



TASK 18 INTRODUCTION

Task 18 includes professional services to conduct the Town of Nags Head 2024 Fall Survey Analysis. The Town's Beach Monitoring and Analysis program represents a continued effort of conducting beach monitoring surveys and providing analyses, building upon past efforts by Town of Nags Head from 2012 through 2024 in association with the 2011 and 2019 Nags Head Beach Nourishment post-construction monitoring. The primary purpose of the beach monitoring is to determine the condition of the beaches, measure shoreline change and volumetric rates of erosion and accretion, maintain eligibility for designation as a FEMA engineered beach, estimate when future maintenance activities may be warranted, and evaluate the performance of beach nourishment and other restoration efforts.

It is understood that McKim & Creed will be conducting the fall monitoring surveys under a separate contract with the Town. M&N has been coordinating with McKim & Creed to confirm that their survey scope and M&N's analysis scope are in alignment. Under this proposed scope of work, M&N will be responsible for receiving the survey data products from McKim & Creed, writing and production of the reports, and the shoreline/volumetric analyses associated with the reports.

TASK 18 SCOPE OF WORK

As stated above, the proposed Scope of Work is for the Town of Nags Head 2024 Fall Survey Analysis. In general, the task includes preparation of a supplemental report to summarize the shoreline and volume change analysis of 112 profiles along the Town of Nags Head shoreline that will be surveyed under a separate contract between the Town and McKim & Creed. A more detailed outline of project tasks is as follows.

Task 18.1 – Completion of Fall Survey Analysis and Supplemental Beach Condition Memo

(A) Survey Scheduling and Client Coordination - McKim & Creed will provide fall season beach condition surveying under a separate contract between the Town and **McKim & Creed**. **M&N** will assist the Town to coordinate the survey with McKim & Creed. The survey of the transects is scheduled to take place during the month of November 2024, with the objective of capturing the effects of storms that have occurred during the 2024 late summer and fall season. M&N will work closely with McKim & Creed and the Town to facilitate McKim & Creed's surveys within this designated time frame.

(B) Survey Profiles – The 112 survey transects established in 2012 for the 2011 Nags Head Beach Nourishment post-construction monitoring covering the Nourished Oceanfront and part of National Seashore North will be used for analysis.

(C) Data Analysis and Reporting - Using data provided by **McKim & Creed**, **M&N** will perform the following monitoring analysis:

Shoreline and Volume Change

M&N will compute shoreline changes between the 2024 summer and fall surveys for the MHW elevation of +1.18 ft NAVD88. **M&N** will report these results at each transect as well as the



average changes for each of the previously established subreaches. Comparison between the status of the shoreline in Fall 2023 and Fall 2024 will also be conducted.

M&N will compute volume changes between the 2024 summer and fall surveys above several strategically selected elevations to track sand movement along the profile. **M&N** will calculate these volume changes in accordance with the 2024 annual monitoring efforts from a landward point on the back of the dune out to the seaward edge of the nourishment berm (+6 ft NAVD88), above MHW (+1.18 ft NAVD88), above -6 ft NAVD (wading depth), above -14 ft NAVD88 (capturing the offshore bar), above -19 ft NAVD (depth of closure), and above -30 ft NAVD (approximate seaward extent of surveys). **M&N** will report these results at each transect as well as the overall changes for each of the previously established subreaches. Comparison between the measured profile volumes in Fall 2023 and Fall 2024 will also be conducted. The volumetric change calculations performed during the analyses will be used to identify areas vulnerable to significant scarping and overwash or exhibiting significant dune growth.

Beach Nourishment Project Performance

The volumetric change calculations performed during the annual analyses will be used to track the performance of any beach nourishment or other maintenance projects. Annual changes from each placement area will be documented throughout the nourishment cycle to gain an understanding of actual volume lost, providing insight into future volume need. Comparisons will be made between the current condition of the beach and the volumetric triggers established in the Nags Head Multi-Decadal Beach Nourishment Master Plan, allowing for estimates of when the next nourishment will be needed.

Reporting

Once all of the analyses are completed, the resulting calculations and analysis will be included within a supplemental beach condition memorandum. One (1) copy of the draft memorandum will be submitted to the Town by January 22, 2025 (or six weeks after receiving all survey products from **McKim & Creed**) for Town review and comment. The memorandum will summarize the status of the beach with regards to the volumetric triggers. The data will also be included in the 2025 Annual Monitoring Report. **M&N** will submit eight (8) hard copies of the memo and one (1) electronic copy of the memo to the Town by February 5, 2025, or within two weeks after receiving the Town's comments on the draft memo. **M&N** will also attend and provide a presentation to the Town's Board of Commissioners at one of their monthly, regularly scheduled meetings. All data collected for each survey event by McKim & Creed will also be provided by file transfer or on a USB flash drive.

TASK 18 PROJECT COST

The total estimated fee for the Town of Nags Head 2024 Fall Survey Analysis is a lump sum of **\$26,350**, including expenses for reproduction. M&N proposes to invoice the Town monthly on a percent complete basis by Task.