APPENDIX B

Sea Level Rise Adaptation Planning Scenarios

INTRODUCTION

The Community Plan considers the potential effect of sea level rise on the community's infrastructure and built environment. Located on former tidal wetlands and adjacent to the San Diego River and San Diego Bay, Midway - Pacific Highway has a high water table and experiences periodic flooding during storms and unusually high tides. Portions of the community have potential, although low, for flooding due to sea level rise by 2050. Greater portions of the community will have a higher potential for flooding by 2100 under daily conditions or during extreme tied and/or weather events. This Appendix includes additional information and maps from the Sea Level Rise Adaptation Strategy for San Diego Bay (Adaptation Strategy), prepared by ICLEI - Local Governments for Sustainability USA, that supplement the discussion and policies in the Public Facilities, Services, and Safety Element.

High tides can currently result in localized flooding in Midway - Pacific Highway, as seen here on Midway Drive during a King Tide event.

B.1 SEA LEVEL RISE ADAPTATION PLANNING SCENARIOS

The Adaptation Strategy considered four planning scenarios:

- 2050 Daily Conditions — Inundation at mean high tide in 2050 with 20 inches (0.5 meters) of sea level rise
- 2050 Extreme Event – Flooding from 100-year extreme high water event in 2050, with 20 inches (0.5 meters) of sea level rise, including such factors as El Niño, storm surge, and unusually high tides
- 2100 Daily Conditions — Inundation at mean high tide in 2100 with 59 inches (1.5 meters) of sea level rise
- 2100 Extreme Event – Flooding from 100-year extreme high water event in 2100, with 59 inches (1.5 meters) of sea level rise, including such factors as El Niño, storm surge, and unusually high tides

Inundation is when land that was once dry becomes permanently wet. Sea level rise could result in certain currently dry locations around San Diego Bay being inundated by daily high tides. The potential future inundation scenarios for the two time horizons are shown in Figures B-1 and B-3.

Flooding refers to the circumstance of normally dry land being covered by water for a limited period of time. These events are often described in terms of their statistical potential to occur. For example, a flooding event referred to as the one percent chance storm event (often called the 100 year storm) has a one percent chance of occurring in a given year and on average occurs once every 100 years. The Extreme Event scenarios considered in the Adaptation Strategy are the 100 year high water event, which accounts for a number of local water level factors including El Niño effects and storm surge, but does not account for precipitation and riverine flooding from storms. In the San Diego Bay

area, it is expected that sea level rise will cause coastal flooding to reach farther inland and to occur more often. The potential future flooding scenarios for the two time horizons are shown in Figures B-2 and B-4.

Each of the planning scenarios considered three variables: amount of sea level rise, horizon year, and sea level variability. The higher-end sea level rise scenarios were chosen from the range of possibility to encourage a risk-averse approach to planning, as recommended by State guidance, and to leverage existing research and data. All flooding and inundation maps are based upon research performed by Rick Gersberg of San Diego State University with support from a grant by the San Diego Foundation. Geographic Information Systems map layers showing flooding were created through a "bathtub" modeling method, which does not account for a number of factors—such as topography of the Bay floor, wave run up, and erosion—that could increase or decrease the extent of the inundation and flooding. The method also does not account for existing shoreline protection infrastructure. Finally, this model cannot account for future changes to land use and land form. Despite these drawbacks, the maps provide meaningful information on low lying areas that could be exposed to inundation or flooding under various sea level rise scenarios. These future inundation and flood maps can be compared to current FEMA flood zones delineated on Flood Insurance Rate Maps (FIRMs). The FIRM shows the estimated extent of flooding during a hypothetical storm. It shows both the hypothetical "100 year storm" (also called a 1% storm) and "500 year storm" (also called a 0.2% storm).

Review and evaluation of the potential impacts to development and infrastructure under these varying scenarios of inundation and flooding can help inform future development risk assessments and adaptation decisions.

FIGURE B-1: DAILY CONDITIONS - INUNDATION IN 2050

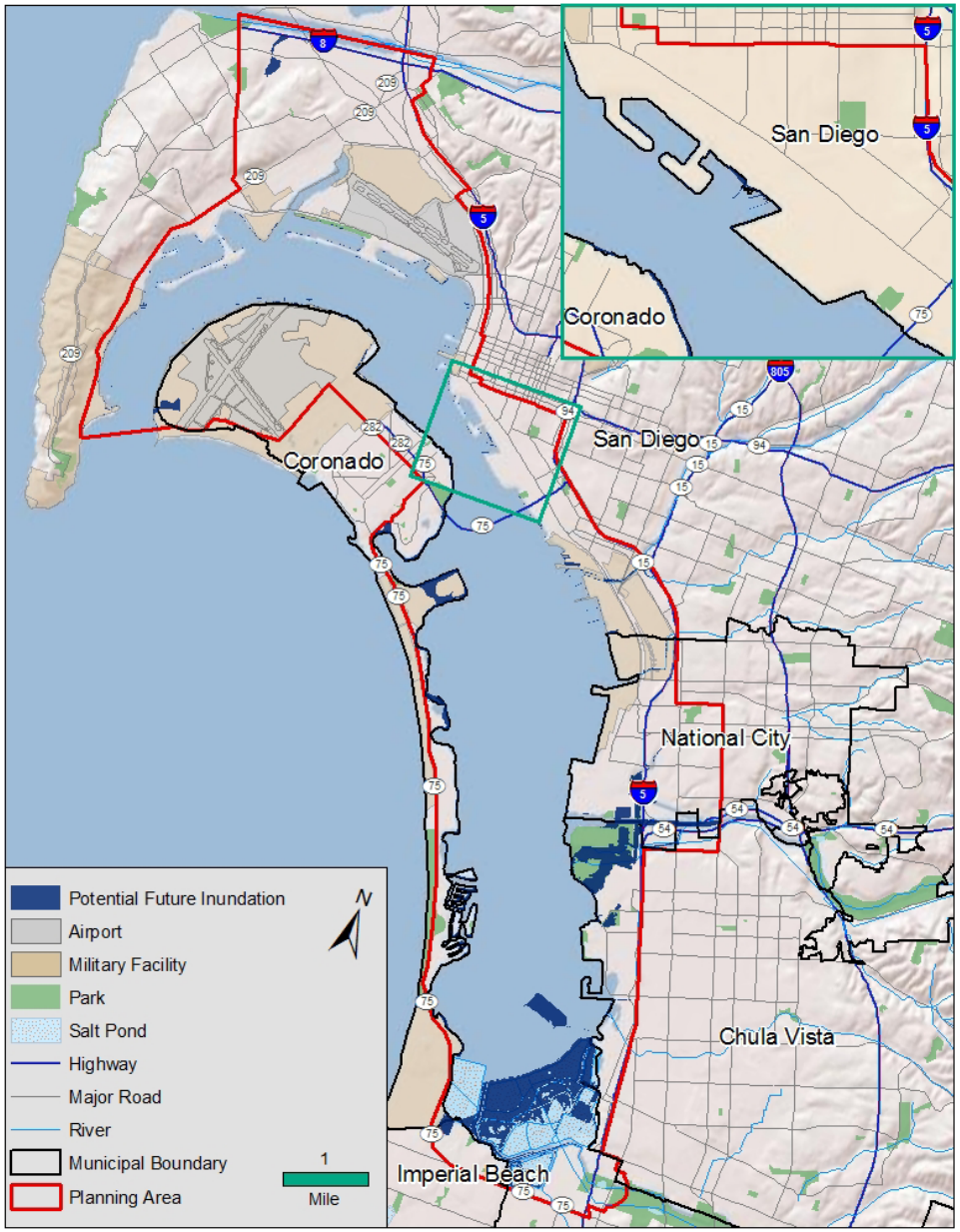


FIGURE B-2: EXTREME EVENT - FLOODING IN 2050

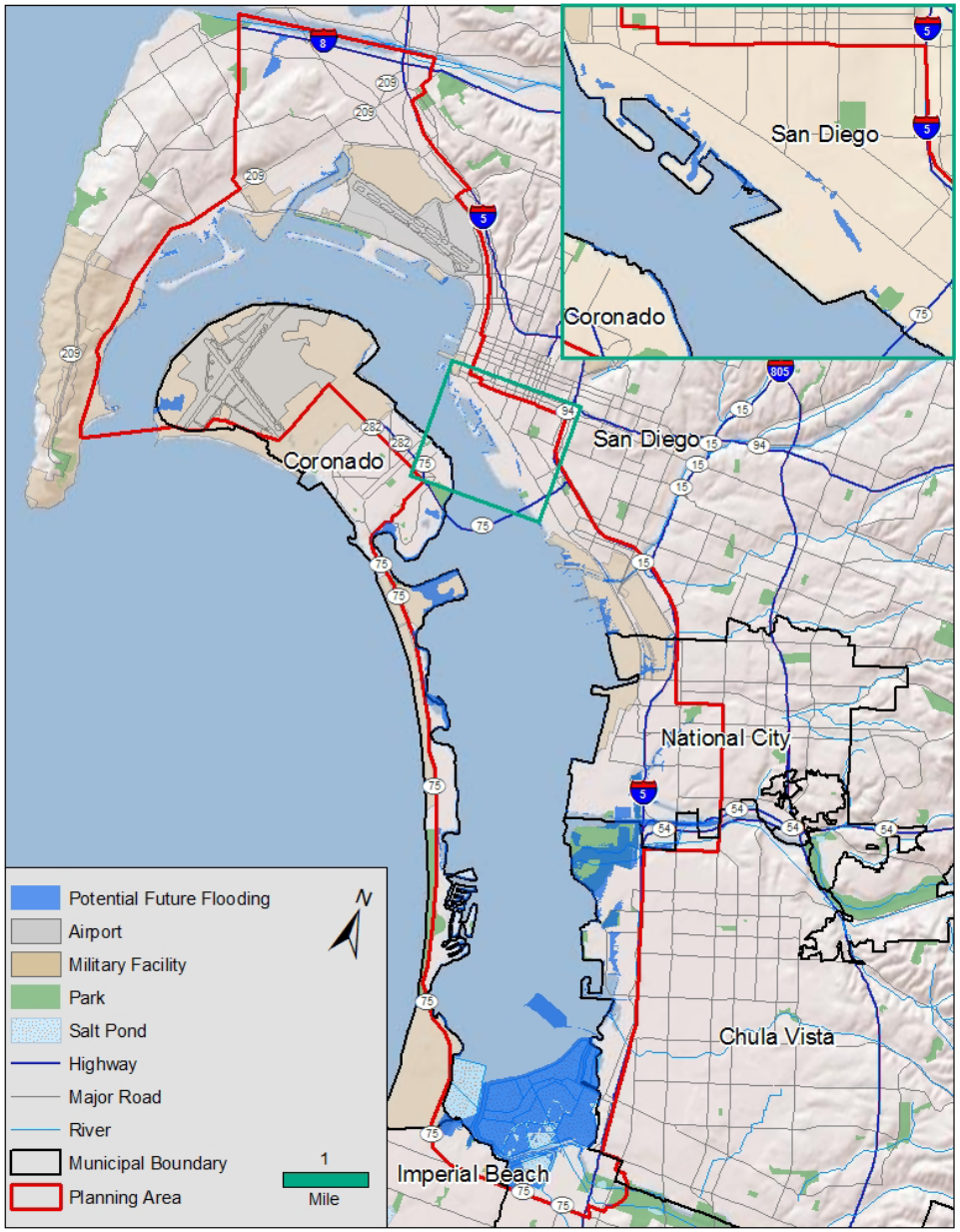


FIGURE B-3: DAILY CONDITIONS - INUNDATION IN 2100

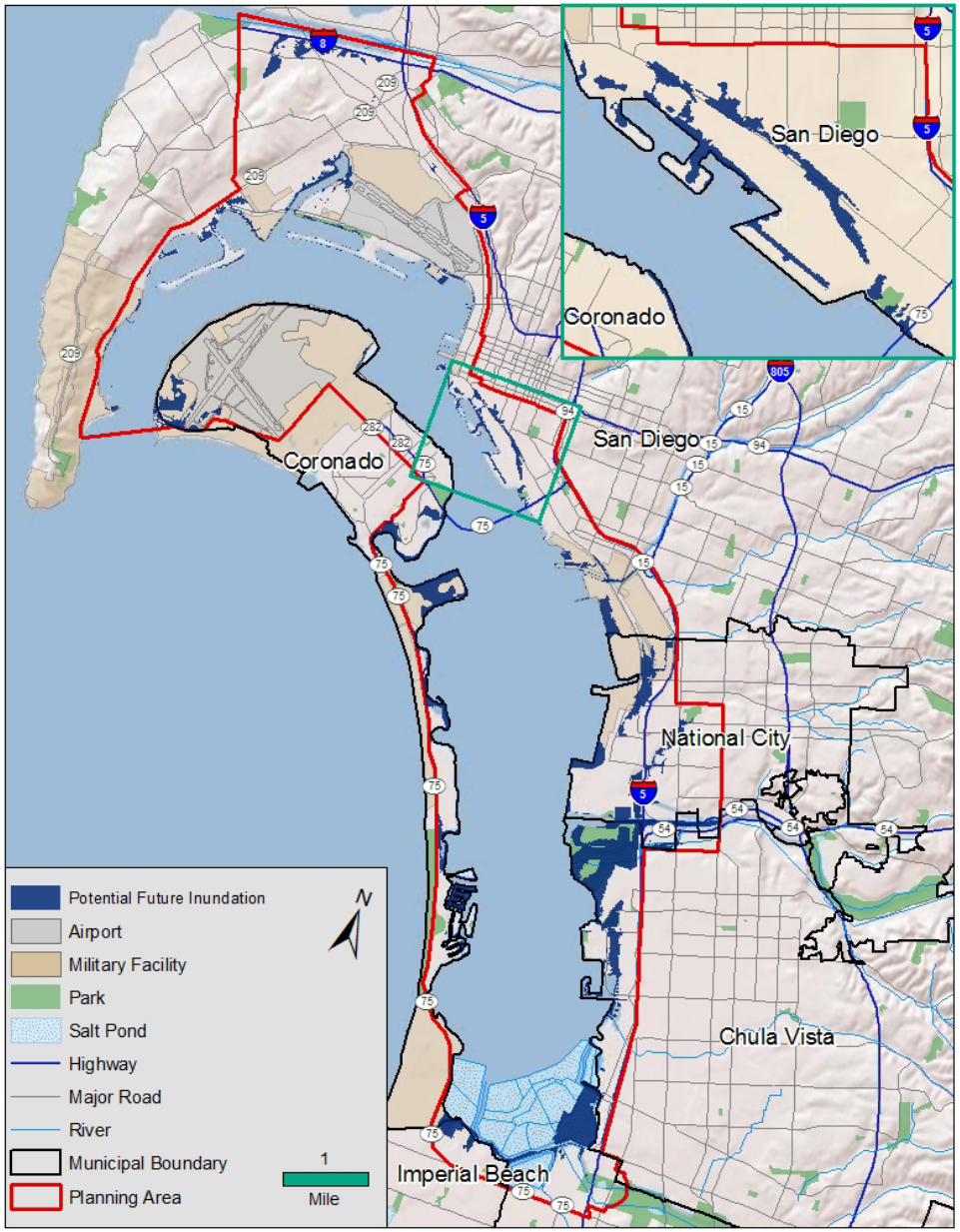
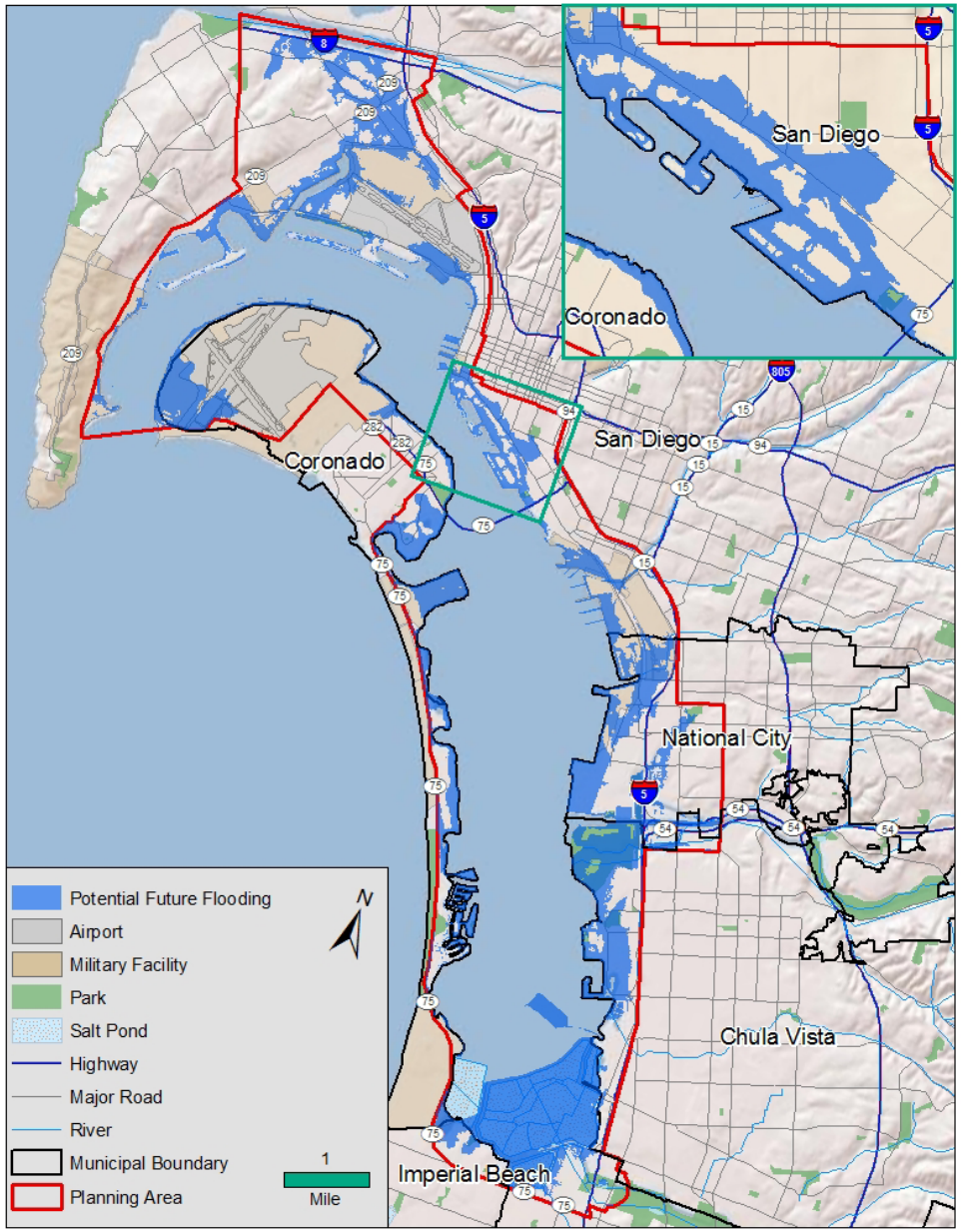


FIGURE B-4: EXTREME EVENT - FLOODING IN 2100



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