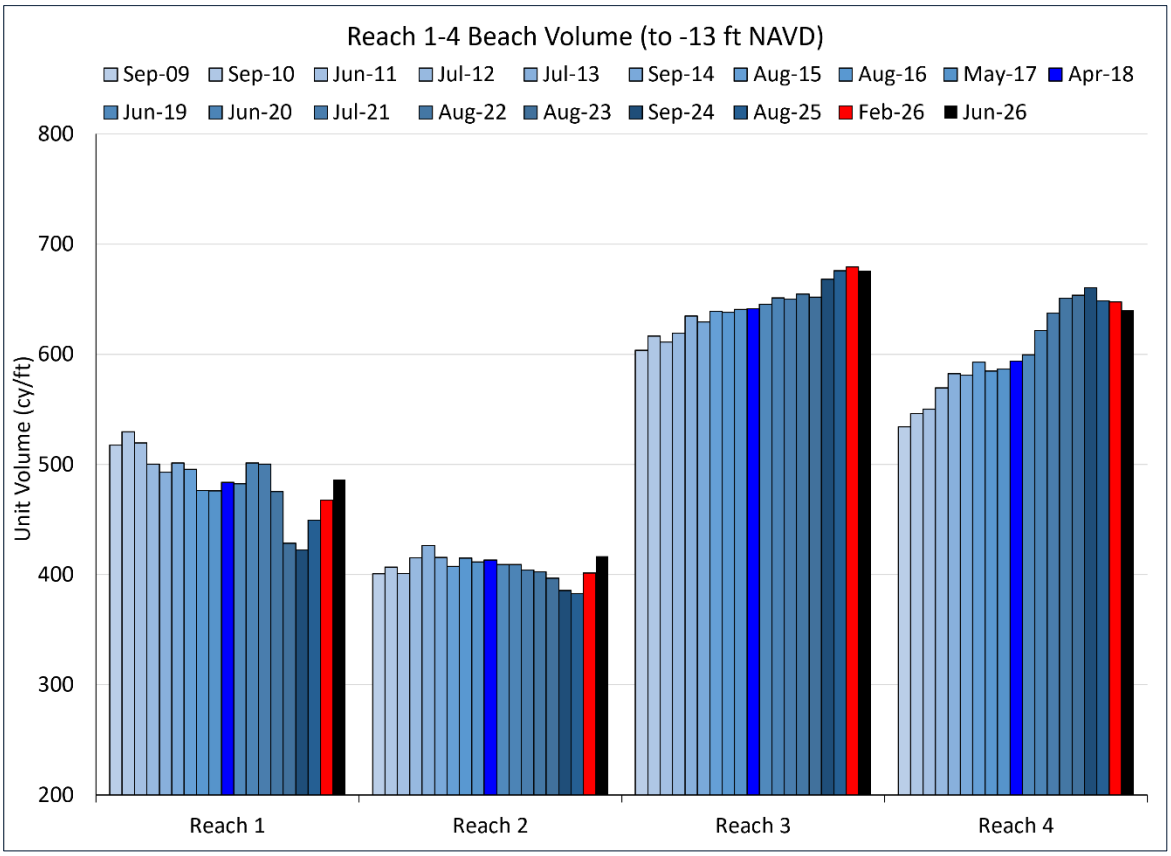


FIGURE 4.26. Note the slight erosion in Reaches 3 and 4 corresponding with the accretion in Reaches 1 and 2. The sand that is eroding from the center of the island is following the dominant direction of littoral transport toward the south end of the island. USACE projects have also contributed to accretion in Reaches 1 and 2 over the past 18 months.

4.3.7 Reach 2

Reach 2 spans 4,000 ft between south of 6th Avenue and Beach Access 13 (Stations 40 to 80 – Fig 4.27). It includes the oceanfront commercial area at the eastern end of the reach. Reach 2 shows a shoreline change pattern like Reach 3, with intermittent periods of accretion and erosion. The reach has been fairly stable since monitoring began in 2009, with an average annual loss of ~5,000 cy per year from 2009–2025.



FIGURE 4.27. Survey reference line stationing along Reach 2 spanning between 6th Avenue and the Sea Cabins Pier.

Overall, Reach 2 has been stable or measured minor long-term erosion; however, erosion from 2021 to 2024 accelerated and caused deterioration of berms and dunes at most stations. Two USACE projects placed sediment in the low tide area of the beach through a beneficial use beach disposal project. The projects moved sediment from nearby spoil islands and the Intracoastal Waterway to provide additional protection to the south end of the island. Combined, the two projects excavated ~900,000 cy of material from the dredge areas; however, much of this material did not remain on the beach to be captured by monitoring surveys. An undetermined portion of the sediment may have been lost in suspension and carried away by currents, and other material may have shifted along the intertidal and underwater beach profile to the Breach Inlet delta (most likely the case for material placed in Reach 1).

Overall, Reach 2 gained ~151,400 cy (37.9 cy/ft) throughout the year. Volume increased by 82,625 cy (20.65 cy/ft) from August 2025 to February 2026 and another ~68,775 cy (17.2 cy/ft) from February to June 2026. Gains near 6th and 7th Avenues (Stations 45+00–55+00) are mostly due to the beneficial use project that utilized sand from the Intracoastal Waterway. The rest of the accretion during the first half of the year is mostly tied to an accretional wave moving south from Reach 3 (Table 4.4). This was evident from the volume change trends from the upcoast area, as well as from visual assessment of the sand character, which included light-tan sand with a modest amount of fine shell hash. From Station 70 (Access 9) to Station 80 (Oceanwatch Condos), accretion of ~25,775

cy added ~93.3 feet of dry sand beach. This gain is also evident in the aerial photography around the pier (Fig 4.29), which shows a clear dry sand beach across the whole reach. This year's accretion is the first accretional period since 2018, marking a return to beach recovery. While erosion in Reach 2 over the past few years was not as significant as in Reach 1, the accretion will work to complement the upcoming beach nourishment project to provide a beach with more sand volume than has ever been documented along the reach.

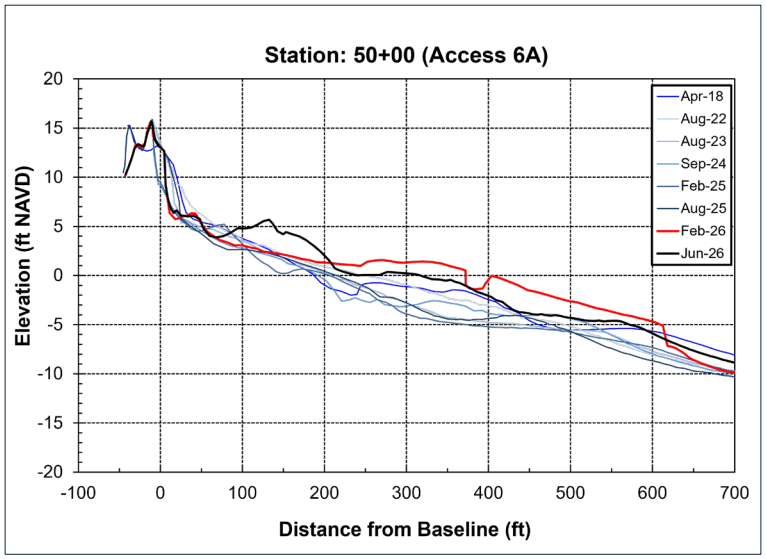
CSE uses the 4.5-ft contour to approximate the seaward edge of the dry sand beach. Analysis from August 2025 to February 2026 tracked a significant gain in the dry sand beach along the entire reach, averaging ~70 feet. This includes a slight gain of 15.6 feet of dry sand beach in the USACE placement area. This is because most of the material from the spoil islands was placed below the mean low water line. The idea behind this placement is that coarser-grained material can work its way up the profile, and any fine-grained sediment will disperse in the water column.

From February 2026 to June 2026, most of the ~68,775 cy gain can be directly tied to downcoast spreading of sand from the center of the island (Table 4.4). CSE can see that the accretional wave noted during the first half of the year has progressed further south in the reach around Station 55 (Access 7) to Station 65 (Access 9). Only one station recorded erosion during the year: Station 80 (Oceanwatch Condos), at around –2,650 cy. This station accreted ~15,400 cy six months prior, resulting in a net gain of ~12,750 cy in the whole year.

A ridge-and-runnel system is also present in portions of Reaches 1 and 2. This feature describes when the beach has a mass of sand (ridge) separated by a depression (runnel). Often, the runnel becomes dry at low tide but can be wet during higher tides and separate portions of the dry sand beach. At Isle of Palms, the runnel is very shallow even at high tides and still allows access to the dry ridge. This feature typically acts as a sand storage feature and serves as a wave dissipation device for the main beach. Normally, these features signify a stable or accretional beach, as the ridge and runnel serve as the beginning of the migrating sand wave.

While Reach 2 is accreting, it will directly benefit from the upcoming nourishment project. Sand will be pumped along all of Reaches 1 and 2. The southern end of the island is expected to be the last project area to be constructed around fall 2026 and will place 800,000 cy of sand to enhance the dunes and dry sand beach. Due to the accretion this past year, the seaward berm was moved further seaward to add additional dry sand beach. This project is expected to add berm widths of around ~250 feet.







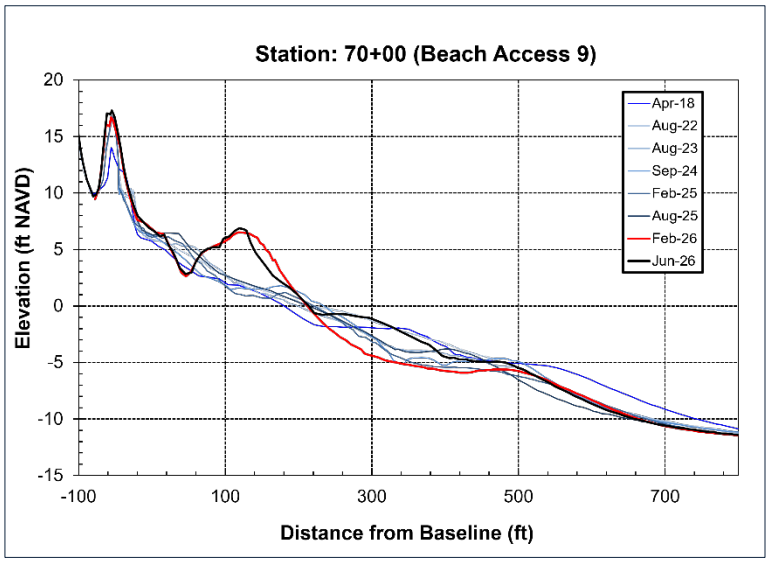


FIGURE 4.28. June 2026 photos of Reach 2. **[UPPER LEFT]** View south from Station 50. **[LOWER LEFT]** View north from Station 70. Note the large increase in dry sand beach in both sections from migrating sand waves. Station 70 has seen significant dune growth since 2018, whereas Station 50 has slowly retreated. The upcoming project will help protect the dunes in this area.



FIGURE 4.29. Aerial view of Reach 2 in June 2026. Note a significant amount of dry sand beach that is in Reach 2 that has mostly come from further north. The losses in Reaches 3 and 4 correspond to an accretional wave that is moving further down the beach in Reaches 1 and 2.

4.3.8 Reach 1

Reach 1 encompasses 5,000 lf of beach between Breach Inlet and South of 6th Avenue (Fig 4.30) and is classified as an unstabilized inlet erosion zone due to the dynamic nature of the shoals associated with the inlet delta.

The long-term trend in the reach is accretion, evidenced by a new row of houses built seaward of the original 'beachfront' row in the 1980s, based on historical Google imagery. Sand supply originates from shoal-bypass events at Dewees Inlet and longshore sand transport from northeast to southwest over the length of the Isle of Palms. Excess sand is deposited along the southern spit of the island and in the Breach Inlet ebb-tidal delta. The shoals of Breach Inlet form a salient or bulge in the shoreline, which is a zone of sand trapping, functioning much like a terminal groin. Changes in this area can be related to bars from the inlet delta migrating onto the beach, or marginal flood channels moving landward or seaward. Such natural processes lead to rapid changes in the upper beach compared to the central Isle of Palms reaches. Marginal flood channels of Breach Inlet are particularly problematic because they encroach directly on the visible beach if they are forced landward by inlet shoals. Once shoals attach, the shoreline can jump seaward by hundreds of feet.



FIGURE 4.30. Survey reference line stationing along Reach 1, which encompasses the beach between Breach Inlet and 6th Ave.

Due to its proximity to Breach Inlet and changes in sediment supply from upcoast, Reach 1 experiences variable periods of erosion and accretion, with the mid-term trend showing erosion since 2009. Historically (going back to 1980), Reach 1 has been stable to accretional, with limited erosion and shoreline change. Erosion increased significantly from 2021 to 2023, with losses averaging roughly –108,950 cy/yr (–21.7 cy/ft). From 2023 to 2024, the erosion rate slowed to –27,300 cy (–5.5 cy/ft**). In this past year (August 2025 to June 2026), Reach 1 gained 166,325 cy (33.3 cy/ft). Reach 1 gained a total of ~82,225 cy (16.5 cy/ft) from August 2025 to February 2026 and an additional ~84,100 cy (16.9 cy/ft).** Gains coincided with portions of the USACE placement projects.

The accretion this year marks the second year of volumetric gains in a row following four years of significant erosion. Accretion was spread along most of the reach, especially during the past four months. During the first half of the year, accretion was generally focused in areas of the USACE project with slight erosion of previously nourished areas the year before. However, over the past four months (February to June 2026), accretion was present at almost all stations, with an average rate of change of 18.3 cy/ft. There was slight erosion toward Breach Inlet, likely due to shifts on the inlet. Notably, the accretion seen after February 2026 occurred after the beach disposal project was completed in that area.

The gains in the second half of the year are likely attributed to both the disposal project and natural beach recovery. Most of the material placed during the disposal project was in Reach 1 and was pumped near mean low water (MLW). Typically, sediment placed in the MLW zone creates bars that dissipate wave energy (a beneficial effect in this case). The coarse, sandy material tends to move onshore or downcoast into Breach Inlet over time. This was a contributing factor to the 31.8 feet of growth seaward of the dry sand beach (4.5-ft contour). Reach 1 also likely benefitted from material from the disposal project and migrating sand waves from Reach 2. Material for the USACE project that was placed in Reach 2, as well as sand from further north, followed the main direction of littoral transport and has accumulated in Reach 1.

Over the past four months, Reaches 1 and 2 gained 152,875 cy. The total gain of 317,575 cy in the past year has increased beach volume in Reaches 1 and 2 to similar conditions as June 2020, offsetting the high erosion that occurred in recent years.

Similar to Reach 2, CSE adjusted the template so that the berm was wider to account for the recent accretion. At the time of writing this report, Marinex Construction is planning on placing 800,000 cy of sand across 8,600 feet of the south end of the island in the fall of 2026. This will result in a wider berm being constructed and increased storm production. By the completion of the nourishment project, Reaches 1 and 2 will contain around 600,000 cy more than has been measured at any point since monitoring began in 2010.

4.3.9 Shoal Analysis

CSE assesses the cyclic evolution of both Dewees and Breach Inlet to anticipate impacts to the beach system in response to shoal migration or inlet changes. In Dewees Inlet, the analysis tracked the movement and amount of sand in the shoal attached to Reaches 5 and 6. To quantify the amount of material present in the shoals, the attachment area was broken up into three different zones – Landward, Middle, and Seaward (Figure 4.31).



FIGURE 4.31. Google Earth aerial imagery showing the control areas used to compute volumes relative to offshore condition lacking any bypassing shoal.

This analysis evaluated shoal attachments in 2008, 2012 to 2016, and the recent, ongoing attachment from 2022 to 2026. The current event includes an emergent shoal that attached in 2025 and a new emergent shoal that is anticipated to attach in late 2026. Both shoals emerged from a larger sand mass moving onshore that contains ~600,000 to 800,000 cy of sand. Some downcoast areas have benefited from sand dispersal from the first shoal, but full sand spreading will not occur until the second shoal fully attaches. In total, the offshore zones shown in Figure 4.31 lost ~330,000 cy over the past year, with ~100,000 cy of that lost from the inshore zone to the active beach profile.

The upcoming nourishment project will mask natural spreading of shoal sand over the next few years. A similar shoal formation occurred during the 2018 project, and it had no measurable effect on project performance. The current project has likewise been designed with this shoal in mind: sand was intentionally placed updrift to function as a "sand engine," feeding the main nourishment area by following the dominant direction of littoral transport. As a result, the shoal is likely to come onshore near the designed sand engine, further supplementing the littoral system with sand.

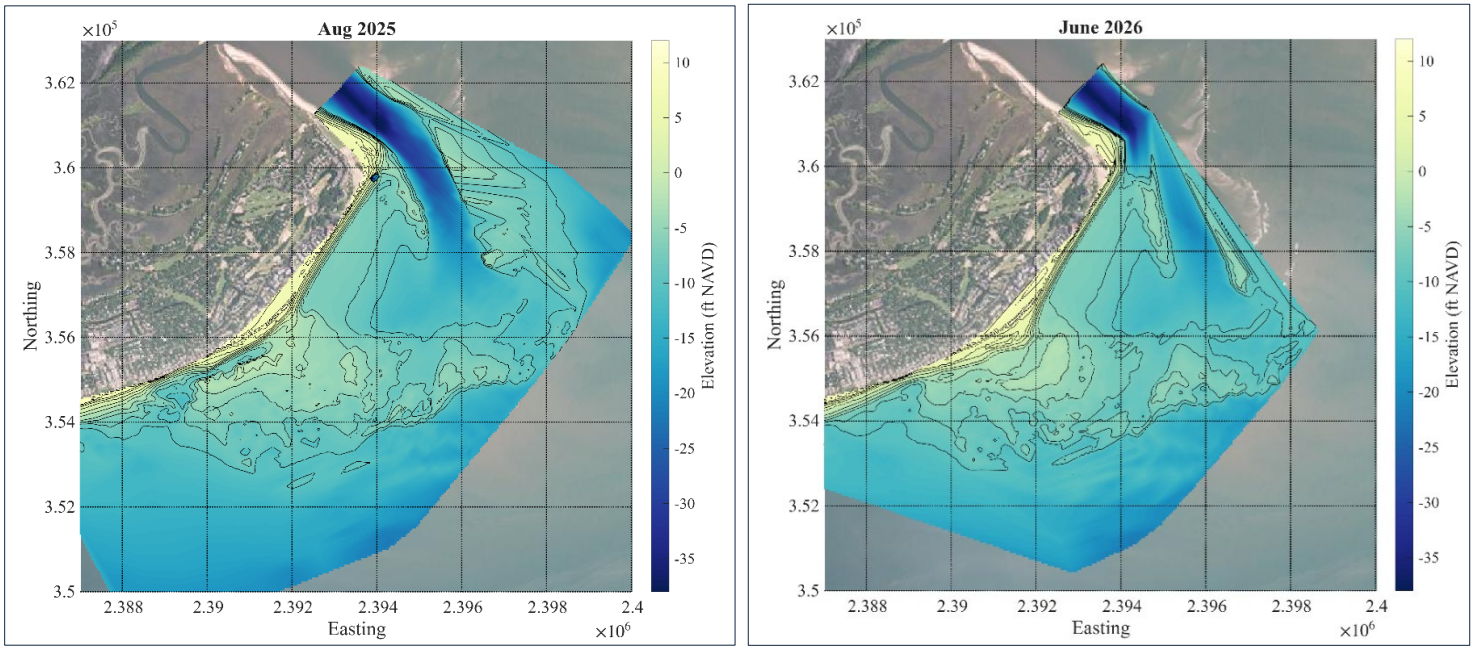


FIGURE 4.32. Shoal Contour Map from August 2025 compared to June 2026. Note how the previous shoal has welded to the shore and the new shoal is right behind it. The new shoal is around half the size of the previous shoal.

At Breach Inlet, CSE examined morphology and dynamics related to the increased erosion rate in Reach 1 between 2021 and 2023. As with the analysis conducted at Dewees Inlet, volumetric and contour methods were applied to assess the dynamics of Breach Inlet. This analysis examined whether erosional trends on the beach are tied to recent changes in Breach Inlet. Historically, the southern end of Isle of Palms has exhibited stability and a slight trend towards accretion. That said, erosion has occurred periodically and is often related to changes in channel orientation and shoal development in Breach Inlet and varying sand supply from upcoast. CSE's analysis examines recent erosion events and their connections to shoal growth in Breach Inlet.

Contour maps were used to quantify volume and positional changes in the Breach Inlet ebb tidal delta. This analysis was different than the one used for Dewee's Inlet because it examines the size of the shoal as it grows away from the island versus the amount of material coming toward it in an attachment zone. Due to limitations in data availability for offshore and downcoast portions of the delta, there are limitations in volumetric and contour analysis. CSE has expanded survey coverage in recent years to fully cover Breach Inlet and its shoals. Moreover, CSE's monitoring of Sullivan's Island, which was initiated in 2023, can be used to supplement missing data further downcoast.

CSE noted in last year's report how there is an observable trend between the growth of the shoal in Breach Inlet and erosion on the beach in Reach 1. Generally, when the offshore shoal gains volume as it extends west towards Sullivan's Island, there is accompanying erosion on the beach along Reach 1. This indicates that the delta shoals draw sand off of the shoreline during the extension process that follows a natural delta breach.

Similar to shoal migration in Dewees Inlet, bypass events occur in Breach Inlet, where shoals form off Isle of Palms and overextend across Breach Inlet (Hubbard 1977; Hayes 1980; Nelligan 1982). The ebb tidal delta deflects the Breach Inlet channel to the west until the outer bar breaches, triggering onshore shoal migration onto Sullivan's Island. The cycle of spit growth, overextension, and breaching impacts the rate at which sand is drawn off Isle of Palms into Breach Inlet. In general, when the shoal grows, there is erosion along Isle of Palms spit. In 2020, the Breach Inlet shoal started to grow significantly, and it may have triggered the high erosion from 2021 to 2023 by drawing sand off the beach to accumulate in the offshore shoal.

With the limited coverage in February 2026, the spit along the tip of Reach 1 has grown since August 2025. This is likely due to the movement of the ridge and runnel system as it welds onshore, adding dry sand beach. In August 2025, a dry sand ridge formed offshore from the main beach and was separated by a tide pool. As waves continued to hit the ridge, it slowly pushed the dry sand mass onshore, welding it onto the beach. This not only increases the dry sand beach in an eroded area, but also adds protection from wave energy.

The most notable change in the Breach Inlet delta is the seaward shift of the marginal flood channel that separates the intertidal beach from the outer sandbar on the Isle of Palms's side of the inlet. This channel has encroached on the beach in recent years, contributing to erosion of the beach. The seaward shift accompanies accretion of the dry-sand beach at the southern tip of the island.

With this area of Reach 1 being highly dynamic, CSE recommends continued assessment of historical trends and post-project erosion following the 2026 nourishment. Given the lifetime of barrier islands (centuries to millennia), changes that may seem unlikely along the southern reach of Isle of Palms may be part of a long-term cycle between erosion and accretion around Breach Inlet. Continued monitoring will determine if short-term erosion trends persist in the future.



FIGURE 4.33. Aerial view of Reach 1 in August 2025 **[UPPER]** compared to June 2026 **[LOWER]**. Note the increase in dry sand beach in the bottom photo (June 2026), as well as the movement of the ridge and runnel system.

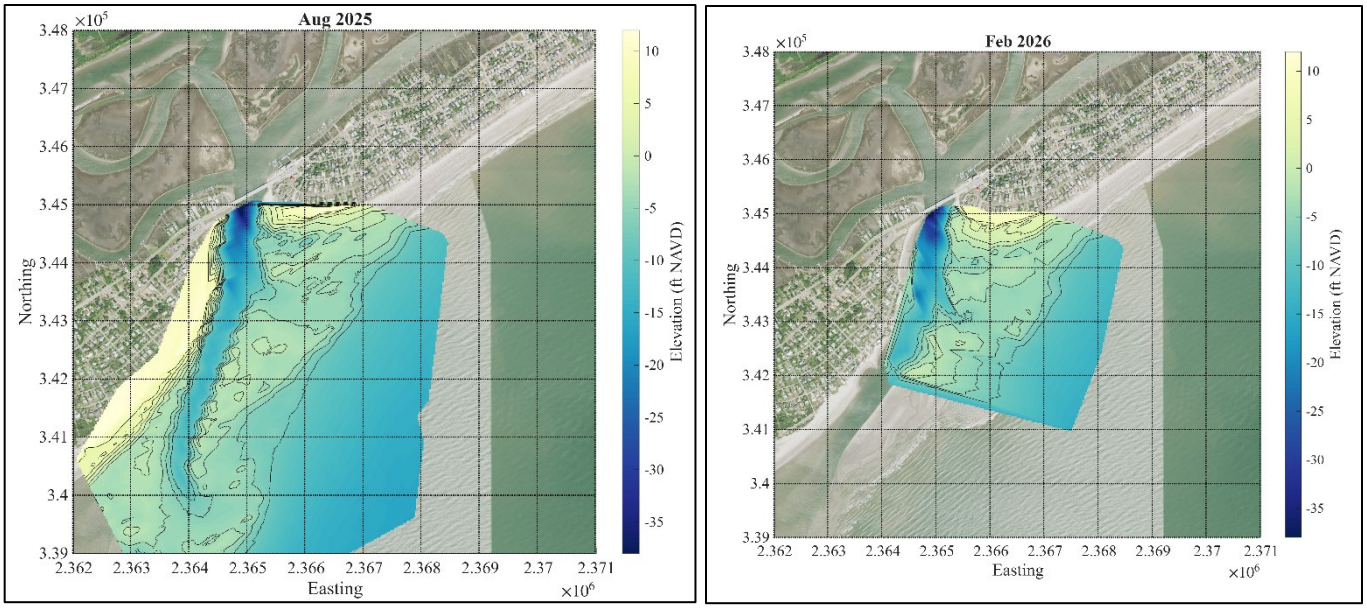


FIGURE 4.34. Breach Inlet contour maps showing the changes in shoal position and size, along with the changes to the inlet channel. Note the growth of the dry sand beach (lighter color) on the south end of Isle of Palms.

5.0 COASTAL RESILIENCY UPDATE

5.1 Weather and Climate Conditions, September 2025 to June 2026

CSE gathered weather and climate data from outside sources (all NOAA-supported) to evaluate observed changes to the beach with respect to environmental conditions. Wind and wave data reported here cover the period from September 2025 to June 2026 (the same as the survey data presented herein). Wind data are compared to historical data covering the period from 1945 to 2026 (Fig 5.1). The Midwestern Regional Climate Center (MRCC), a cooperative program between offices of the National Oceanic and Atmospheric Administration (NOAA) and Purdue University, aggregates real-time and historical hourly wind data from across the United States (MRCC 2025, http://mrcc.purdue.edu/). The closest operational station is located at Charleston International Airport (FAA Identifier – CHS) in North Charleston, ~20 miles northwest of Isle of Palms.

The average wind speed and direction from 2010 to 2025 was 14.6 miles per hour (mph) from ~222° (southwest, Fig 5.1). The peak observed wind speed from 2010 to 2025 was a gust of 73.1 mph from ~22° (north) on 30 September 2022 during the passage of Hurricane *Ian*. During this past year, from September 2025 to June 2026, the average wind speed and direction* was 15.5 mph from ~178° (south), and the peak was 35.6 mph on February 22, 2026, during a winter storm. According to MRCC-NOAA data, wind data during the study period were similar to long-term trends. Winds from the southeast (90°–180°) and southwest (180°–270°) quadrants represented ~47.4 percent of the total from 1945 to 2026; between September 2025 and June 2026, they represented ~44.7 percent of the total incoming winds. Northerly winds were consistent with long-term trends.

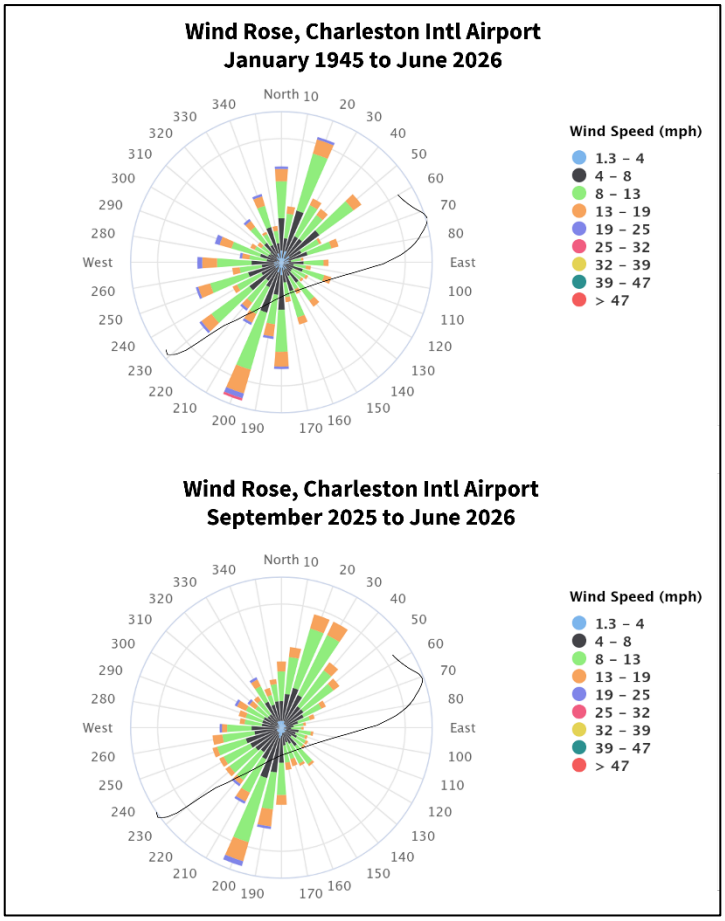


FIGURE 5.1. Wind roses showing the direction and magnitude of winds measured at Charleston International Airport from January 1945 to June 2026 **[UPPER]** and from September 2025 to June 2026 **[LOWER]**.

* *Herein, wind and wave direction is either given in degrees north or in terms of the direction from which it propagates.*

** *The direction from which waves propagate toward NDBC Station 41004.*

Wave data are recorded by the National Data Buoy Center (NDBC) Station 41004 ("Edisto"), located 41 nautical miles (nm) southeast of Charleston, SC (NOAA 2025, http://www.ndbc.noaa.gov/station_page.php?station=41004). Over the past year, the wave climate around Isle of Palms has remained consistent with the previous year and with historical averages. From September 2025 to June 2026, the average wave height was 4.09 feet, arriving from the southeast at 130°, close to the historical average of 4.22 feet.

The largest wave recorded during the year reached 14 feet on September 30th, as Hurricane *Imelda* passed roughly 230 miles offshore of Florida. This was one of 271 waves exceeding 10 feet recorded during the year, slightly above the historical average of 231 such waves per year. However, although Isle of Palms averaged around 25 waves over 15 feet per year from 2010 to 2026, no waves exceeded 15 feet this year, indicating no direct hurricane impacts.

Most Category 1 hurricanes have a central pressure of ~980–990 mb, and many nor'easter-type storms will feature central pressures below 1000 mb. In the past year, pressure did not drop below 990mb or 1,000 mb. This is another indicator that no major storm has occurred in the past year. Historically, Isle of Palms sees a drop in air pressure below 1,000mb around 89 mb a year, with a number of those occurring during one storm. This does not mean that there were no elevated wave conditions or stormy conditions that affected Isle of Palms.

The work of erosion is fundamentally a sand transport problem. An increase in erosion indicates more sand is being transported away from a location than is being transported to replace lost volume. Sand transport increases exponentially with current velocity, and wave energy increases by the square of the wave height. So, in tidal channels, a doubling of velocity will result in an eight-fold increase in net transport, while a doubling of wave height produces a four-fold increase in erosive force. This helps explain why even minor storms can do considerable damage along the coast. A four-foot wave impacting a structure or the foredune will be much more impactful than a normal two-foot wave.

Engineers and scientists use measurements of wave properties like height, wavelength, and speed to estimate the magnitude of energy exerted by a wave striking the beach. The estimate is expressed as 'wave power' in kilowatts per meter of crest length (kW/m). Because sand can migrate either way along a beach, wave power must be adjusted so that waves resulting in southerly transport (ie – north to south) and northerly transport (ie – south to north) can be differentiated. To accomplish this, wave power can be calculated so that northerly transport is measured above zero (positive) while southerly transport is measured below zero (negative). Wave power at Station 41004 is presented in Figure 5.3 with wave height. The larger-magnitude wave power values from September to March represent the passage of cyclonic storms during the fall and winter. In the spring and summer, lower-magnitude positive values tend to dominate.

The most powerful waves from September 2025 to June 2026 exhibited ~14.0 kW/m of wave power in southerly and 9.2 kW/m in northerly directions, with southerly waves occurring more frequently (Fig 5.3). This was similar to last year's results, which also had a relatively calm hurricane season. Similar to wave heights, this is less than the historical average, which exhibited ~9.0 kW/m of wave power in southerly and 7.4 kW/m in northerly directions.

During the year, the average power of a northerly-directed wave was 1.4 kW/m, while the average southerly-directed wave power was –0.7 kW/m. Calculating the average of all wave power indicates there was a general balance in either direction over the period, which, in theory, should lead to a more stable shoreline. The reason it is not along Isle of Palms is the transformation of waves as they approach shore, refract around inlet shoals, and strike at varying angles to the beach.

These results indicate that most waves at Isle of Palms approach from the south, but the strongest waves approach from the north. Since 2010, a similar pattern has been observed wherein approximately three to four times more total energy is expended moving waves in a northerly direction compared to a southerly direction. However, individual southerly-directed waves are roughly twice as powerful. This result corroborates long-term observations along the Isle of Palms documenting southerly-directed sand transport. It is important to note that Station 41004 is several dozen miles off the coast with slightly different exposure to northerly winds. Thus, the net total wave power exhibited at Station 41004 may be different from the inshore zone off Isle of Palms, but the general trends in long-term wave climate should be similar.

Wave data are presented in Figure 5.4 in the form of a wave rose. The wave rose illustrates that most of the waves approach the Isle of Palms from East-Southeast, or roughly normal to the shoreline, along with the magnitude of those waves. The waves shown were transformed to represent the size and direction they would be when they affect the inshore zone of Isle of Palms.

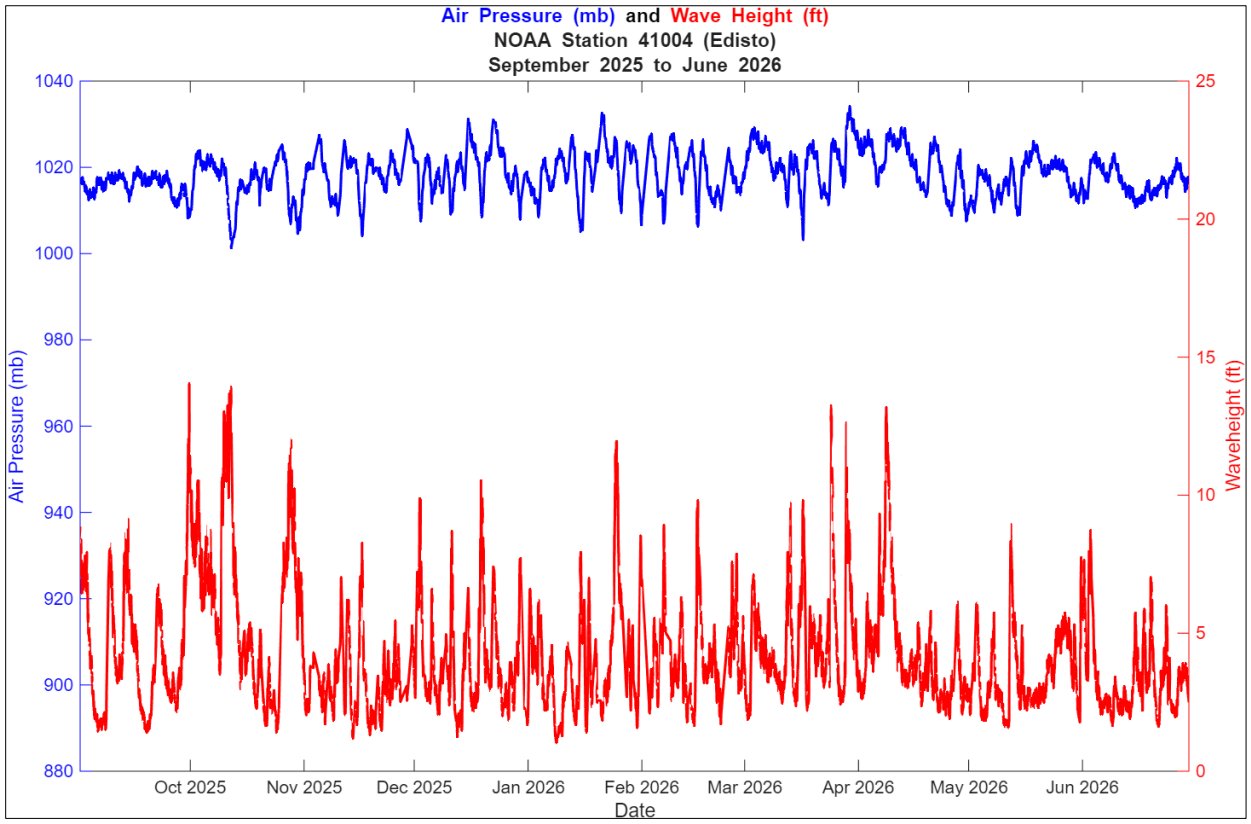


FIGURE 5.2. Atmospheric pressure and wave height at NDBC 41004 from September 2025 to June 2026. Wave heights exceeded 10 ft multiple times during the study period, but atmospheric pressure did not drop below 1000 mb during the few low-pressure systems that occurred in the winter, spring, and summer months.

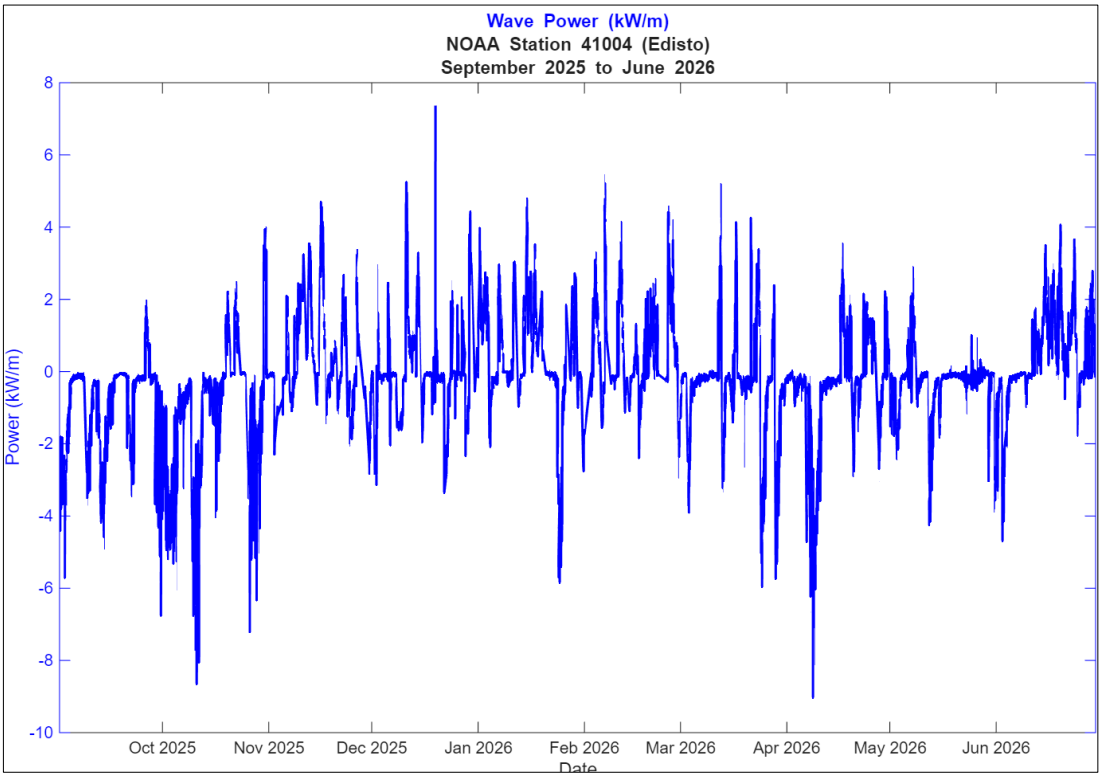


FIGURE 5.3. Wave power (in kW/m) and wave height (in m) for NDBC 41008 from September 2025 to June 2026. Wave power is a useful parameter for determining the relative magnitude and direction of wave energy in an alongshore direction along a beach. Positive values indicate waves move from south to north (ie – northerly transport), while negative values indicate a predominance of north-to-south (ie – southerly) transport.

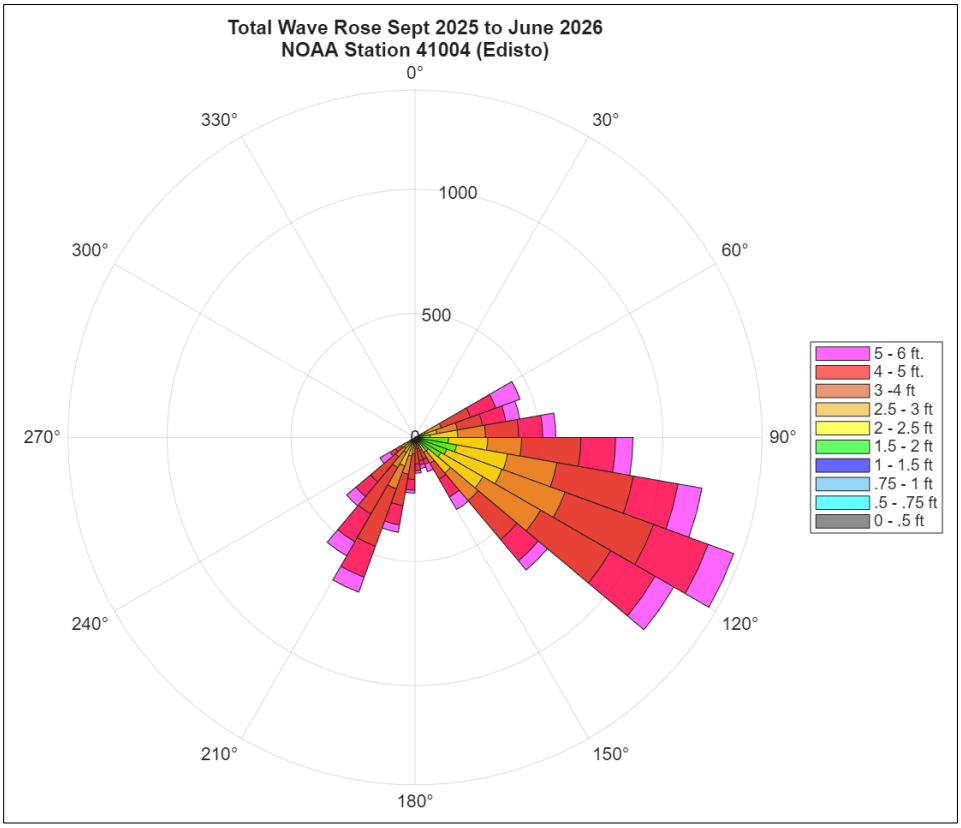


FIGURE 5.4. Wave rose in Isle of Palms from September 2025 to June 2026.

Notably, average tide levels differed between the current monitoring year and the previous year (Figure 5.5). Both monitoring periods exhibited similar tidal conditions during the fall, with comparable weekly mean water levels through approximately November. Following this period, average tide levels during the 2025–2026 monitoring year were generally lower than those observed during 2024–2025 throughout the winter months. Beginning in the spring, however, the trend reversed, with average tide levels from approximately April through June consistently exceeding those recorded during the previous year.

The elevated spring and early summer water levels may have contributed to the increased erosion observed in Reaches 3 and 4 between the February and June surveys. Higher mean water levels allow waves to act farther landward on the beach profile, increasing the frequency and duration of wave attack on the upper foreshore and dune toe. As a result, wave runup reaches higher elevations on the beach, enabling more wave energy to be dissipated across the dry beach rather than offshore. This process can accelerate sediment mobilization and shoreline retreat, particularly when accompanied by energetic wave conditions. Although tidal elevation alone does not control erosion rates, the combination of elevated water levels and storm or high-wave events can significantly increase the potential for beach erosion.

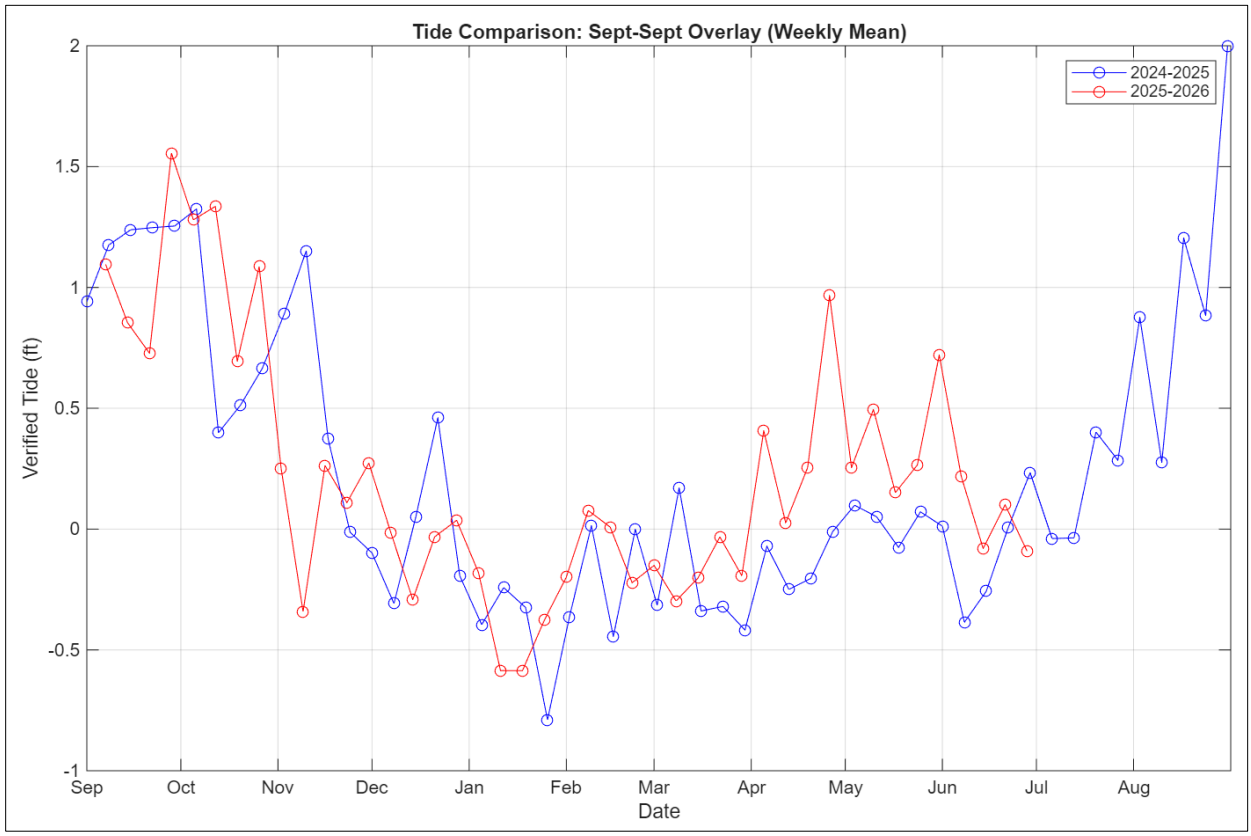


FIGURE 5.5. Charleston Harbor tide levels from 2024 to 2025 (blue) compared to 2025 to 2026 (red).

5.2 Flood Vulnerability

Regional projections of sea level rise (SLR) through this century within the Southeast US range from ~1 ft to ~10 ft (Sweet et al 2022). These projections are based on modeled values of future CO_2 and other greenhouse gas emissions, shifts in ocean circulation, vertical movements in the Earth's crust, and changes to Earth's gravitational field and rotation. They range from a 'Low' scenario (~1 ft by 2100) to 'Extreme' (~10 ft by 2100), with a 'High' scenario at 8 ft and three 'Intermediate' values averaging ~4 ft (Fig 5.6; NOAA 2021).

For reference, the highest astronomical tide (aka 'King Tide') expected at Isle of Palms would bring water levels ~3 ft above mean sea level (MSL). So, the water levels observed during those King Tide events represent the higher range of projected MSL by ~2060 and the lower-intermediate projected MSL by ~2100 (Fig 5.6).

Relative to 1995–2014 conditions, the likely global mean sea level rise by 2100 is ~1 to 2 ft under the *lowest* emissions scenario. This scenario calls for warming to be held at or below 1.5 °C by 2100 compared to 1900 and for 'net-zero' CO_2 emissions by 2100. 'Net-zero' emissions represent the condition in which removals of atmospheric carbon exceed emissions. The 'intermediate' scenarios are approximately in line with the upper (eg – higher-emitting) end of reduced emissions and project ~3–5 ft of SLR by 2100, while the 'very high' scenario assumes no policy changes and projects ~5 to 7 ft of SLR by 2100.

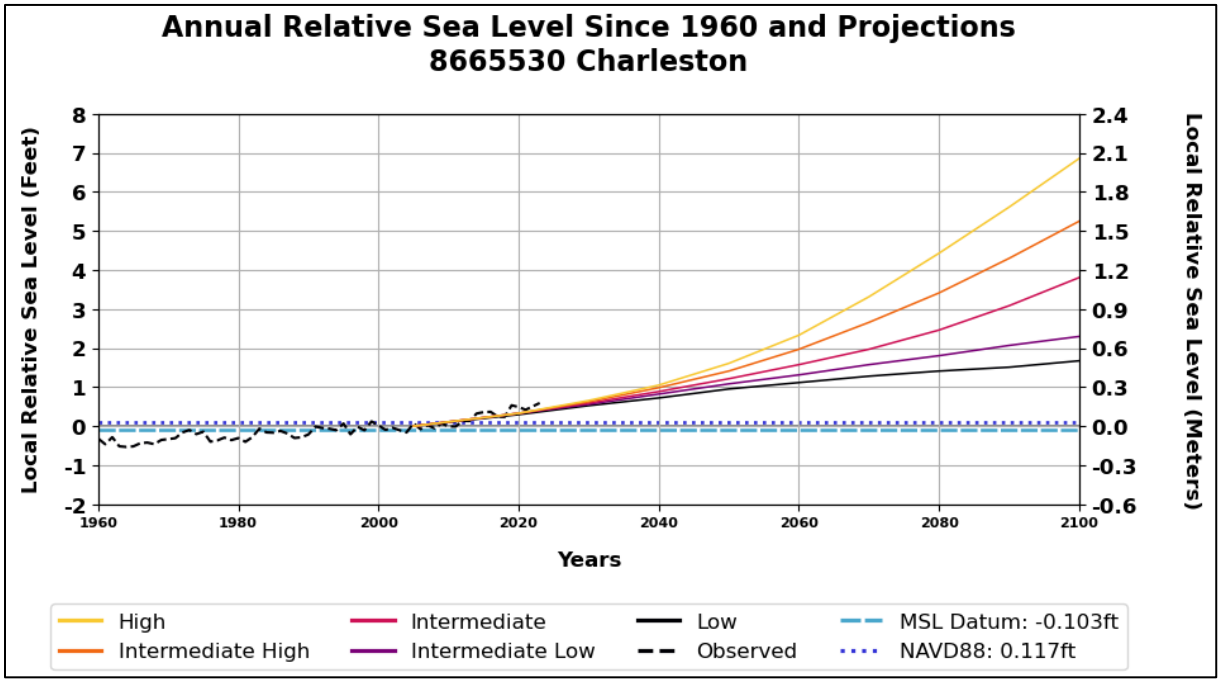


FIGURE 5.6. Projected MSL values under an 'Intermediate' emissions scenario average ~2 ft by 2060, and ~4 ft by 2100 at Charleston Harbor. These projections are global-scale predictions of future water levels (based on emissions) adapted to the Lowcountry by accounting for regional and localized changes in ocean circulation, vertical movement in the ground surface, and other factors. (source: https://tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml?id=8665530#tabscenario). Note higher rate of sea level rise for Charleston since 2010 based on observed data (bold dashed line).

Keep in mind that any rise in *mean* sea level in the future is accompanied by a corresponding rise in mean high tide. So, in simple terms, today's high tide level would become a future mean tide level, and a future normal high tide level could be the equivalent of the storm tides the Isle of Palms experienced during hurricanes *Matthew* or *Dorian*.

Coastal communities are becoming more aware of the subtle differences in these impacts as they begin to feel pressure from sunny day 'nuisance' floods (see Sweet et al 2018, Sweet et al 2020, Sweet et al 2022). Such floods will tend to impact low-lying sheltered shorelines, such as causeways over the marsh or creek-front backyards. Just a minor increase in sea level can quickly overtop a road that is barely above normal spring tide levels. On the other hand, locations along the oceanfront generally do not experience nuisance floods the same way. This is because dunes just inland from the beach lie at higher elevations than the mainland-facing 'back side' of barrier islands, where the shoreline transitions more gradually into marsh and creek habitats.

NOAA provides a 'Sea Level Rise Viewer' (SLRV; see https://coast.noaa.gov/digitalcoast/tools/slr.html) to help people identify local variations in flood impacts under different SLR scenarios. This tool allows users to specify water levels and generate inundation maps showing MSL and projected depths in previously dry areas. The NOAA viewer is a handy tool to see which SLR scenarios begin to impact a particular property.

Figure 5.7a, b shows a range of SLR scenarios between 1 ft and 4 ft above mean higher high water (MHHW). MHHW is presently 2.62 ft above 0 ft NAVD at the Charleston Harbor entrance. So, ~2 feet of SLR would bring MSL up to present-day MHHW and likewise raise MHHW. These visualizations do not distinguish between MSL and MHHW; however, they indicate the water level at 1, 2, 3, and 4 ft above MHHW. This means the maps show where the highest astronomical tide would flood under these scenarios. It is apparent that with increasing SLR, flooding will be more impactful along the backside of the island.

At present, all properties on the island remain above MHHW. Under a SLR scenario of 1 ft (Fig 5.7), some of the marsh edge along the Intracoastal Waterway, Waterway Island, and the landward side of Wild Dunes would be inundated. Roads could be threatened by nuisance flooding more frequently than at present. This is particularly true for the portions of Waterway Boulevard near holes 6 through 8 of the Harbor Course. This scenario is equivalent to projected MHHW in ~2040 under an 'Intermediate' scenario (see Fig 5.6). A 2-ft increase in MHHW would lead to further marsh creep and periodic inundation of holes 6 through 10 of the Harbor Course (Fig 5.7). Marsh edges behind the Harris Teeter and around Marsh Island Lane and Merritt Boulevard would continue to move inland and upward, and these areas would likely see increased nuisance flooding. According to NOAA

projections under an 'Intermediate' scenario, this increase would occur by ~2070 (see Fig 5.6). Kiawah Island has begun strategic planning to address the impacts of this SLR rate and magnitude (see Town of Kiawah Island 2018).

The SLRV indicates that the most significant changes could occur when MHHW increases from 2 ft to >3 ft above present (Fig 5.7). Many properties would be permanently inundated, particularly along Waterway Boulevard, between 2nd and 6th Ave, behind the Harris Teeter, and along Back Bay Drive in Wild Dunes. With 3 ft of SLR, Palm Boulevard near Hunley Bridge will become permanently inundated. At 4 ft of SLR, a substantial portion of the neighborhood bounded by 32nd Ave, Hartnett Boulevard, and 41st Ave would be inundated.

SLR of 3 ft and 4 ft on the oceanfront could trigger a mixture of impacts. If sufficient sand volumes are maintained along the oceanfront, the first one or two rows of beachfront homes would likely remain high and dry even with a 4-ft rise in MHHW. This is because most oceanfront properties are elevated higher than back-barrier buildings to accommodate surge and wave runup. Keep in mind that such properties may be safe from normal conditions but will still be exposed to higher water levels in storms. Houses presently elevated to the 100-yr flood level standard will become more vulnerable to lower return-period storm surges – as frequently as a 30-yr interval – under the likely SLR scenarios in the next 80 years (see Marsooli et al 2019).

A 3-ft increase in MHHW is possible under the 'Intermediate' scenario by ~2090 (see Fig 5.6), whereas a 4-ft SLR under the same scenario is not expected until after 2100. Folly Beach plans to adapt to SLR of 3 ft by ~2060 (see SC Sea Grant 2017). Extensive research is being conducted worldwide to improve future sea-level predictions and ramifications for individual locations. A key finding of the August 2021 IPCC* report is that regardless of any level of reduction in atmospheric CO_2, sea levels will rise through 2100 by at least 2 to 3 ft.

** IPCC – the Intergovernmental Panel on Climate Change was formed by the United Nations to provide regular assessments of the scientific basis of climate change, its impacts and future risks, and options for adaptation and mitigation. The panel currently has 195 members worldwide, with dozens of additional scientists contributing to each report.*

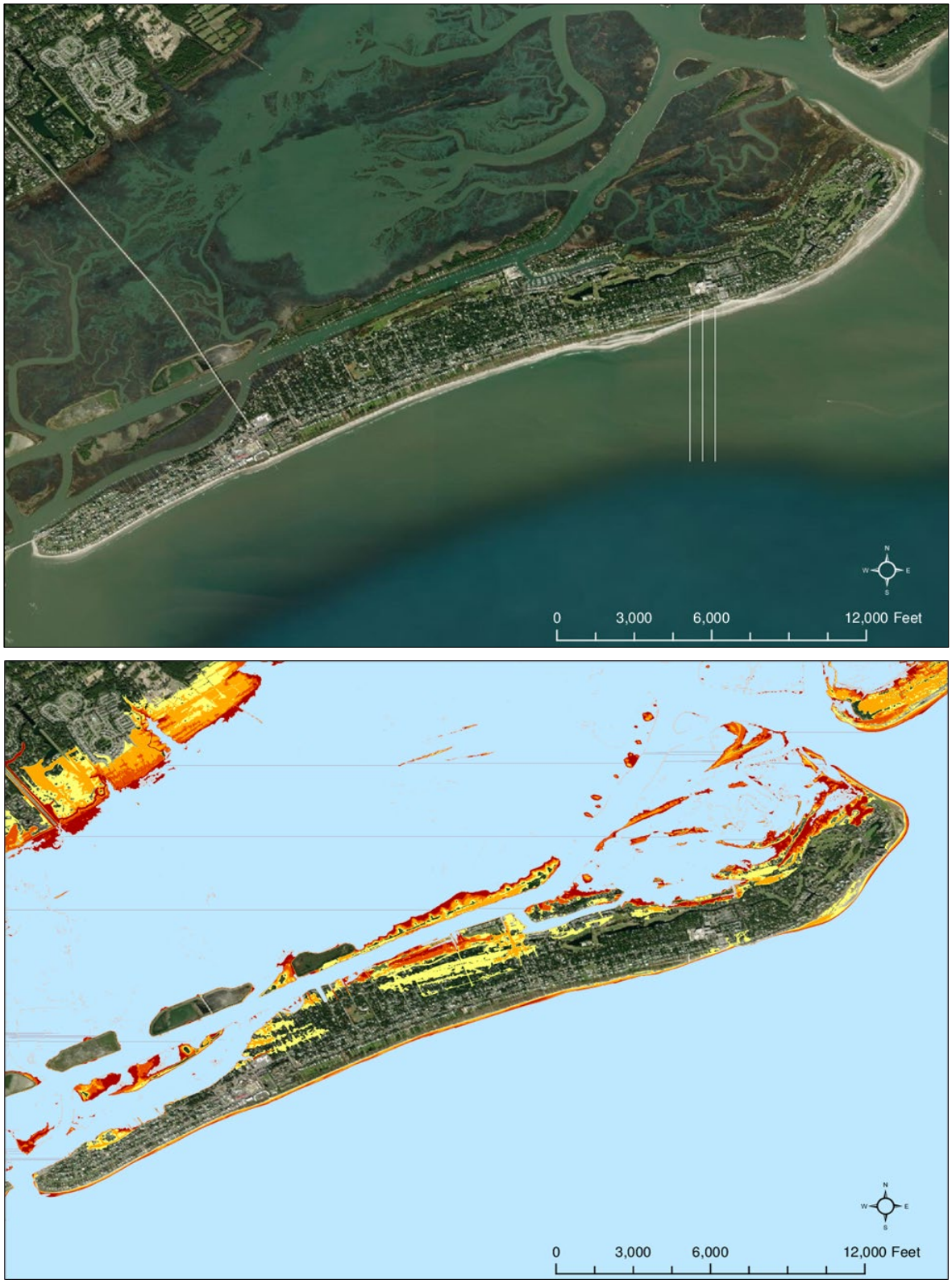


FIGURE 5.7a, b. Sea level inundation models around the Isle of Palms generated using data from NOAA (https://coast.noaa.gov/digitalcoast/tools/slr.html). Shades of yellow, orange, red, and maroon are used to signify SLR of 1, 2, 3, and 4 ft above present-day MHHW.

5.3 Coastal Resilience in the 21st Century

NOAA's Ocean Service defines coastal resiliency as the "ability of a community to 'bounce back' after hazardous events…rather than simply react to impacts" (NOAA 2021). NOAA recommendations for effectively preparing for hazardous situations and improving coastal resiliency include being "informed and prepared" for the impacts of SLR as a community.

As mentioned above, many communities around the nation, the world, and a handful of communities in South Carolina have begun strategic planning initiatives to address the impacts of projected SLR. The impacts of SLR are diverse and extensive, and conditions vary significantly from one community to another. Individualized plans developed at a community level help prepare for these impacts using a variety of tools and adaptation strategies.

Other communities in South Carolina have categorized potential adaptation strategies according to their role and utility in mitigating impacts from future SLR. These include water infrastructure management, uplands management and/or conservation, transportation adaptation, and education/communication. The order of mitigation and adaptation strategies should be timed according to the vulnerability and capabilities of the community in question. Shorter-term goals (eg – 1 to 3 years) are focused on generating plans and recommendations based on a detailed inventory of the vulnerability of upland properties at a parcel scale. Medium- and long-term goals (eg – 3 to 5+ years) include implementing recommendations.

SLRV data indicates flooding along Waterway Boulevard and portions of Wild Dunes will present issues for the entire island by mid-century under 'Intermediate' SLR scenarios (Fig 5.7). Mitigation and adaptation strategies for that vulnerability should target improving drainage following rain events and elevating the road surface above future MHHW. On a longer timescale ('Intermediate' scenarios as projected by the end of the century), developed properties between Hartnett Boulevard and the Harbor Course, as well as near the Exchange Club, will be vulnerable to persistent flooding even during calm weather conditions.

Figure 5.8 illustrates an example of SLR on a barrier island and how it affects both the back bay and oceanfront properties. SLR in the back bay can reduce the ability of water to drain effectively from the island. This can worsen problems with sunny-day flooding that affect low-lying areas, which can lead to a water quality problem. This can lead to the need for long-term projects to strengthen the back bay in the form of bulkheads, stormwater drainage reform, and more. On the oceanfront, storm waves and surge can affect higher up the beach, leading to increased erosion. In areas where beach and dunes are already affected by erosion, property damage can occur.

Figure 5.9 illustrates how the rate of sea level change has varied over time, based on a two-year running average. While short-term fluctuations are evident, the overall trend (red dotted line) indicates that the rate of sea level rise has gradually increased since the mid-20th century. This suggests that, in addition to natural variability, there is a long-term acceleration in sea level rise that may have implications for coastal planning and infrastructure resilience.

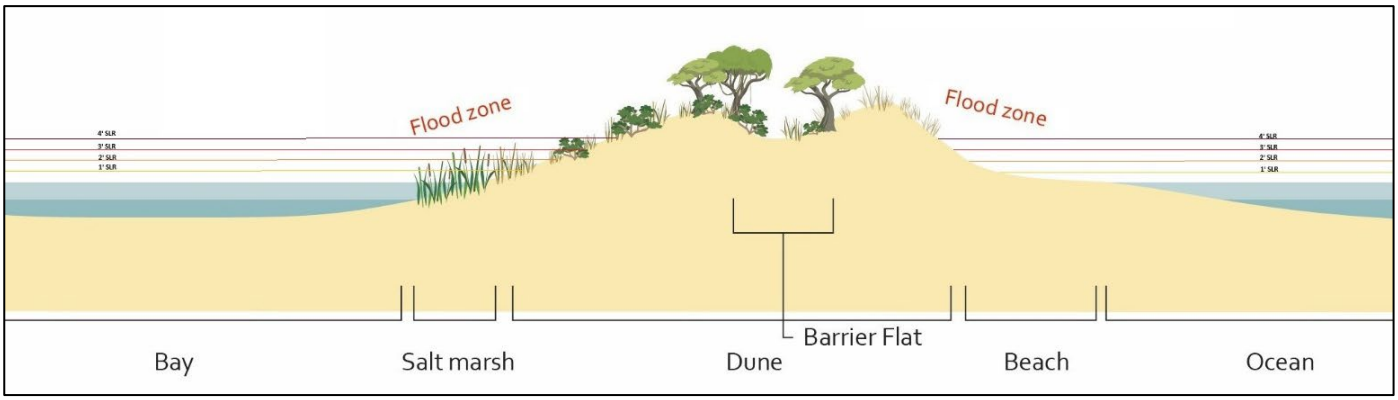


FIGURE 5.8. Example of 1, 2, 3, and 4 ft SLR above MHW on barrier islands.
(Original image: https://creatingattheedge.wordpress.com/wp-content/uploads/2015/06/doorsnedes-barrier-mainland-flood-20150506.jpg).

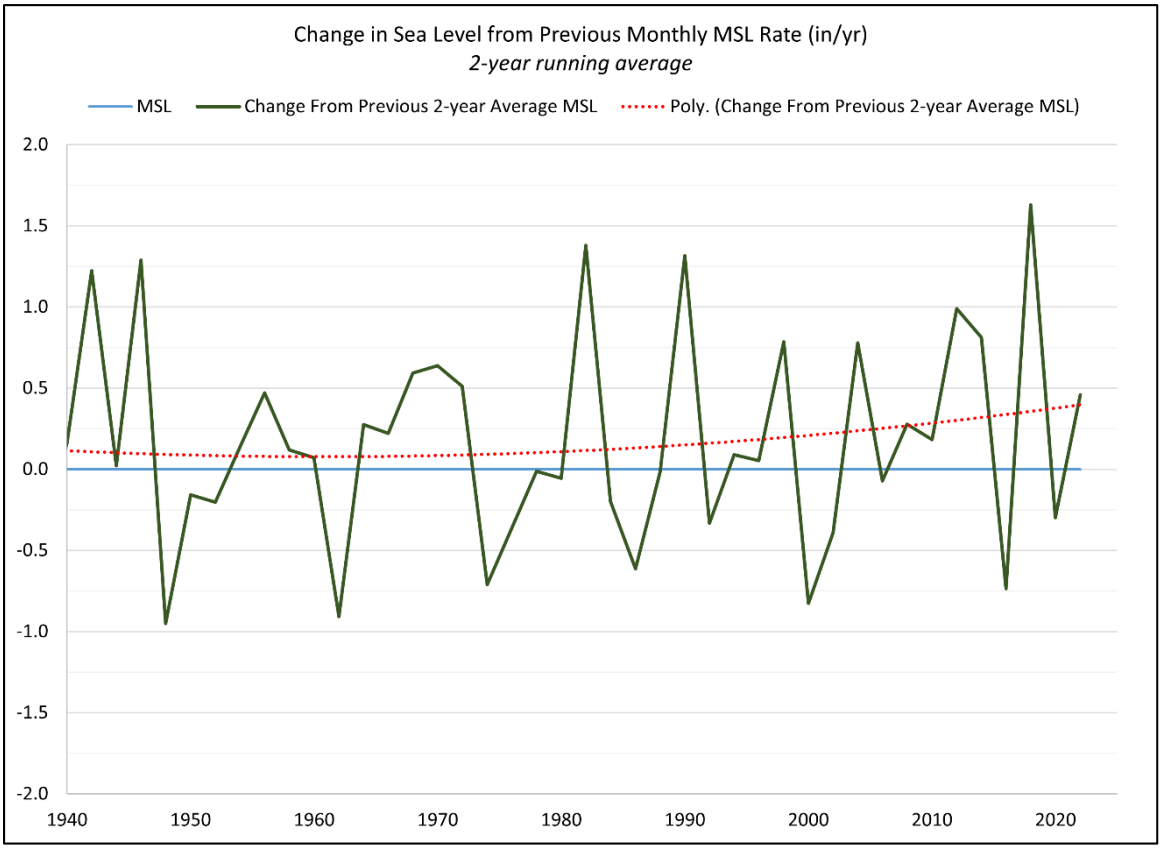


FIGURE 5.9. Change in sea level rate (in/yr) based on a 2-year running average, showing short-term variability and a long-term upward trend since the 1940s.

The City should consider sponsoring a Climate Change and SLR adaptation plan like those developed by Folly Beach and Kiawah Island to improve its coastal resiliency. Adaptation plans are not unlike the Beachfront Management Plans prepared by many communities, although due to the broad array of SLR impacts, they can represent a more interdisciplinary effort. These plans contain recommendations and identify time horizons for specific priorities and goals. More importantly, they inform a community of the hazards presented by SLR and how to prepare adequately before those hazards negatively impact the community.

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6.0 SUMMARY & RECOMMENDATIONS

This report describes beach conditions at Isle of Palms as observed between 2025 and 2026. **The beach gained around ~187,400 cy of sand from August 2025 to February 2026 and then gained ~42,050 cy from February 2026 to June 2026, resulting in a net gain of ~229,450 over the last year.** The majority of the accretion occurred in the south end of the island thanks to USACE beneficial use projects and natural spreading from the center island beach. Accretion was also observed along the center of Wild Dunes, with the continued shoal attachment in the north end of the island.

The primary results of this latest monitoring effort are:

1. The large shoal at the north end is completely attached to the beach in Subreaches 5c and 6a, and sand has started to spread alongshore to areas like Beachwood East, Ocean Club, and the Wild Dunes Links Course.

2. The south end of the island has benefited from the USACE project and the downdrift movement of sand from the center of the island.

3. The design of the nourishment project has been changed to match the island's current conditions and dynamics.

At the north end of the island, the accretion of new sand from the shoal has slowed in the past four months in Subreaches 5c and 6a. This indicates that the shoal attachment is in Stage 3 of the shoal bypass cycle where sand starts spreading downdrift. This is apparent from the reduction in erosion rates and the growth of the dry sand beach. This is especially evident in Subreach 5b, where erosion rates around Beachwood East have slowed, and a moving sand wave of dry sand beach has moved to around Dunecrest Lane. Based on volumetric analysis, most of the sand is moving toward Reach 5, with some also reaching Reach 6. This has reduced the erosion rates in Subreaches 6b and 6c but has yet to rebuild the dry-sand beach. Vulnerable areas, such as Ocean Club, remain susceptible to storm damage. Fortunately, these heavily eroded areas are the focus of the upcoming nourishment project, which will add hundreds of feet of dry beach.

Second, the south end of the island has accreted a significant amount of material in the past year. In the first half of the survey period, Reaches 1 and 2 gained 164,850 cy (18.3 cy/ft), with most of the gains south of 7th Avenue from the USACE beneficial use project. With that gain, CSE noted in the February 2026 interim memo that there was a significant gain of sand (~25,750 cy) due to an accretional sand wave moving from the area north of the pier. This sand originates from downdrift movement during the 2008 and 2018 projects. From February 2026 to June 2026, there was a gain of 152,875 cy (17.0 cy/ft) that was mostly attributed to natural sand migration. This was the largest gain

of sand recorded since monitoring began, and it covered only a four-month period. The growth of Reaches 1 and 2 marks a welcome change from significant erosion from 2021 to 2024. During this period, there was significant damage to dunes, causing them to recede further from the historical position. With the growth of the dry sand beach, CSE expects the dune to grow and reestablish vegetation, given there are no significant storm events.

At the time of this writing, Marinex Construction is completing the 2026 nourishment project. The project includes nourishing 2.5 million cubic yards across three areas of Isle of Palms: 900,000 cubic yards in Reach, 6,800,000 cubic yards in Reach 5, and 800,000 cubic yards in Reaches 1 and 2. The project will add a new dune line in heavily eroded areas and reshape dunes in other areas. It will add significant amounts of dry sand beach around the island, with berm lengths reaching ~650 feet in some areas. CSE made slight adjustments to the template to account for the current conditions and the performance of past projects. This material will move with littoral transport to help supply some of the heavily eroded areas in these reaches for years after the project. At the south end of the island, the recent accretion allowed the template to be pushed further seaward to create a wider beach. Similar to the north end of the island, sand is placed in anticipation of future sediment transport patterns. Following project completion, the island is expected to hold 1.6 million cy more sand than has ever been measured.

CSE recommends that the City continue its current efforts to pursue various restoration efforts, including short-, mid-, and long-term plans. The nourishment project will help provide the island with the most sand in the littoral system since monitoring began. The City is pursuing the possibility of building hard structures on the beach to help limit beach losses. These structures can prove effective in slowing erosion rates and maintaining dry-sand beach width. There are also considerations, such as downdrift effects, that must be evaluated before employing these structures. CSE recommends continued monitoring of the beach, as conditions can change quickly independent of storm effects. Monitoring remains one of the best tools for beach management, as it shows the current beach picture compared to historical conditions.

REFERENCES & BIBLIOGRAPHY

CSE. 2007. Shoreline assessment and long-range plan for beach restoration along the northeast erosion zone, Isle of Palms, South Carolina. Feasibility Report for Wild Dunes Community Association, Isle of Palms, SC. Coastal Science & Engineering (CSE), Columbia, SC, 76 pp.

CSE. 2008. Isle of Palms beach restoration project. Final Report for City of Isle of Palms, South Carolina. Coastal Science & Engineering (CSE), Columbia, SC, 46 pp + appendices.

CSE. 2009. Beach restoration project (2008), Isle of Palms, South Carolina. Year 1 Monitoring Report, City of Isle of Palms, SC. CSE, Columbia, SC, 107 pp + appendices.

CSE. 2010. Beach restoration project (2008), Isle of Palms, South Carolina. Interim Year 2 (May 2010) Monitoring Report, City of Isle of Palms, SC. CSE, Columbia, SC, 24 pp + appendices.

CSE. 2011a. Beach restoration project (2008), Isle of Palms, South Carolina. Year 2 (March 2011)—Beach Monitoring Report, City of Isle of Palms, SC. CSE, Columbia, SC, 93 pp + appendices.

CSE. 2011b. Beach restoration project (2008), Isle of Palms, South Carolina. Year 3 (November 2011)—Beach Monitoring Report, City of Isle of Palms, SC; CSE, Columbia, SC, 95 pp + appendices.

CSE. 2012. Beach restoration project (2008), Isle of Palms, South Carolina. Year 4 (November 2012)—Beach Monitoring Report, City of Isle of Palms, SC; CSE, Columbia, SC, 83 pp + appendices.

CSE. 2013. Beach restoration project (2008), Isle of Palms, South Carolina. Beach Monitoring Report – Year 5 (December 2013), City of Isle of Palms, SC; CSE, Columbia, SC, 89 pp + appendices.

CSE. 2015. Beach restoration project (2008), Isle of Palms, South Carolina. Year 6 (April 2015)—Beach Monitoring Report, City of Isle of Palms, SC; CSE, Columbia, SC, 85 pp + appendices.

CSE. 2016 (June). Annual beach and inshore surveys: 2008 Isle of Palms restoration project. Year 7 (2015) monitoring report for Isle of Palms, SC. CSE, Columbia, SC, 69 pp + appendices (2447YR1).

CSE. 2019 (April). City of Isle Palms 2018 Beach Restoration Project. Final report for the city of Isle of Palms, SC. CSE, Columbia (SC), 57 pp + appendices.

CSE. 2020 (July). City of Isle Palms 2018 Beach Restoration Project. Year 1 (July 2020) —Beach Monitoring Report, City of Isle of Palms, SC. CSE, Columbia (SC), 63 pp + appendix.

FitzGerald DM, NC Kraus, and EB Hands. 2000. Natural Mechanisms of Sediment Bypassing at Tidal Inlets.

Gaudiano, DJ. And Kana, TW. 2001. Shoal bypassing in South Carolina inlets: geomorphic variables and empirical predictions for nine inlets. Tech Rept, Dept Geological Sciences, Univ South Carolina, Columbia, 182 pp.

Hayes, MO. 1979. Barrier island morphology as a function of tidal and wave regime. In S Leatherman (ed), *Barrier Islands*, Academic Press, New York, NY, pp 1-26.

Houser, C, S Hamilton. 2009. Sensitivity of post-hurricane beach and dune recovery to event frequency. Earth Surf. Proc. and Landforms 34, 613-628.

Kana, TW. 2002. Barrier island formation via channel avulsion and shoal bypassing. In Proc 28th Intl Conf Coastal Engineering (Cardiff), pp 3438–3448.

Kana, TW, ML Williams, and FD Stevens. 1985. Managing shoreline changes in the presence of nearshore shoal migration and attachment. In Proc Coastal Zone '85, Vol 1, ASCE, New York, NY, pp 1277-1294.

Marsooli, R, N Lin, K Emanuel, et al. 2019. Climate change exacerbates hurricane flood hazards along US Atlantic and Gulf Coasts in spatially varying patterns. Nat Commun 10, 3785. https://doi.org/10.1038/s41467-019-11755-z

National Oceanic and Atmospheric Administration (NOAA). 2021. Tides and Currents. https://tidesandcurrents.noaa.gov/

South Carolina Sea Grant. 2017. City of Folly Beach, South Carolina, Sea Level Rise Adaptation Report. SC Sea Grant Consortium Product #SCSGC-T-17-04.

Sweet, W, G Dusek, D Marcy, G Carbin, and J Marra. 2018. 2018 State of U.S. High Tide Flooding with a 2019 Outlook (NOAA Technical Report No. NOS CO-OPS 090).

Sweet, WV, G Dusek, G Carbin, JJ Marra, D Marcy, and S Simon. 2020. 2019 State of US High Tide Flooding With a 2020 Outlook. NOAA Tech. Rep. NOS CO-OPS., Vol. 92. Silver Spring, MD: National Oceanic and Atmospheric Administration, 17.

Sweet, W., et al. 2022, Global and regional sea level rise scenarios for the United States: Updated mean projections and extreme water level probabilities along United States coastlines, NOAA Tech. Rep. NOS 01, Natl. Ocean Serv., NOAA, Silver Spring, MD, 111 pp.

The Edge. 2015 (May / June). Research – Creating At The Edge. [Internet]. Available from: https://creatingattheedge.wordpress.com/research/research/

Town of Kiawah Island. 2018. Flood Mitigation and Sea Level Rise Adaptation for Kiawah Island SC. Kiawah Island, SC. 123 pp.

Traynum, SB, and H Kaczkowski. 2015. Evolution of a large-scale shoal-bypass event at Isle of Palms, SC – Implications for local beach management and shoreline predictions. Proc. Coastal Sediments, 14 pp.

USFWS. 2017. Biological opinion for Isle of Palms, Charleston County, SC. US Department of Interior, US Fish & Wildlife Service, FWS Log No 04ES1000–2017–F–0157, Charleston, SC, 67 pp.