

A. Baseline Report

A.1. Water Elevation

The Baseline Report was provided to the California Coastal Commission on May 1, 2020. Water elevation baseline data for the Baseline Report was accessed for the North Spit Tide Gauge from the National Oceanic and Atmospheric Administration (NOAA) website and referenced to NAVD88 (Appendix A). The reporting period for the Baseline Report is April 1, 2019, to March 31, 2020. Monthly maximum water elevations ranged from 7.67 feet to 8.86 feet. The mean monthly maximum water elevation for the baseline reporting period was 8.07 feet (Figure 1). Monthly mean sea level for the baseline reporting period ranged from 3.44 feet to 4.33 feet with a mean of 3.80 feet for the reporting period (Figure 2).

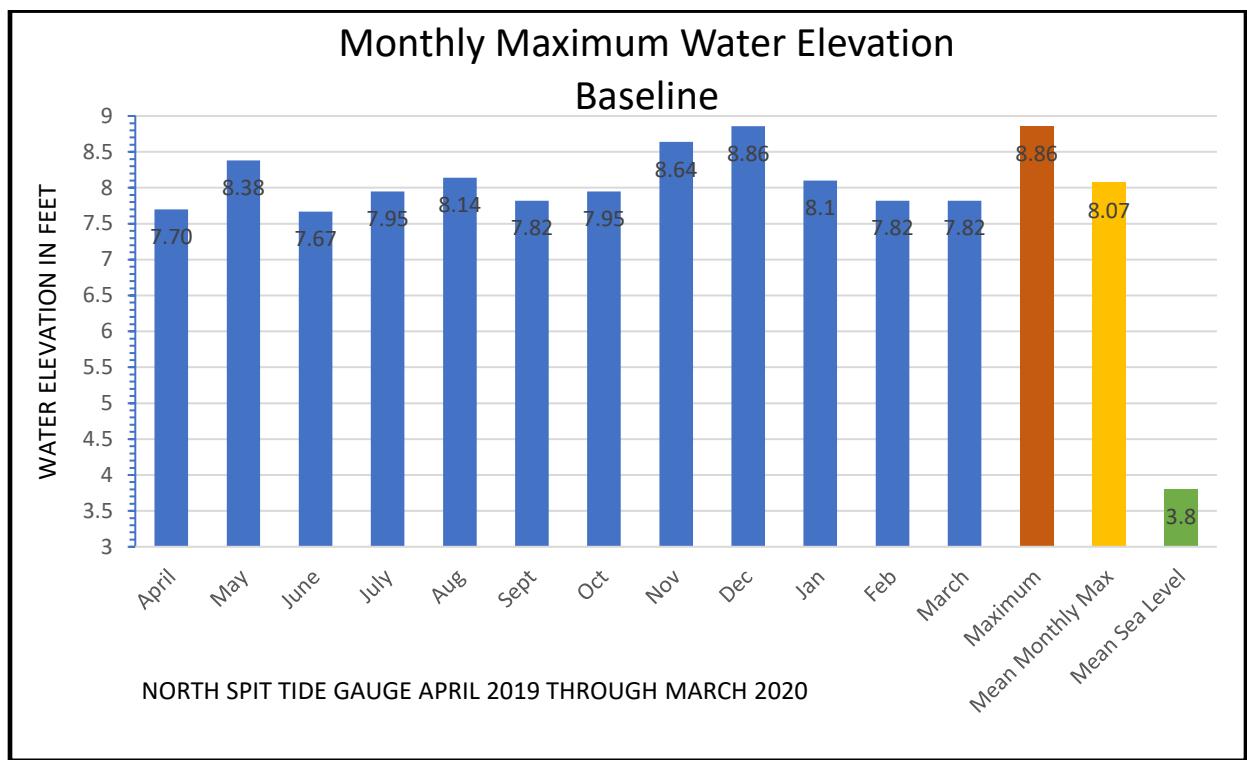


Figure 1. Monthly Maximum Water Elevation. Baseline shows the maximum water elevation by month at the North Spit Tide Gauge from April 1, 2019, to March 31, 2020. Monthly maximum and monthly mean sea level data were accessed from the NOAA Tides and Currents webpage. Mean Monthly Maximum and Mean Sea Level were calculated using the NOAA data.

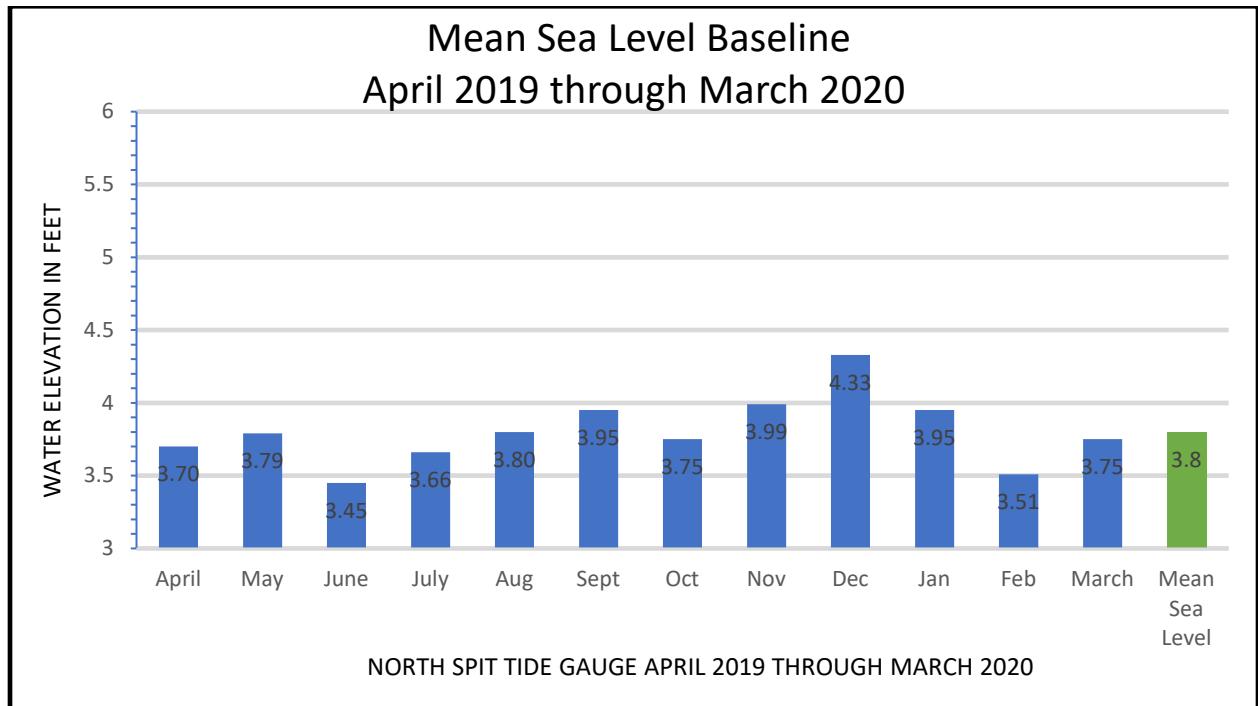


Figure 2. Mean Sea Level. Baseline at the North Spit Tide Gauge for April 1, 2019, through March 31, 2020, was calculated from available monthly mean sea levels from the NOAA Tides and Currents webpage.

A.2. *Reference Photograph Locations*

Reference locations for photographing annual King Tide and extreme tidal events along the Eureka-Arcata Corridor (Corridor) were established for the Baseline Report and were organized to easily facilitate replicating photos for the Annual Reports (Appendix B). Photograph location selection criteria included accessibility and safety, vulnerability to flooding (Caltrans Eureka-Arcata Corridor: Sea Level Rise Vulnerabilities and Adaptation Solutions 2019), and locations representing various shoreline cover and land use.

Two to four specific photo sites were established at each of the ten selected reference locations: Gannon Slough, Fay Slough, Jacoby Creek, North Bracut, South Bracut, Indianola, California Redwood Company, Jacobs Tide Gate, Eureka Slough, and Cole Avenue.

Site reference photos for Gannon Slough, Jacoby Creek, North Bracut, South Bracut, Indianola, California Redwood Company, Jacobs Tide Gate, Eureka Slough, and Cole Avenue were taken close to high tide on December 23, 2019. The National Weather Service (NWS) Daily Climate Report reported December 23, 2019, weather conditions as clear with an average wind speed of 2.8 miles per hour and no precipitation. The previous day saw 1.23 inches of precipitation. Site reference photos for Fay Slough were taken during the King Tide event on January 10, 2020. NWS reported cloudy weather conditions with an average wind speed of 4.6 miles per hour and minimal precipitation of 0.12 inch. Light precipitation of 0.28 inch was recorded for the previous day.

B. Annual Report 2024

B.1. Water Elevation

Water elevation data for the 2024 Annual Report for the North Spit Tide Gauge was accessed from the NOAA Tides and Currents website (NOAA April 2024) and referenced to NAVD88 (Appendix A). The reporting period for the 2024 Annual Report is April 1, 2023, through March 31, 2024. Monthly maximum water elevations ranged from 7.47 feet to 8.96 feet (Figure 3). The highest reported water elevation of 8.96 feet was observed on December 27, 2023. This monthly maximum elevation is the same as the highest monthly maximum elevation from the 2023 Annual Report, 0.42 feet lower than the 2022 Annual Report, 0.31 feet higher than the 2021 Annual Report, and 0.10 feet higher than the monthly maximum elevation from the Baseline Report. The mean monthly maximum water elevation for the 2024 reporting period was 8.33 feet (Figure 3). This is 0.04 feet higher than the mean monthly maximum from the 2023 Annual Report, 0.17 feet higher than the 2022 Annual Report, 0.23 feet higher than the 2023 Annual Report and 0.26 feet higher than the mean monthly maximum from the Baseline Report (Figure 4).

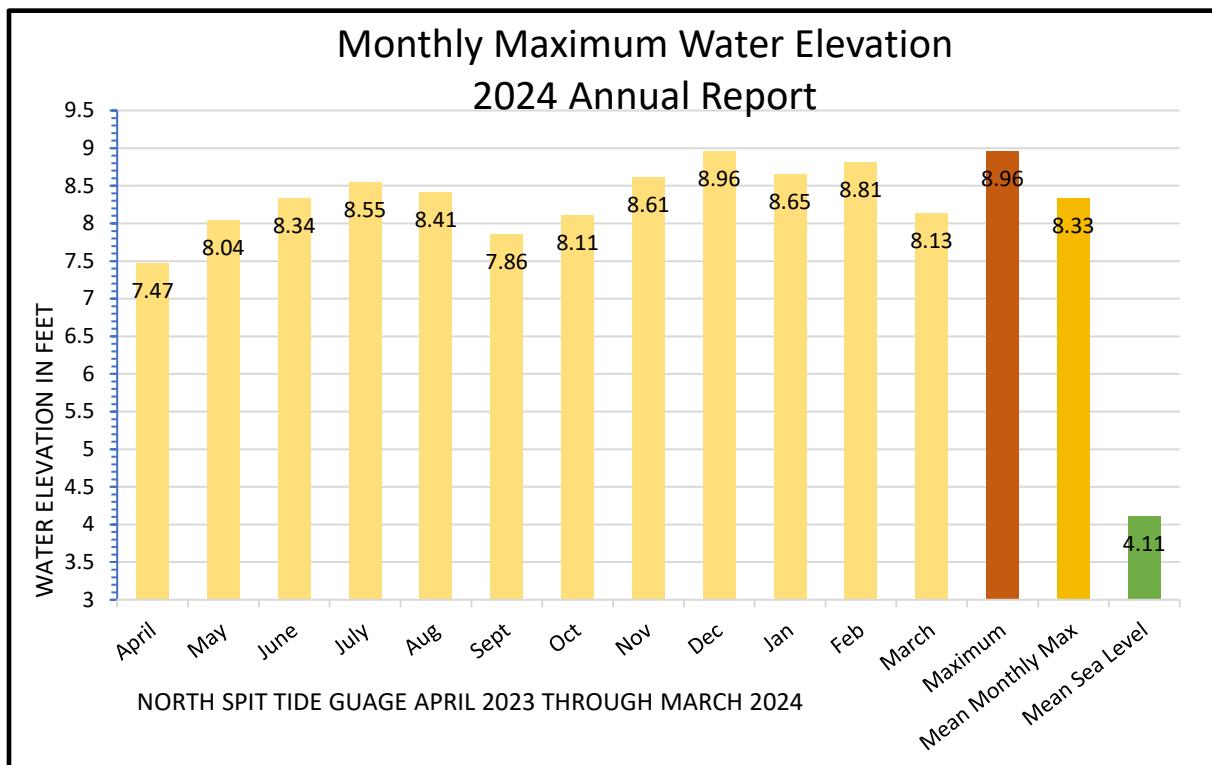


Figure 3. Monthly Maximum Water Elevation. 2024 Annual Report shows the maximum water elevation by month at the North Spit Tide Gauge from April 1, 2023, to March 31, 2024. Mean Monthly Maximum and Mean Sea Level data were accessed from the NOAA Tides and Currents webpage.

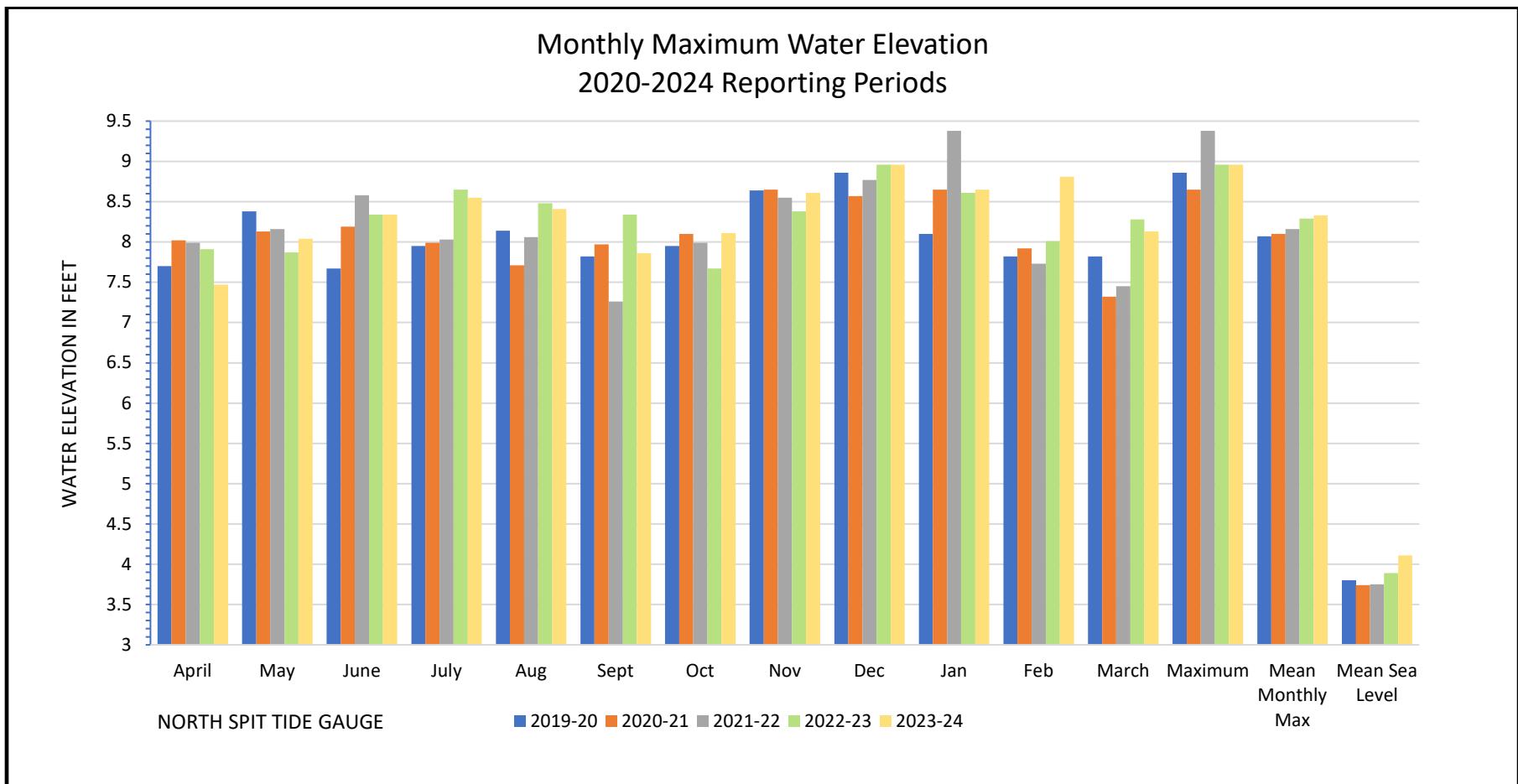


Figure 4. Monthly Maximum Water Elevation 2020-2024 reports the maximum water elevation by month at the North Spit Tide Gauge for the Baseline Report (April 1, 2019, to March 31, 2020), the 2021 Annual Report (April 1, 2020, through March 31, 2021), the 2022 Annual Report (April 1, 2021, through March 31, 2022), the 2023 Annual Report (April 1, 2022, through March 31, 2023), and the 2024 Annual Report (April 2023 through March 31, 2024). The maximum water elevation, mean monthly maximum, and mean sea level for the five reporting periods is also represented in the figure.

B. Annual Report 2024 (continued)

B.1. Water Elevation (continued)

Monthly mean sea level for the 2024 reporting period ranged from 3.68 feet to 4.47 feet. Mean sea level for the 2024 Annual Report is 4.11 feet (Figure 5). The mean sea level for the 2023 and 2022 reporting periods was 3.89 feet and 3.75 feet respectively. The mean sea level for the 2021 reporting period was 3.74 feet. The Baseline Report mean sea level was 3.80 feet; 0.31 feet lower than the 2024 Annual Report (Figure 6).

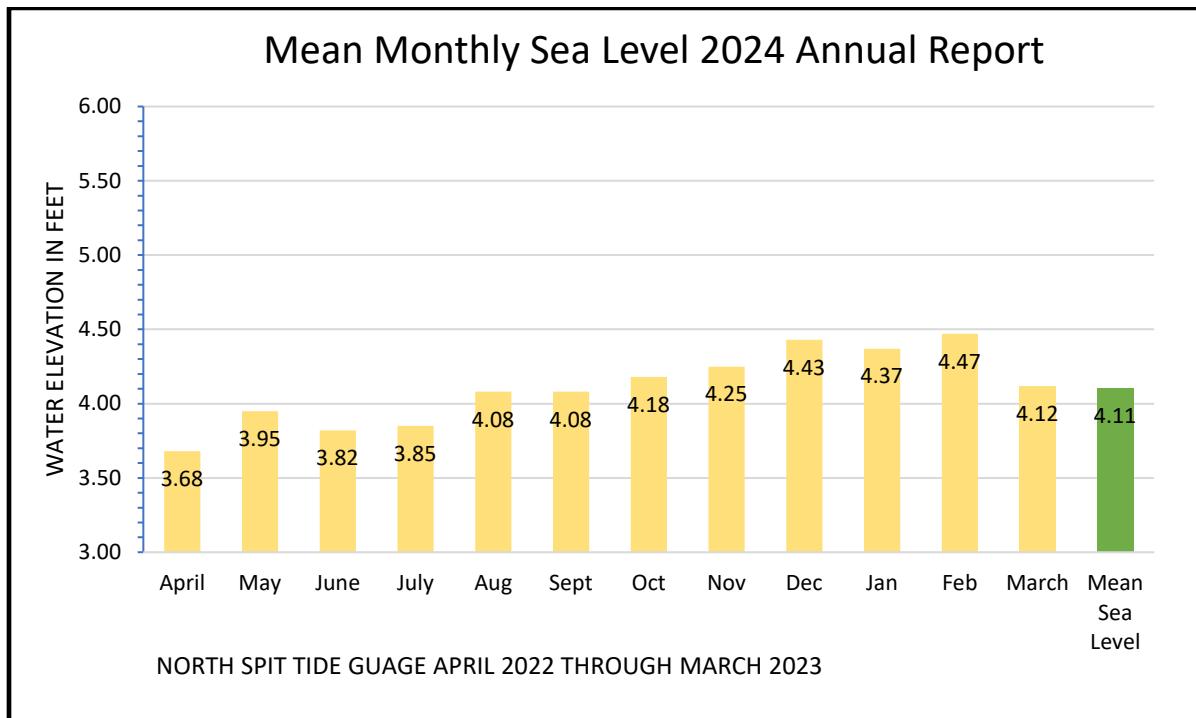


Figure 5. Mean Sea Level at the North Spit Tide Gauge for April 1, 2022, through March 31, 2023, was calculated from available monthly mean sea levels from the NOAA Tides and Currents webpage.

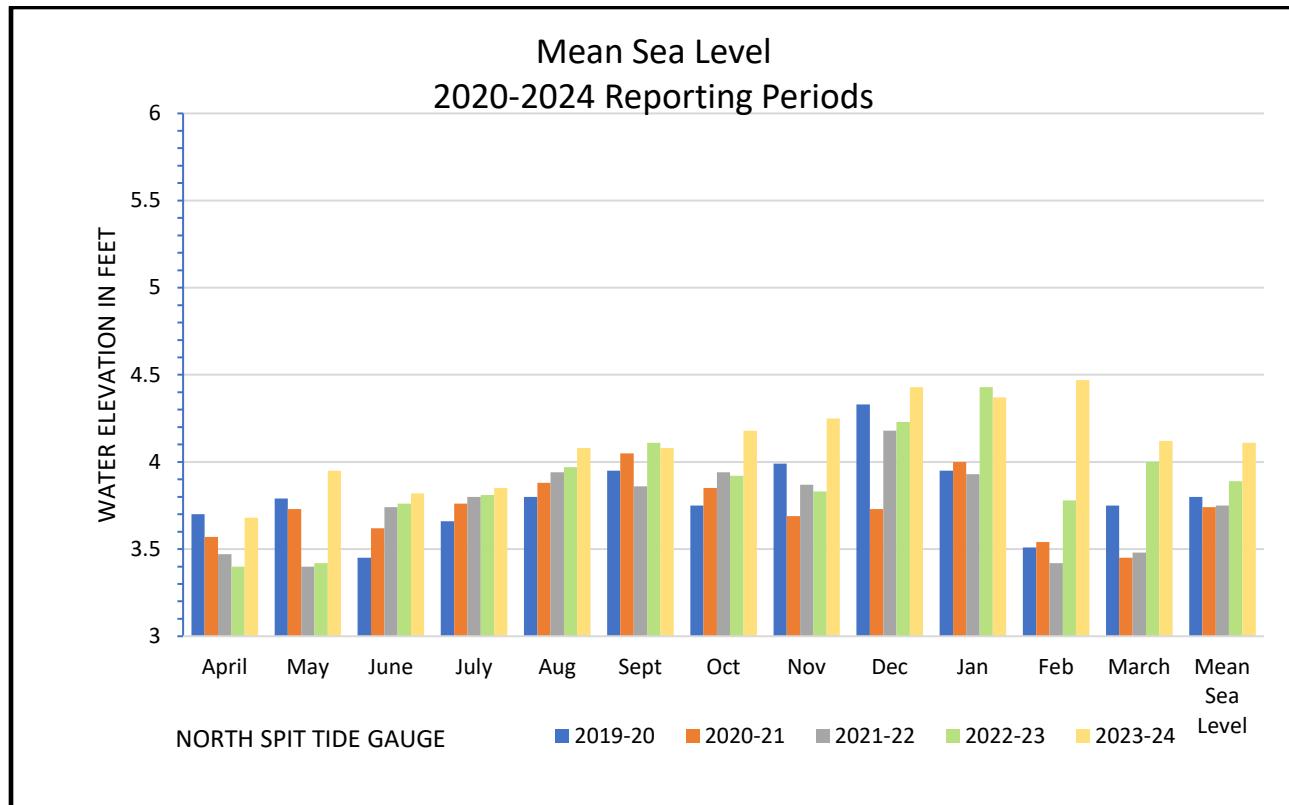


Figure 6. Mean Sea Level for the Baseline Report (2020) through the 2024 Annual Report at the North Spit Tide Gauge. The Baseline Report and the 2021 through 2024 Annual Reports show monthly mean sea levels from April 1 through March 31. Mean sea level for the reporting period was calculated from available monthly sea level data from the NOAA Tides and Currents webpage.

B.2. Coastal Hazard Impacts

No coastal hazard impacts to highway infrastructure within the U.S. Highway 101 Corridor occurred during the 2024 reporting period. No temporary or ongoing flooding was observed and no weather-related incidents (such as erosion, overtopping of dikes, or tide gate failures) impacted the Corridor.

King Tides for winter 2023/2024 took place January 11 and 12, 2024, and February 9, 2024. Caltrans staff photographed King Tide conditions from established reference locations along the Corridor during January and February King Tide occurrences (Appendix C). Using the daily tide prediction tables published on the NOAA website, three-hour work windows were identified for when to best document King Tide conditions to capture the highest water elevations for each day.

Weather on January 11, 2024, included mostly clear conditions with an average wind speed of 2.0 miles per hour and 0.02 inches of precipitation for the day. Previous day precipitation was measured at 0.65 inch (Appendix A—National Weather Service Climate Data). Maximum January 11, 2024, high tide at the North Spit Tide Gauge was 8.35 feet (NOAA).

Weather conditions on January 12, 2024, were cloudy with an average wind speed of 5.4 miles per hour and 0.21 inches of precipitation for the day and 0.02 inch for the previous day (NWS). Maximum high tide on January 12, 2023, was 8.37 feet.

Weather conditions on February 9, 2024, were mostly cloudy with an average wind speed of 2.5 miles per hour and no precipitation. Previous day precipitation was 0.02 inch (Appendix A—National Weather Service Climate Data). Maximum February 9, 2024, high tide was 8.39 feet.

B.3. Adaption and Hazards Response

During the reporting period, Caltrans did not implement any weather- or flood-related closures within the Corridor.

Additionally, no repair or maintenance was performed by Caltrans or other entities on dikes or berms that protect the highway. No impacts have been identified that would require a planned response, an amendment to CDP 1-18-1078, or a separate CDP application before the next monitoring cycle.

B.4. Adaptation Plan Progress

Progress made on the CAIP since the last update includes establishment of a contracted partnership with Cal Poly Humboldt (Cal Poly—formerly known as Humboldt State University [HSU])) to complete technical studies, increase participation with community groups, and increase outreach and local coordination. Most significantly, the Climate Change Adaptation Branch has grown to three (3) full-time employees with the additions of Lorna McFarlane, Climate Change Adaptation Branch Supervisor, and Kaitlin Woolling, Environmental Scientist (Hydrologist). A Sea Level Rise Engineer position has also been added to the Maintenance Hydraulics unit.

Two internal working groups were established in 2021: the District 1 Climate Change Working Group (CCWG) and the Sea Level Rise Technical Working Group (SLR TWG). The CCWG's mission is to develop a collaborative strategy for addressing climate change utilizing adaptive framework encompassing resources from long-range planning through maintenance. The goals and values of the CCWG are to lead on climate action planning through partnership, collaboration, and innovation on climate action. Specifically, the CCWG will engage stakeholders and the public, and will prioritize equity in planning and decision-making. Responsibilities and tasks include the following: (1) coordinate climate change activities across all functional units; (2) identify and provide support for implementation and updates of climate change adaptation policy and strategies; (3) provide review and assistance; (4) develop and implement outreach and education activities; and (5) provide and/or participate in training needs related to climate change.

The SLR TWG is specifically focused on addressing all needs related to Special Condition 2 of CDP 1-18-1078, also known as the Comprehensive Adaptation and Implementation Plan (CAIP) for the Eureka-Arcata Corridor. The SLR TWG is currently developing the CAIP to include the following: (1) SLR analysis based on updated, best available science and monitoring reports; (2) evaluation of adaptation alternatives (accommodation, protection, and relocation) and their consistency with Coastal Act policies; (3) a timetable for implementation; and (4) coordination with local governments, stakeholders, and public interest groups.

Staff are working diligently on the CAIP. District 1 has also applied for PROTECT (Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation, part of the Infrastructure Investment and Jobs Act Federal Aid Program) Program 2% Planning Set-Aside for Climate Adaptation and Resilience Planning Studies for fiscal year(s) 23/24 and 24/25 to provide support resources for the CAIP. The resources from the PROTECT Program will provide the needed internal support resources for the remainder of the CAIP process, and we are awaiting the evaluation and award process that is being run by Caltrans HQ Office of Air Quality and Climate Change.

In the fall of 2023, a California Model Agreement (CMA) between District 1 Caltrans and Cal Poly Humboldt for Subject Matter Expert and technical study needs of the CAIP was finalized. The CMA between Cal Poly Humboldt will involve two major CAIP-related tasks: Task 1 – Evaluate Existing and Anticipated Conditions and Task 2 – Review of Conceptual Adaptation Strategies and Develop Strategies for Analysis and Assessment.

Task 1 will include Cal Poly Humboldt evaluation of existing and determination of anticipated conditions including:

- Compiling and summarizing existing long-term planning and assessment efforts by Caltrans and other experts.
- Defining existing and projected hydrological hazards including groundwater assessment, Humboldt Bay stillwater levels, local wind setup and wave runup, shoreline/coastal geomorphology, and riverine flood impacts.
- Defining existing geologic hazards such as subsidence, seismic hazards related to earthquakes, liquefaction, and tsunami hazards.
- Identification of potential land use and infrastructure impacts.

Task 2 work consists of Cal Poly Humboldt's review of conceptual adaptation strategies, development of analysis and assessment strategies, and provisional design guidance for natural armoring systems.

The CMA with Cal Poly Humboldt will run through February 2025. District 1 staff (Lorna McFarlane and Kaitlin Woolling) will work with Cal Poly Humboldt; the contract manager is Clancy DeSmet.

Staff worked with a consultant to develop a public engagement plan (PEP) and additional public workshops will be held. Through the Planning and Public Engagement (PPEC) support services, District 1 also launched a website to help communicate with the public—[North Coast Climate Action](#). On the website, the public will find information about planning and projects along the U.S. Highway 101 Corridor and in each of the four counties covered by District 1. We have also launched [Clancy's Climate Change Corner](#) (a video series) to provide the latest news and updates on projects and opportunities to get involved with the process. We are currently in the process of re-engaging with the PPEC support services to provide public engagement support for the CAIP process.

District 1 staff continue to participate as a member in several groups related to climate change in the area, including: (1) [Cal Poly Humboldt's Sea Level Rise Initiative \(SLRI\)](#); (2) [Cascadia Coastlines and Peoples Hazards Research Hub \(CoPes Hub\)](#); and (3) [Humboldt Bay Initiative](#).

Finally, the CAIP team members have been identified and monthly meetings are occurring. The Technical Advisory Committee (TAC) has also been established and includes representation from local technical experts, the cities of Eureka and Arcata, the County of Humboldt, the Wiyot tribe, and the California Coastal Commission. Future working group and partnering meetings are being planned to include the public and regulatory agencies.

In summary, a lot has been done but there is much more work to do to complete the CAIP by the December 2025 deadline. We are working on partnering meetings, public engagement, and technical assistance with Cal Poly Humboldt (Cal Poly). The heavy lifting will come in 2024 through the end of the process. Once Cal Poly completes their technical studies, Caltrans will work to produce the final CAIP. Public and partner engagement will be the focus in the near term.

B.5. Flood Events

No flooding or road closure events occurred during the reporting period.

C. Frequent Flood Event Report

The roadway was not closed during the reporting period; therefore, no Frequent Flood Event Report is included with this Annual Report.

References

California Department of Transportation (Caltrans). 2019. *Caltrans Eureka-Arcata Corridor: Sea Level Rise Vulnerabilities and Adaptation Solutions*. May 2019.

California Department of Transportation (Caltrans). *CDP 1-18-1078 Special Condition 1, Baseline and Annual Report*. May 2020.

California Department of Transportation (Caltrans). *CDP 1-18-1078 Special Condition 1, 2021 Annual Report*. May 2021.

California Department of Transportation (Caltrans). *CDP 1-18-1078 Special Condition 1, 2022 Annual Report*. May 2022.

California Department of Transportation (Caltrans). CDP 1-18-1078 Special Condition 1, 2023 Annual Report. May 2023.

Observed Weather Reports (March 13, 2024). In *National Weather Service*. Retrieved from <https://forecast.weather.gov/product.php?site=EKA&product=CLI&issuedby=EKA>

Water Level Reports (April 15, 2024). In *NOAA Tides and Currents*. Retrieved from <https://tidesandcurrents.noaa.gov/reports.html?type=monthlyextremes&bdate=20220401&edate=20230331&units=standard&datum=NAVD&id=9418767&retrieve=Retrieve>