

**Kona Village Resort
Small Scale Beach Nourishment Category II**

Completion Report

June 30, 2023



Prepared for:

Kona Village Resort
72-300 Maheawalu Drive
Kailua-Kona, HI 96740

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1. INTRODUCTION

1.1 Background

Kona Village Resort (KVR) property is located at 72-300 Maheawalu Drive, Kailua-Kona, Hawaii. The 2011 Tohoku tsunami caused significant damage to the property and the beach, indefinitely closing the resort. The tsunami pushed sand onshore, separating it from the active littoral cell. In addition to this beach loss, the tsunami-driven erosion also exposed underlying beach rock outcroppings which were previously buried beneath the beach, subsequently inhibiting the recreational use of the beach. Following the 2011 event, the sand transported mauka of the shoreline was collected and stockpiled on site for future use in beach nourishment activities. Since then, efforts have been made to reopen the resort with a full remodel and reconstruction of its campus. KVR has privately funded the restoration of the beach along approximately 350 feet of the shoreline fronting their property to restore the beach to its original pre-tsunami condition.

1.2 Project Location

KVR is located north of Kailua-Kona as shown by the location map in Figure 1-1 and the project site map in Figure 1-2. The project area tax map presented in Figure 1-3 indicates the property's Tax Map Key (TMK) (3) 7-2-010:010. Prior to the tsunami, the beach fronting the property was extensively used by the public and the offshore waters supported various forms of ocean-based recreation, including swimming, snorkeling, diving, and paddling. The recreational beach length is approximately 350 feet, bounded by lava rock to the north, a freshwater spring (Wai a Kane) to the south, and a backshore concrete-rock-masonry (CRM) retaining wall.



Figure 1-1 Location Map, Island of Hawaii

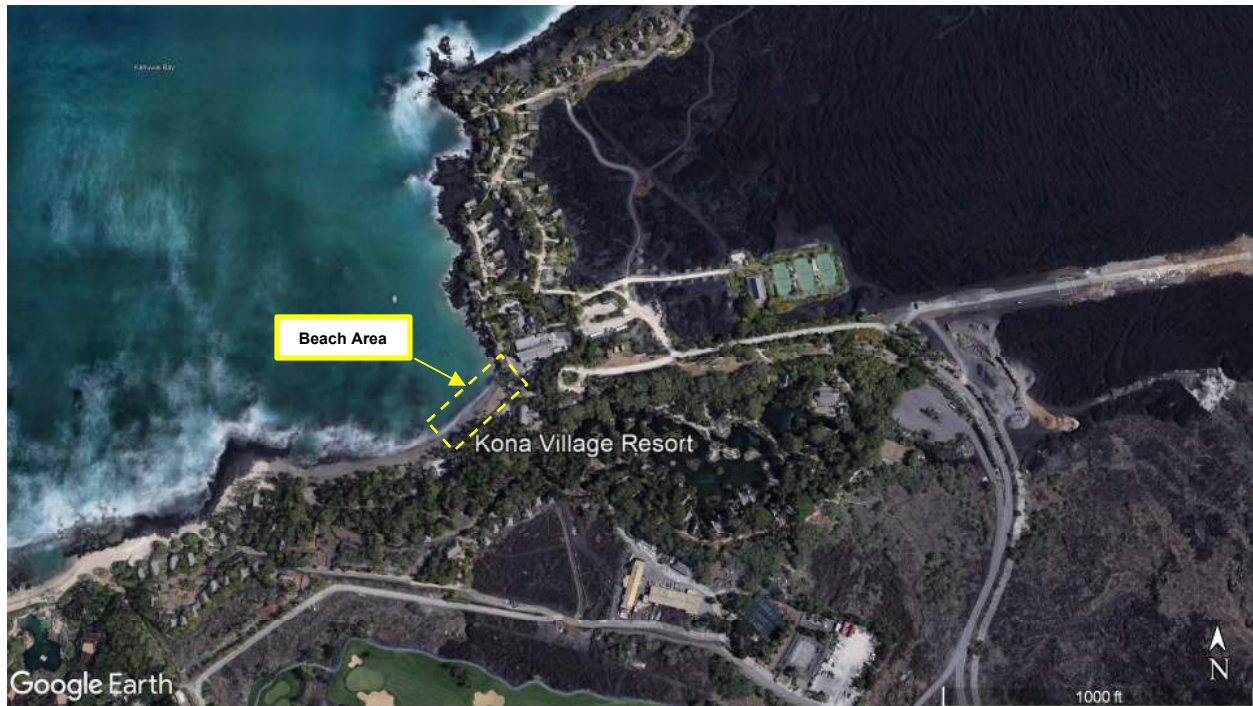


Figure 1-2 Project Site Map, Kona Village Resort

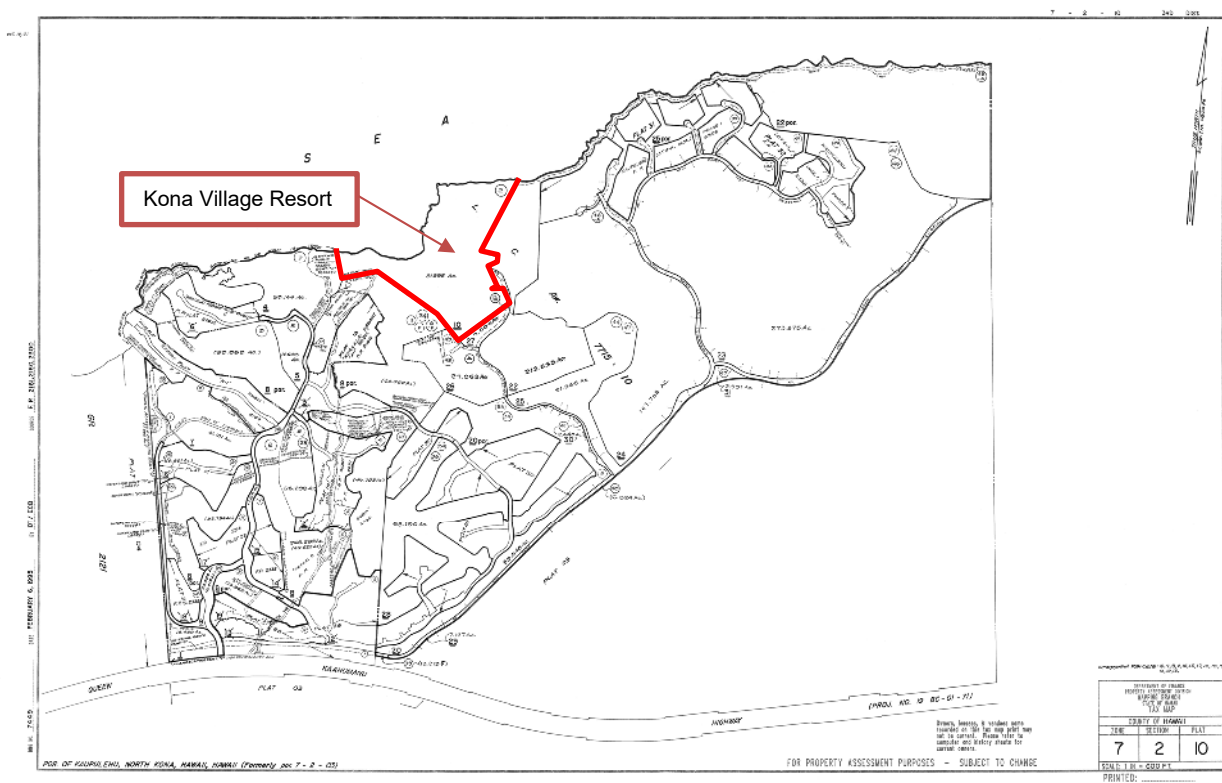


Figure 1-3 Location Map, Tax Map (Red Outline)

1.3 Kona Village Permitting

On November 23, 2022, KVR submitted a Small-scale Beach Nourishment (SSBN) application to the DLNR Office of Conservation and Coastal Lands (OCCL). On January 25, 2023, OCCL issued a SSBN approval (SSBN HA-23-0) authorizing the proposed beach nourishment. To implement the SSBN the applicant also requested a Right of Entry (ROE) authorization from the Hawaii Land Division Office. The ROE application was submitted on February 3, 2023, and was approved on May 18, 2023 (Ref: 23HD-019). Per SSBN conditions, notification of Start of Work was issued to DLNR-OCCL May 18, 2023, one week prior to the start of construction.

Beach nourishment activities were performed from May 26 to May 29, 2023. Beach nourishment efforts were performed in a quick and safe manner, following all conditions specified in Appendices B, C, D, and F of the approved SSBN application.

1.4 Authorized Work

The SSBN and ROE authorized the nourishment of the beach fronting KVR with 740 cy of beach sand. Figure 1-4 illustrates the approximate outline of the approved sand placement area while Figure 1-5 indicates the ingress and egress route the equipment used to transport sand from the stockpile location to the placement area.

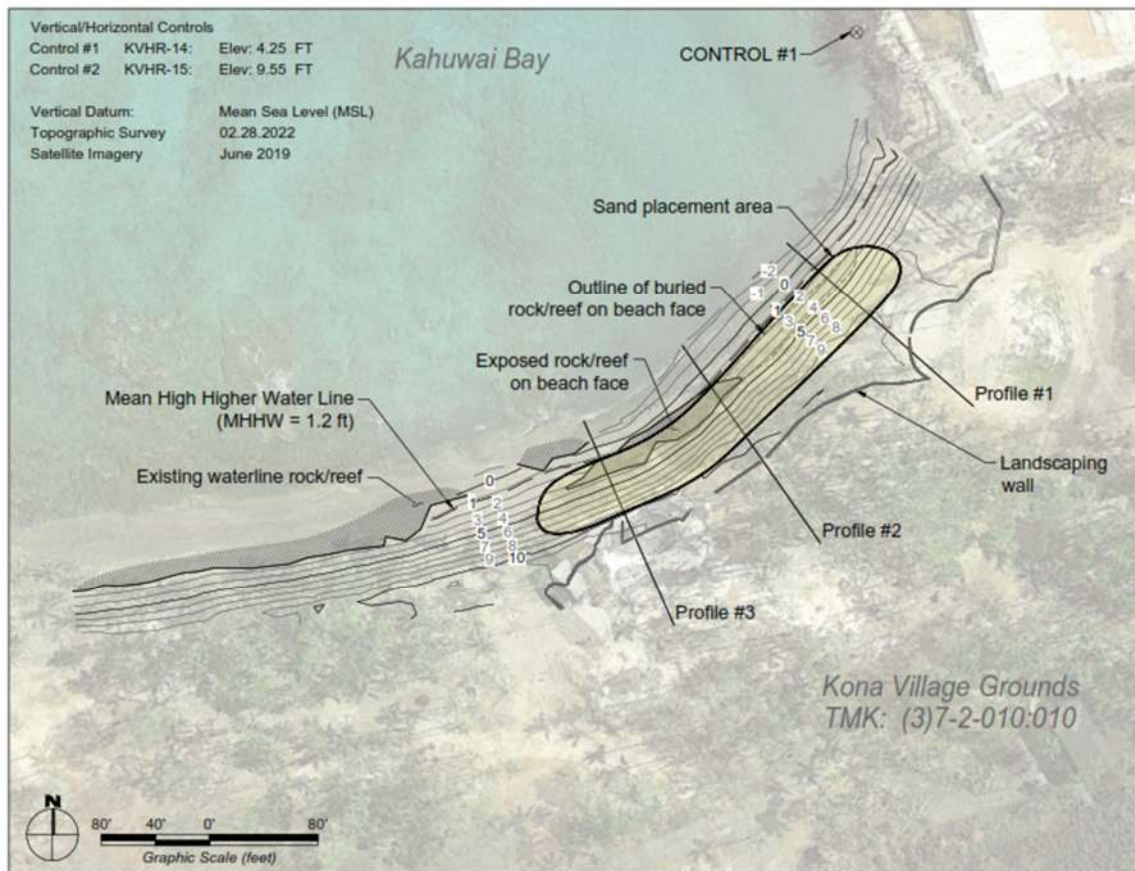


Figure 1-4 Approved Sand Placement area

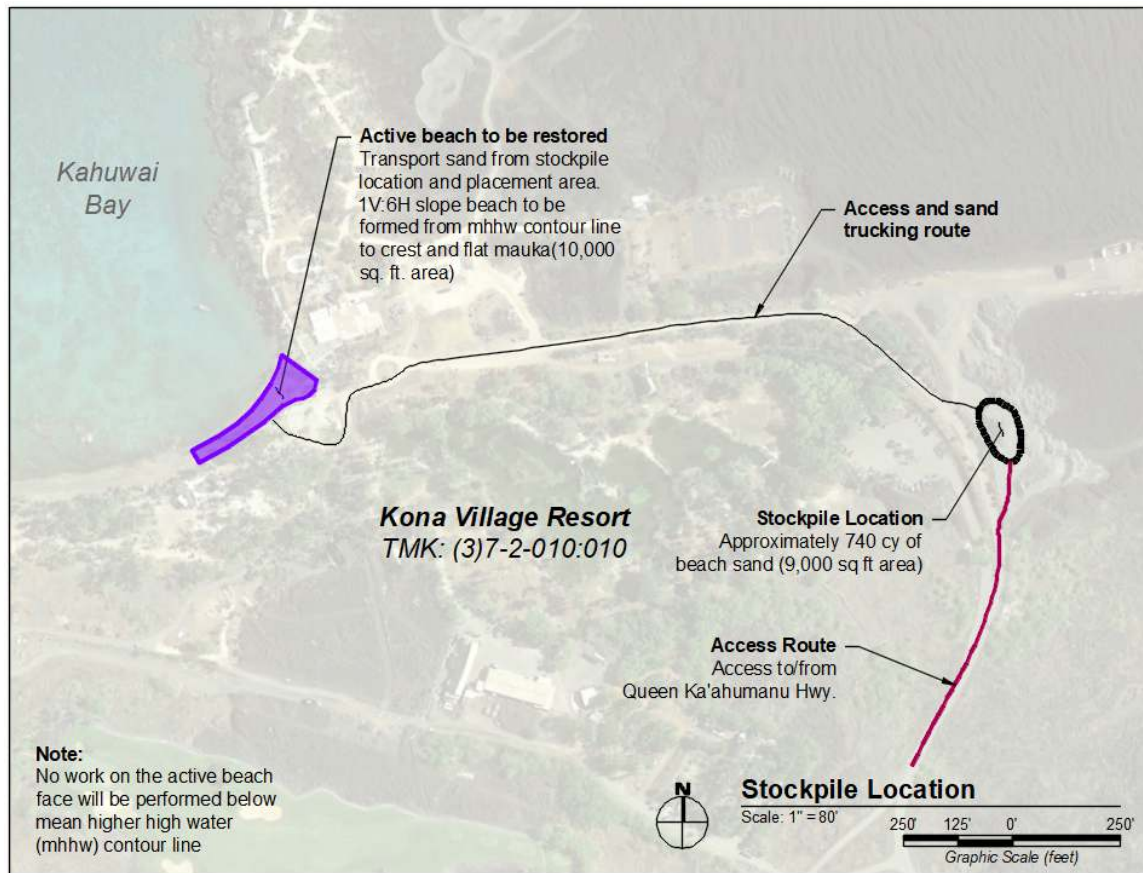


Figure 1-5 Sand transportation route

2. SMALL SCALE BEACH NOURISHMENT

2.1 Material

Beach sand originating from the active littoral cell that was pushed mauka during the 2011 Tohoku tsunami was recovered to nourish the current beach. The sand was stockpiled on site after the tsunami event and remained stockpiled until the nourishment occurred. No excavation or extraction of sediment was performed for this beach nourishment. Suitability of beach fill material was performed prior to placement of sand using standardized grain size analysis at an accredited laboratory. Both grain size and coloration of the beach material closely matched the characteristics of the active beach samples.

2.2 Beach Nourishment

Beach nourishment was conducted between May 26, 2023 to May 29, 2023. Multiple skid steers assisted with the transportation of sand from the stockpile to the placement area on the beach. All nourishment operations were conducted during lower tides and no equipment was operated in the water. All construction activities adhered to the conditions set forth in both the SSBN and ROE approval letters. All documentation regarding the SSBN and the ROE was kept on site in case of any emergency.

2.2.1 Safety

Work was performed during the day and at lower tides. Members of the public rarely utilized the beach during construction. Construction fencing was installed at the southern end of the beach to delineate the work area. All project team members were diligent about watching people approaching the project site and alerting other team members when necessary. Additionally, project team members escorted equipment that was transiting between stockpile location and beach nourishment area. BMPs were followed to mitigate the effects of pollutants or hazardous conditions that might be present on and around the job site.

2.2.2 Heavy equipment

The sand was moved from the stockpile location to the vicinity of the placement area using skid-steer loaders. Then skid-steer loaders placed sand directly onto the placement area. Figure 2-1 to Figure 2-3 shows skid steer loaders transporting sand to the placement area on the beach.



Figure 2-1 Skid steer used to transport sand to placement area



Figure 2-2 Beach Nourishment operations, Aerial photo facing south



Figure 2-3 Beach Nourishment operations, ground photo facing south

2.3 Pre and Post Beach Nourishment

2.3.1 *Topographic survey*

The pre-nourishment survey was conducted on May 25, 2023, while the post-nourishment survey was performed on May 30, 2023. Beach conditions pre-survey and post survey both show similar beach slope conditions of 1V:6H (vertical to horizontal) from the waterline (0 ft contour) to a berm crest with an approximate elevation of +9 ft to +10 ft (MSL), where the profile then levels off towards the backshore. The pre-nourishment topographic survey is shown in Figure 2-4 while the post-nourishment survey is shown in Figure 2-5.

Photographs of the beach taken prior to and following beach nourishment are presented in Figure 2-6 to Figure 2-9, respectively.

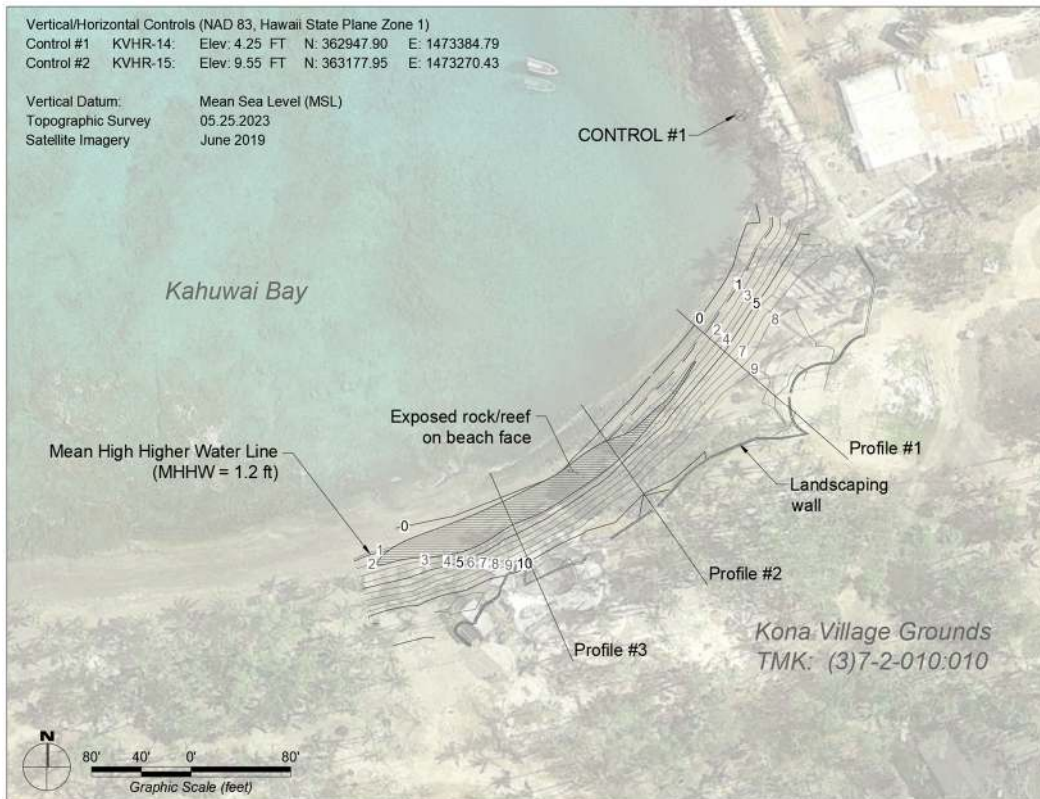


Figure 2-4 Pre-nourishment topographic survey

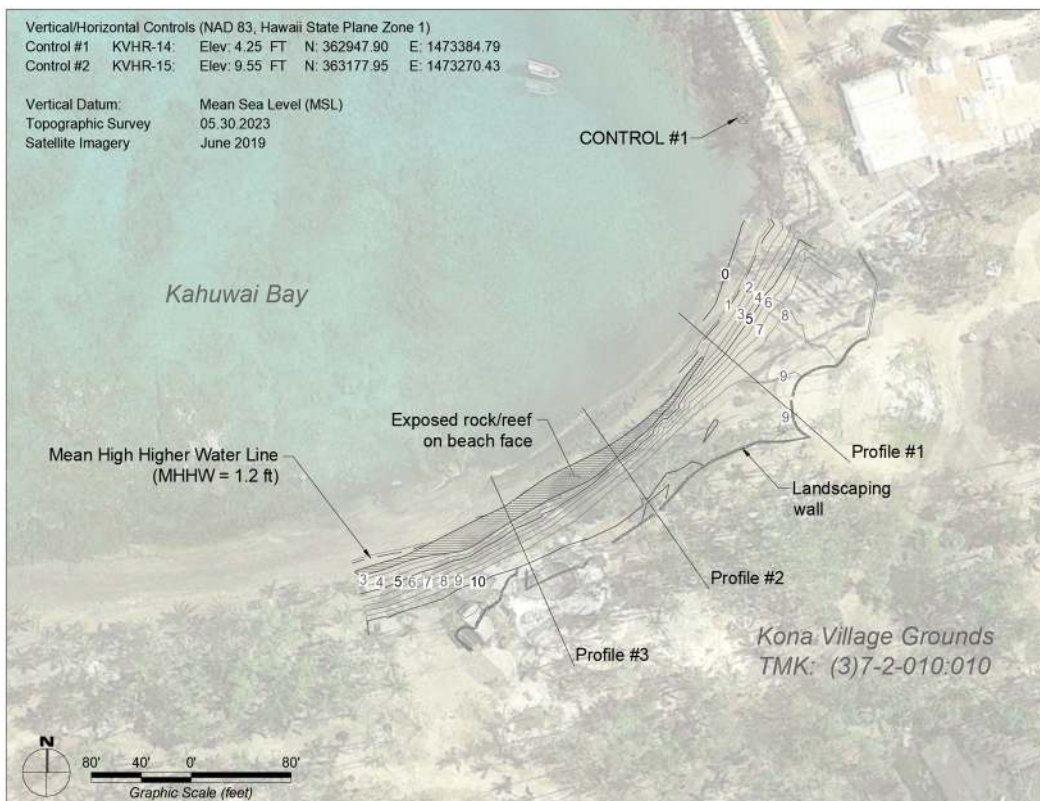


Figure 2-5 Post-nourishment topographic survey



Figure 2-6 Pre-nourishment beach conditions, north facing photo (May 25, 2023)



Figure 2-7 Post-nourishment beach conditions, north facing photo (May 30, 2023)



Figure 2-8 Pre-nourishment beach conditions, south facing photo (May 25,2023)



Figure 2-9 Post-nourishment beach conditions, south facing photo (May 30,2023)

3. OBSERVATIONS

A total of 740 cubic yards of beach material was transported from the backshore stockpile to the designated placement area on the existing beach. Figure 3-1 provides an elevation contour map (colorized as a heat map) of the location where sand was placed on the beach. All nourished beach material was placed well above the MHHW line and within the approved placement area. Figure 3-2 presents three representative cross sections of the nourished sand as placed on the beach. Immediately following completion of construction activities, wave conditions eroded a portion of the sand located adjacent to the top of the beach rock, creating a small vertical scarp shown in Figure 3-4. The post-nourishment scarp is likely a short-term feature as the newly configured beach section gradually transforms to its new equilibrium shape in response to the local oceanographic conditions.

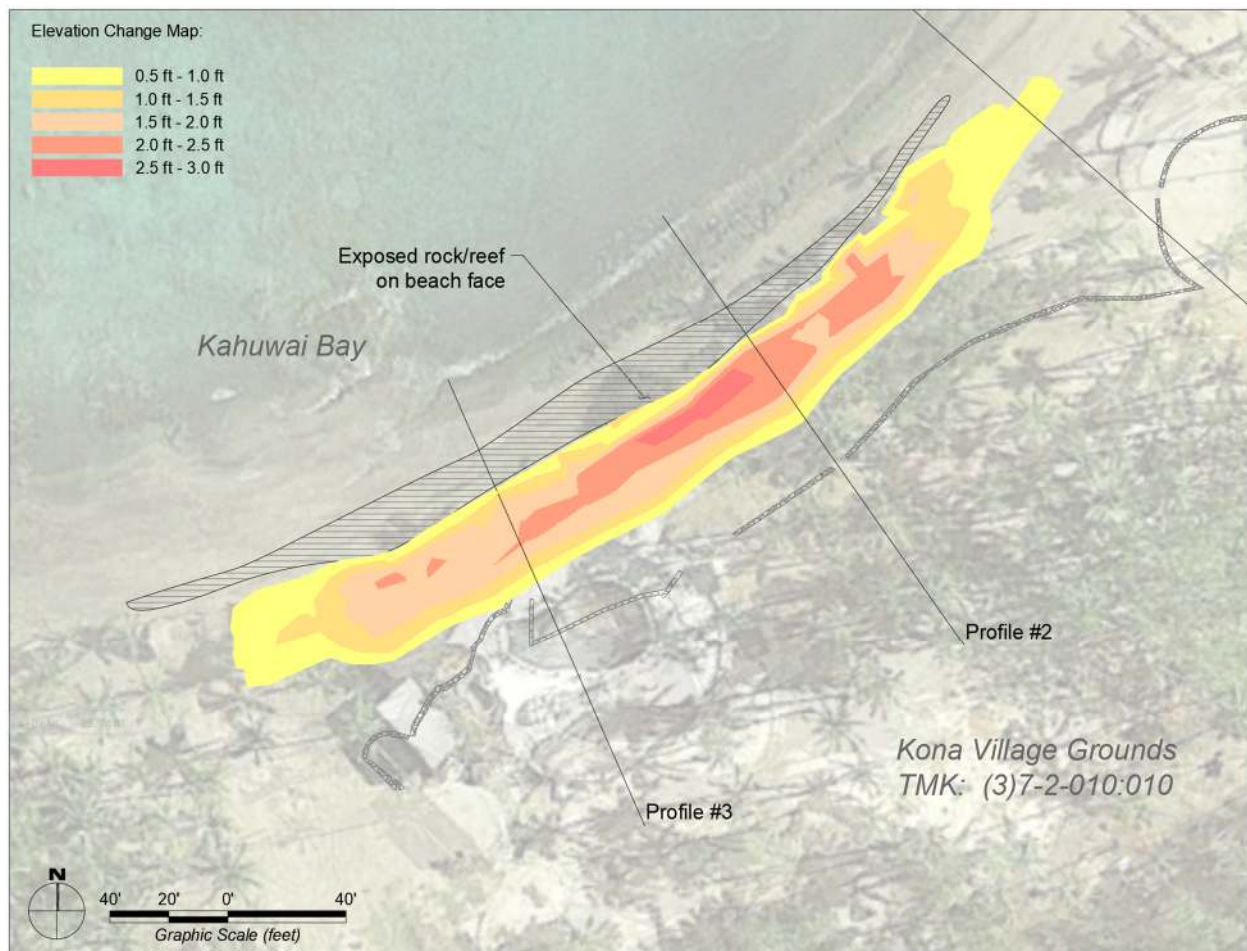
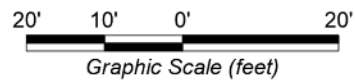
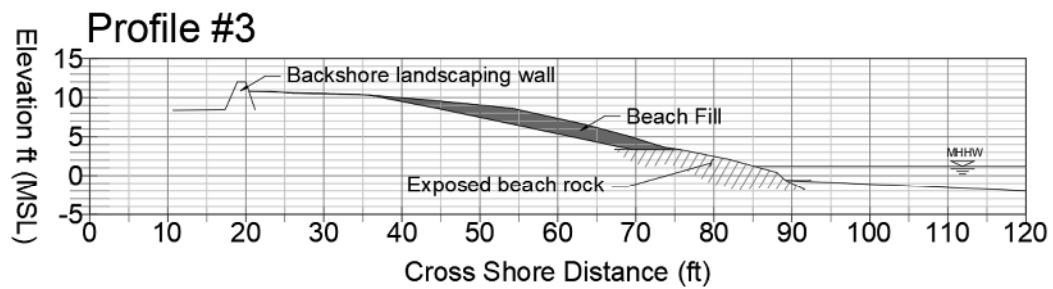
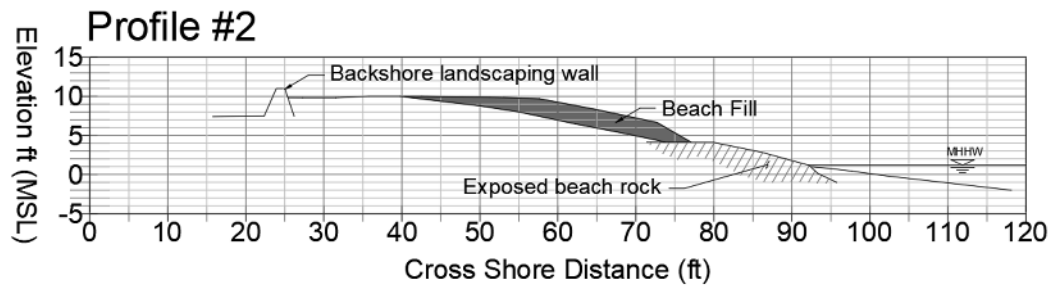
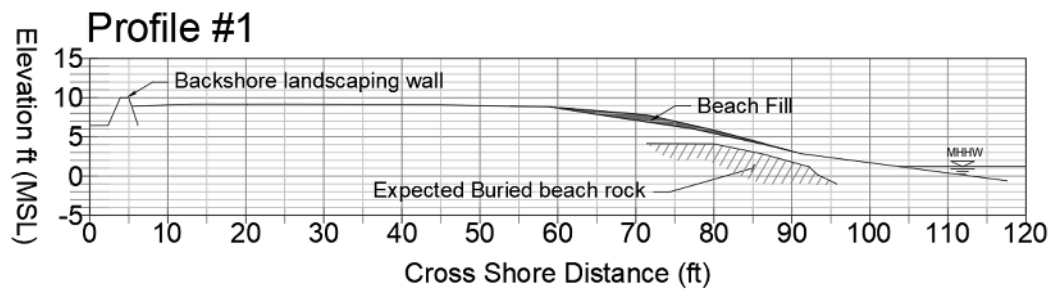


Figure 3-1 Elevation of sand placed on the beach



Vertical Datum:	Mean Sea Level (MSL)
Pre-nourishment Survey:	05.25.2022
Post-nourishment Survey:	05.30.2022

Figure 3-2 Beach Profiles, pre- and post-nourishment



Figure 3-3 Completed Beach Nourishment operations, top view aerial photo



Figure 3-4 Post-nourishment beach conditions, top view aerial photo (May 30, 2023)