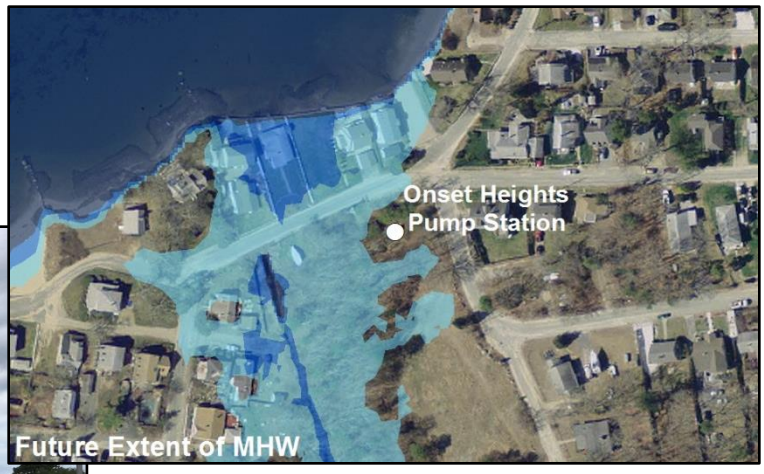
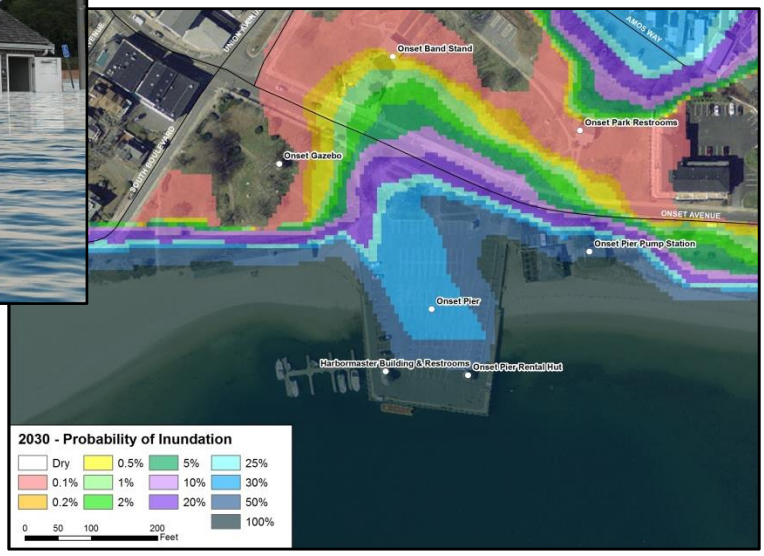
Wareham Climate Change Flood Vulnerability Assessment and Adaptation Planning

FINAL





February 2020

PREPARED FOR:
Town of Wareham
54 Marion Road
Wareham, MA 02540

PREPARED BY:
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A CLS Company
107 Waterhouse Road
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List of Acronyms

ADCIRC	ADvanced CIRCulation
AR5	Fifth Assessment Report
BFE	Base flood elevation
BH-FRM	Boston Harbor Flood Risk Model
CZM	Massachusetts Office of Coastal Zone Management
DEM	Digital Elevation Model
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GHG	Greenhouse Gas
GIS	Geographic Information System
IPCC	Intergovernmental Panel on Climate Change
LiDAR	Light Detection and Ranging
MassDEP	Massachusetts Department of Environmental Protection
MassDOT	Massachusetts Department of Transportation
MC-FRM	Massachusetts Coastal Flood Risk Model
MHW	Mean high water
MVP	Municipal Vulnerability Preparedness
NAVD88	North American Vertical Datum of 1988
NCCARF	National Climate Change Adaptation Research Facility
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NWI	National Wetlands Inventory
ppm	Parts per million
RCP	Representative Concentration Pathway
RSLR	Relative sea level rise
SLAMM	Sea Level Affecting Marsh Model
SLOSH	Sea, Lake, and Overland Surges from Hurricanes
SLR	Sea level rise
SWAN	Simulated WAves Nearshore
USACE	United States Army Corps of Engineers

1. INTRODUCTION

With more than 50 miles of shoreline along Buzzards Bay and a large percentage of its land area at low elevations, the Town of Wareham is particularly vulnerable to sea-level rise. In addition, there are a number of large salt-marsh dominated estuaries, as well as a number of major rivers, which are subject to tidal action and the effects of storm surge and flooding. The areas of Wareham that are vulnerable to flooding contain public infrastructure and facilities, commercial development and residential communities that can be adversely impacted by flooding.

An analysis of insurance claims between 1978 and 2013, as presented in the 2013 Massachusetts State Hazard Mitigation Plan, indicates that there were 869 flood insurance claims in the Town of Wareham for a total value of $11.6 million. Nineteen of these were repetitive loss claims. Due to the low-lying nature of many densely developed areas of Wareham, rising sea levels and increased storm frequencies and intensities associated with climate change will only increase the potential for flooding and storm damages in the Town.

Not surprisingly given the Town's geography, the recent MVP Planning Workshop held in May 2018 identified coastal flooding and sea-level rise as the top natural hazards for the Town of Wareham. To better understand the actual risk to municipal assets from flooding today and in the future given climate change and sea-level rise impacts, the Town of Wareham commissioned this detailed climate change flood vulnerability assessment.

This project has four primary goals:

1. Identify areas of Wareham that are vulnerable to the combined effects of sea-level rise and storm surge during extreme storm events;
2. Assess the vulnerability of municipally-owned infrastructure and natural resources;
3. Assess the vulnerability to residential neighborhoods;
4. Identify adaptation strategies that will help to mitigate the long-term effects of sea-level rise and storm surge; and
5. Educate the public and town officials about the potential impacts.

1.1 PROJECT TEAM

The Town of Wareham contracted Woods Hole Group to conduct the climate change flood vulnerability assessment and adaptation planning project. The consultant team's primary members included:

- Elise Leduc, Project Manager and Natural Resources Modeling Lead
- Kirk Bosma, Inundation Modeling Lead
- Joe Famely, Technical Support
- Brittany Hoffnagle, GIS Support

To ensure that local knowledge and asset specific details were incorporated into the study, Woods Hole Group staff worked closely with a Town Steering Committee throughout the analysis. Members of the Steering Committee are listed in Table 1-1.

Table 1-1. Steering Committee Members

Name	Title
Glenn Barrows	Municipal Maintenance Department
Ken Buckland	Town Planner
Garry Buckminster	Director of Natural Resources/Harbormaster
Guy Campinha	Director of Water Pollution Control
Raymond Goodwin	Onset Fire Department
David Janik	Massachusetts Office of Coastal Zone Management
Patrick MacDonald	Emergency Management Director
Peter Markow	Onset Resident
Dave Menard	Director of Municipal Maintenance
David Pichette	Conservation Administrator
Matthew Rowley	Wareham Fire Department

1.2 PUBLIC OUTREACH

As noted above, one of the primary goals of the project was to raise public awareness of both the escalating flood risks posed by sea-level rise and storm surge, as well as the strategies available to the Town to adapt to these changes over time. Public outreach events were scheduled at each project milestone to keep the public and the Town officials abreast of the latest findings, gather input at crucial junctures, and facilitate active engagement over the lifetime of the project. At these events, Woods Hole Group presented information on climate change, flood modeling, the vulnerability and risk of Wareham's municipal infrastructure and natural resources, and adaptation options and costs. The following is a list of the meetings and the public outreach events organized as part of the project:

Steering Committee Meetings:

- November 13, 2018 (Kick-off Meeting)
- December 6, 2018 (Phase I: Study Parameters)
- July 11, 2019 (Phase II: Vulnerability Assessment)
- August 15, 2019 (Phase II: Vulnerability Assessment)
- October 17, 2019 (Phase III: Adaptation)
- November 20, 2019 (Phase III: Adaptation)

Board of Selectmen Presentations:

- December 18, 2018 (Phase I: Study Parameters)

Other Public Meetings:

- September 26, 2019 (Public presentation)
- December 19, 2019 (Public presentation)

1.3 ACKNOWLEDGEMENTS

The Town would like to thank the contribution of the Massachusetts Department of Transportation under the direction of Steven Miller, Project Manager, and the Federal Highway Administration related to the modeling associated with the Boston Harbor Flood Risk Model (BH-FRM). The methodology from the BH-FRM was utilized as the basis for the development of the Massachusetts Coastal Flood Risk Model (MC-FRM), which was used for this Study.

1.4 PROJECT NEED

The impetus for this assessment was the widespread consensus that climate change, caused by both natural and anthropogenic changes, has accelerated over the past century. Natural climate changes can result from any alteration in the balance between the solar radiation entering the Earth's atmosphere and the re-radiated heat leaving the atmosphere, as shown in the United States Department of the Interior illustration below (Figure 1-1, NPS, 2019).

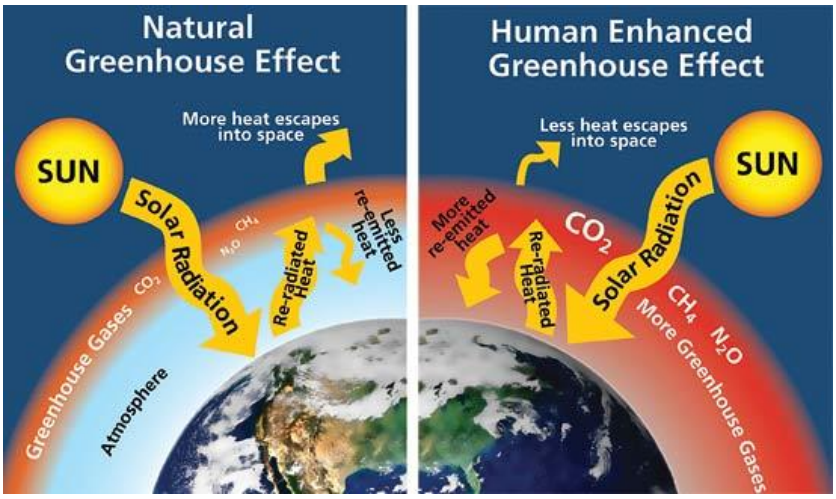


Figure 1-1. Natural versus Anthropogenic Climate Changes.

Historically, changes in the Earth's climate have been due to natural causes, including changes in solar energy, volcanic eruptions, and natural changes in greenhouse gas (GHG) concentrations. GHGs, which include water vapor (H_2O), carbon dioxide (CO_2), and methane (CH_4), slow or prevent the loss of heat through the Earth's atmosphere. Therefore, GHGs essentially act like a blanket, making Earth warmer than it would otherwise be in a process commonly referred to as the "greenhouse effect."

Throughout Earth's history, the climate has experienced a number of natural shifts over time. Currently, however, there is growing scientific consensus that the recent documented increase in atmospheric GHG concentrations is due to human activity. Anthropogenic climate change is caused by carbon dioxide, methane, nitrous oxide, and other greenhouse gases that are produced by automobiles, buildings, airplanes, factories, power plants, and other sources. The majority of the energy fueling these machines comes from non-renewable energy sources such as oil, natural gas, and coal, known as "fossil fuels." Due to their extremely high energy content, fossil fuels have served as one of the main driving forces behind industrialization, population growth, and economic development. Using these fossil fuels, however, results in increased GHG concentrations in our atmosphere. In fact, an exponential "spike" in GHG emissions occurred during the 1800-1900's (industrial revolution), as illustrated in Figure 1-2 (NOAA, 2019). The 1,000-year record of carbon dioxide concentrations used to produce this graph came from the analysis of carbon dioxide concentrations measured from ancient air bubbles trapped in ice extracted from ice cores. Throughout this 1,000-year record, the concentration of carbon dioxide never exceeded 290 parts per million (ppm); in fact, although not graphed, the concentrations have not exceeded 300pm in the last 800,000 years. By 2008, the atmospheric carbon dioxide had reached an unprecedented concentration: almost

400ppm, approximately a 33% increase from the long-term maximum concentration. Monthly concentrations have been monitored from the Mauna Loa Observatory in Hawaii since 1958. The October 2019 concentration of carbon dioxide was 408.5ppm (NOAA, 2019).

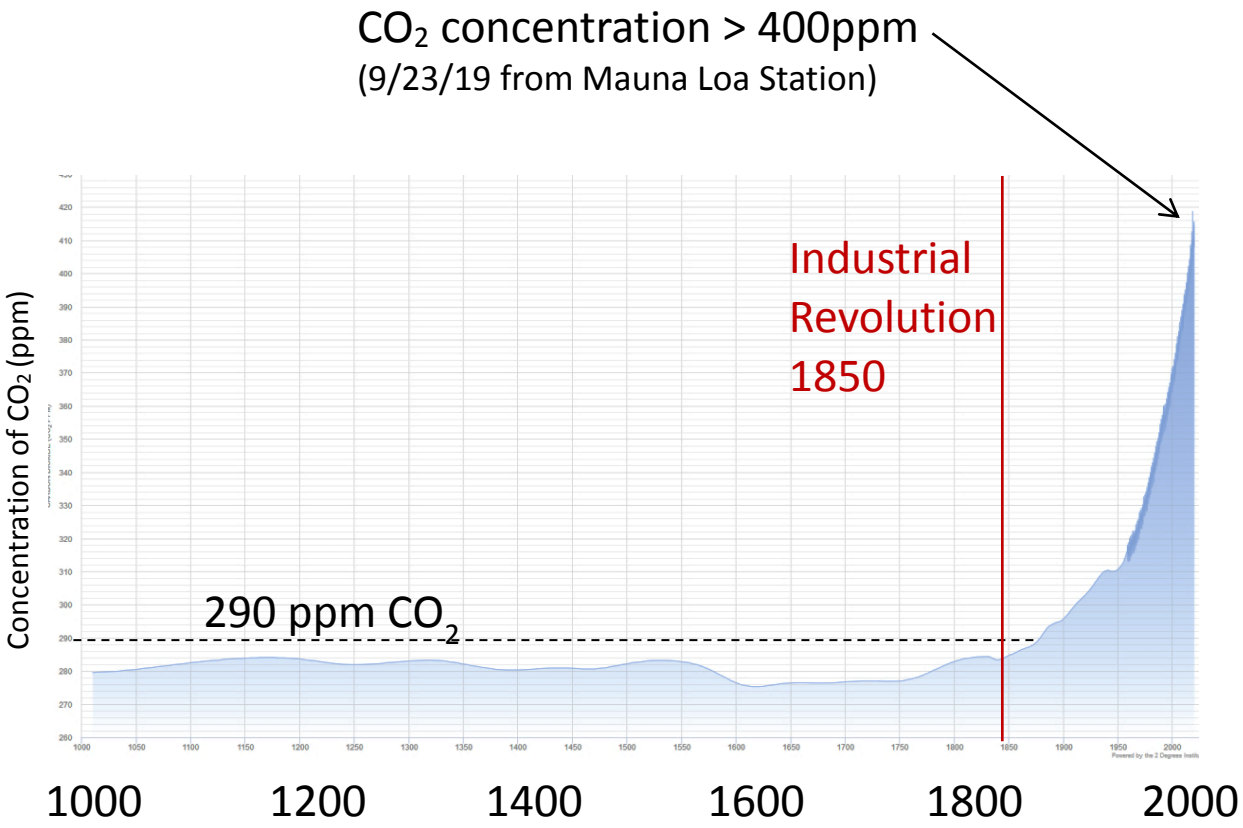


Figure 1-2. Carbon dioxide concentrations over time.

Data such as this have resulted in a general consensus within the scientific community that anthropogenic GHG emissions are causing major changes to the Earth's climate. In response, the Intergovernmental Panel on Climate Change (IPCC) has compiled their latest findings in the fifth assessment report (AR5) (IPCC, 2014). This report utilizes a new approach to climate change forecasting based on different Representative Concentration Pathways (RCPs). RCPs are based on different assumptions about how concentrations of GHGs resulting from human activities will change in the future. RCPs also include assumptions about human population growth, alternative sources of energy, and changes in land use. The four RCP scenarios are:

1) RCP 8.5 – Highest Emissions – This assumes no policy changes in the future to reduce emissions, resulting in a continued increase of GHG emissions and high GHG concentrations in the atmosphere over time; this is essentially the worst-case scenario. The RCP 8.5 scenario includes:
   - A tripling of today's CO_2 emissions by 2100,

- CO_2 concentrations continue to accelerate, reaching 950ppm by 2100 and continuing to increase into the following century,
- Global population of 12 billion by 2100,
- Use of both croplands and grasslands increases, and
- Continued heavy reliance on fossil fuels.

2) RCP 6 – Intermediate High Emissions - Stabilization of radiative forcing shortly after year 2100, via the application of a range of energy efficiency technologies and strategies that reduce greenhouse gas emissions. The RCP 6 scenario includes:
   - CO_2 emissions almost double from today's levels, peaking in 2060, then dramatically fall, but stay above today's levels,
   - CO_2 concentrations continue to increase, albeit at a slower rate, reaching 620ppm by 2100,
   - Strong reliance on fossil fuels remains, and
   - Cropland use continues on trend, while use of grasslands is reduced.

3) RCP 4.5 – Intermediate Low Emissions - Stabilization of radiative forcing shortly after year 2100, consistent with a future with relatively ambitious emissions reductions. The RCP 4.5 scenario includes:
   - CO_2 emissions increase slightly from 2008 levels before declining in mid-century,
   - CO_2 concentrations continue to increase at current rates to approximately 520ppm in 2070, then continue to increase but more slowly,
   - Moderate population and economic growth,
   - Stringent climate policies and strong reforestation programs,
   - Nuclear power and renewable energy play a greater role, and
   - Decreasing use of croplands and grasslands.

4) RCP 2.6 – Lowest Emissions - Ambitious GHG emissions reductions would require a major turnaround in global climate policies; this is essentially a best-case scenario. The RCP 2.6 scenario includes:
   - CO_2 emissions peak by 2020, then decline through 2100,
   - CO_2 concentrations at 440ppm in the atmosphere peak by mid-century, then slowly decline through 2100,
   - Oil use declines,
   - Global population peaks mid-century at just over 9 billion, and
   - Croplands are more regularly used for bio-energy production.

In light of these global climate projections, in 2016 the governor of Massachusetts issued an Executive Order (No. 569) establishing an integrated climate change strategy for the Commonwealth. This Executive Order recognizes that climate change presents a serious threat to the environment and the Commonwealth's residents, communities, and economy; and that extreme weather events associated with climate change present a serious threat to public safety, and the lives and property of our

residents. The order also launched the Municipal Vulnerability Preparedness (MVP) Program[1], the State Hazard Mitigation and Climate Adaptation Plan, and resilient MA, a climate change clearing house of data for the state.

[1] The Town of Wareham completed their MVP Planning workshop in May 2018, and is now an MVP Certified Community.

2. ASSESSMENT INPUTS AND METHODS

A series of analyses was conducted to determine the vulnerabilities of natural resources, high-risk developed areas, and municipal assets (Town-owned infrastructure and facilities). Different analyses were required to understand vulnerabilities of varying types of resources, from large salt marsh areas to site-specific properties and structures. First, coastal inundation modeling was conducted to determine which areas of the Town would likely be exposed to coastal flooding during storms in the near- and longer-term future. A slightly different ecological assessment and modeling effort was undertaken to determine vulnerabilities and potential future changes of natural resources. Finally, a risk assessment methodology was utilized to generate risk scores for each asset and assist the Town with prioritization of capital fund projects. These targeted analyses are described within the following sections.

2.1 COASTAL INUNDATION MODELING

One of the most important inputs when considering the flood risk of a particular area or a specific facility is detailed and accurate inundation modeling. In essence, one must determine what the likelihood of flooding is at any particular location and at what depth will that flooding occur given a specific storm intensity. This section provides background on the inundation model used for this analysis, the sea-level rise projections it incorporated and what planning horizons were selected.

2.1.1 Massachusetts Coast Flood Risk Model (MC-FRM)

The hydrodynamic modeling utilized for this study simulates a full suite of processes that affect coastal water levels, including tides, waves, winds, storm surge, sea level rise, and wave set-up at a fine enough resolution to identify site-specific locations that may require adaptation alternatives. Water surface elevations were modelled using the ADvanced CIRCulation (ADCIRC) software to predict storm surge flooding coupled with the Simulated WAves Nearshore (SWAN) software, a wave generation and transformation model. This modeling was performed as part of the Massachusetts Coast Flood Risk Model (MC-FRM), which was developed for the Massachusetts Department of Transportation (MassDOT) to assess potential flooding vulnerabilities to highways and other transportation infrastructure throughout the state of Massachusetts. Since the MC-FRM domain includes the entire Massachusetts coastal area, including the Town of Wareham, this model is ideally suited to assess the vulnerability and risk of coastal flooding to Wareham's infrastructure and natural resources. Using this existing model is beneficial to the Town of Wareham since much of the upfront work and cost in developing the model was already conducted as part of the MassDOT project.

The spatial resolution of the model is 10 meters or less between nodal points, and sometimes as low as 2-3 meters to capture important changes in topography and physical processes related to storm dynamics. This high-resolution model offers more accuracy than other storm surge models, such as the Sea, Lake, and Overland Surges from Hurricanes (SLOSH) model developed by the U.S. Army Corps of Engineers (USACE) and the National Oceanic and Atmospheric Administration (NOAA). The MC-FRM is also superior to a more rudimentary "bathtub" approach, since the latter does not account for critical physical processes that occur during a storm event, including waves and winds, nor can it determine the limited volume of water that may be able to enter certain areas, particularly those with narrow entry points.

The model quantitatively incorporates climate change influences on sea level rise, tides, waves, storm tracks, and storm intensity for 2030, 2050, 2070, and 2100 time horizons, providing discrete risk estimates at various time horizons to assist with both near- and long-term planning. To do so, it evaluates a statistically-robust sample of storms, including hurricanes, tropical storms and nor'easters, based on the region's existing and evolving climatology. Using this storm set, the model then calculates resulting water surface elevations to estimate the probability that various flood depths will be exceeded at each nodal point within the model boundary. The resulting flood risk maps and probability curves can then be interpreted using geographic information systems (GIS) to identify the estimated annual probability, or likelihood, that any node within the model will experience flooding, and if so, up to what elevation.

The probability-based approach of MC-FRM is beneficial to the Town when assessing the vulnerability of and risk to infrastructure and when developing adaptation strategies to mitigate future flooding damage. It will also produce information that can be used to inform engineering design criteria since it provides the probability of an event occurring in this changing regime, such as the "new" 1% event flood levels (equivalent to a 100-year recurrence water level). In particular, the accurate and precise assessment of the exceedance probability of combined SLR and storm surge helps Town managers and decision makers identify areas of existing and near-term vulnerability requiring immediate action in Wareham, as well as areas that will benefit from long-range planning for future preparedness and risk reduction.

2.1.2 Sea-level rise scenarios

It should be noted that the science of translating climate risks into design criteria is a new and evolving practice, involving uncertainty and variability in future greenhouse gas emissions pathways, as well as in the downscaling of global climate projections for local application. The Commonwealth of Massachusetts has developed projections (temperature, precipitation, sea level rise) based on a range of medium to high greenhouse gas emissions scenarios (RCP4.5 to RCP8.5), which are inherently variable (Figure 2-1), and has made them available on the Massachusetts Climate Change Clearinghouse (resilient MA) for use by communities in the MVP program.

The projections utilized in this study are aligned with the state standards, which have adopted a probabilistic approach to local sea level rise and storm surge projections. The Commonwealth has developed probabilistic local SLR projections downscaled from global models and adjusted for local landform subsidence. While there is variability in these projections, there is a high degree of confidence in the protectiveness of each projection given the associated emissions scenarios and embedded assumptions therein. The science of climate change is an evolving field that is constantly being updated and is inherently variable in nature. As such, projections made within this report provide guidelines for investment decisions based on the current state of the practice and knowledge to date. The flood level predictions made in this report are based on some of the most recent developments in the science of climate change but are not guaranteed predictions of future events. It is recommended that these results be updated over time as science, data and modeling techniques advance. Additionally, a full review of facility drawings, materials testing, or analyses of a structure's ability to withstand the projected hydrostatic forces due to flooding was not completed for this study.

Therefore, the findings include certain assumptions based on reasonable engineering judgment as to the ability of buildings and facilities to resist the projected hydrostatic forces due to flooding. These assumptions will require additional verification and customization during the design phase of individual projects.

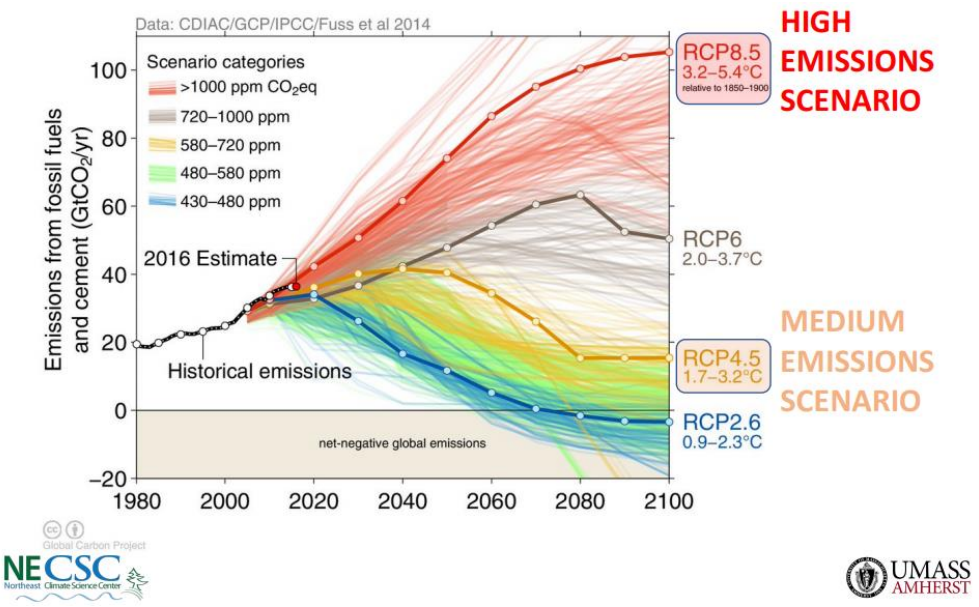


Figure 2-1. Global emissions scenarios used in resilient MA projections (from Fuss et al, 2014).

The relative sea-level rise (RSLR) projections used in the MC-FRM represent the most up-to-date RSLR projections for the Massachusetts coastline (Douglas et al., 2016), drawing on long-term water level datasets from a series of tide gages around the state. For Wareham, RSLR was estimated using the nearby NOAA tidal gage at Woods Hole (station ID 8447930), which has recorded an increase in relative mean sea level of 2.86 mm (+/- 0.17 mm) annually based on monthly mean sea level data from 1932 to 2017 (Figure 2-2). This equates to approximately 9.5 inches of mean sea-level rise over the last 85 years. Over that same time period, the global rate of sea level rise was about 1.7 mm annually (approximately 5.7 inches over the last 85 years). This significant difference between the RSLR experienced locally and the global SLR trend highlights the importance of accounting for local conditions.

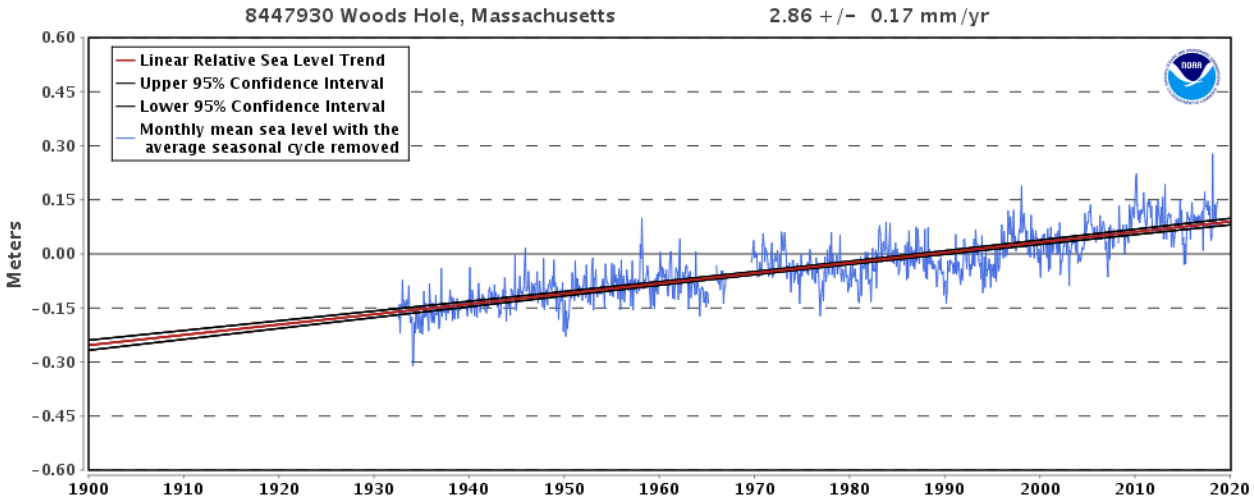


Figure 2-2. Mean sea-level rise trend at the Woods Hole tide gage (#8447930).

In order to compare future mean sea level to "present day" conditions, a starting elevation for mean sea level must be calculated. A tidal-epoch, a 19-year time period, is traditionally used to calculate tidal datums. For this study, the 19-year tidal-epoch with a mid-point year of 2008 (i.e., 2000-2018) was used to calculate a starting elevation for mean sea level. Based on this methodology, the mean sea level in Wareham in the year 2008 was at an elevation of -0.30 feet (NAVD88). This 2008 starting elevation of -0.30 feet (NAVD88) can then be used to compare to projected relative mean sea-level elevations at 2030, 2050, 2070 and 2100 under various scenarios (Table 1). Note that the values in Table 1 are elevations of the projected mean sea level at various times relative to a vertical datum of NAVD88, not the magnitude of change in elevation. For comparison, the baseline (i.e., year 2008) mean sea level elevation, is -0.30 feet (NAVD88). Based on the projected sea level elevations presented in Table 2-1, this means there is a projected change in mean sea level rise of 1.4, 2.7. 4.5 and 8.0 feet between the year 2008 and 2030, 2050, 2070 and 2100, respectively, based on the "High" SLR scenario.

The data in Table 2-1 are recommended by Massachusetts CZM for assessing sea-level rise, and are being used by the Massachusetts Department of Transportation and other state agencies and communities for vulnerability assessments. As such, these sea-level rise projections were incorporated into the MC-FRM. The "High" SLR scenario was chosen for the MC-FRM because MassDOT and the state were interested in inundation risk probabilities that were unlikely to be exceeded (there is a 83% confidence level that the "High" scenario chosen will not be exceeded, when accounting for possible ice sheet instabilities). In addition, selecting the "High" scenario also allows for the evaluation of inundation risk probabilities under other scenarios due to the bracketed nature of the results. For example, the "High" results in 2030 are equivalent to "Intermediate" results in 2050, and the "High" results in 2050 are the equivalent to the "Intermediate" results in 2070. In this way, the selected scenarios provide an upper bound of potential risk.

Table 2-1. Relative mean sea level (feet NAVD88) for Woods Hole, MA.

Scenario	Cross-walked probabilistic projections	2030	2050	2070	2100
High	Extremely unlikely to exceed (99.5%) under RCP8.5	1.1	2.4	4.2	7.7
	• Unlikely to exceed (83%) under RCP8.5 when accounting for possible ice sheet instabilities • Extremely unlikely to exceed (95%) under RCP4.5 when accounting for possible ice sheet instabilities				

2.1.3 Storm Events and Wave Run-up

Figure 2-3. Storms Used in MC-FRM for Present and 2030 Simulations.

The storm climatology parameters in MC-FRM include wind directions and speeds, radius of maximum winds, pressure fields, and forward track. MC-FRM requires storm input data to run storm surge simulations and generate flooding results. Without input data, MC-FRM cannot determine which areas of Wareham will likely be exposed to coastal flooding in the medium- and longer-term future, as much of the community's flood risk profile is dependent on storms.

As part of the development of MC-FRM, a large statistically robust sample of storms, including tropical (hurricanes) and extra-tropical (nor'easters) storms, was developed specifically for the coast of Massachusetts under existing and future climatologies. This storm data set includes historic storm events, as well as future storm conditions, and was used to assess coastal flooding risks in the present, 2030, and 2070. Figure 2-3 shows a representation of the storm tracks representing some of the tropical storms used in MC-FRM.

To assess coastal flooding risks in 2070, a different sample of storms reflecting a late 21st century climatology was used. This storm sample includes some very powerful hurricanes, for example, reflecting projections that tropical storms will be more intense on average in the second half of the century assuming that air and ocean temperatures are significantly higher than in the past. This set of storm input data was created by MIT professor Dr. Kerry Emmanuel based on climate projections.

Fully optimized Monte Carlo simulations were run in MC-FRM using the respective storm sets and SLR projections for present and future conditions. Importantly, these simulations included the tide cycle as a dynamic element of the model. The same storm surge can result in very different flooding outcomes depending on whether it coincides with high, mid, or low tide. Results of the Monte Carlo simulations were used to generate cumulative probability distribution functions of the storm surge water levels at a high degree of spatial precision. In particular, they provide an accurate and precise assessment of the probability of water levels from combined SLR and storm surge exceeding the elevation of the ground at each node in the model.

2.1.4 Planning Horizons

The Town of Wareham Climate Change Flood Vulnerability Assessment and Adaptation Planning project focused on two of the modeled out-years for climate change, sea-level rise and storm surge flood effects: 2030 and 2070. These out-years were selected by the Steering Committee, comprised of multi-departmental working group of municipal staff and committee members, to provide the most useful data for planning. Flood risk probabilities for 2030 represent a near-term risk, which will be useful in driving actionable items now, while flood risk probabilities for 2070 will provide a long-range planning tool that will be particularly useful when planning large capital projects, designing and siting new infrastructure and/or buildings, and guiding municipal bylaws and zoning regulations.

2.2 Coastal Wetlands Modeling

Unlike built infrastructure, most natural coastal ecosystems are fairly resilient to occasional flood events. Asking whether there is a high likelihood of a salt marsh flooding during a particular storm is therefore less useful than considering what impacts new tidal elevations will have on coastal wetlands. This section describes the model, sea-level rise projections and planning horizons utilized to address the likely impacts to coastal habitats given long-term changes in sea level.

2.2.1 Sea Level Affecting Marsh Model (SLAMM)

The methods utilized to evaluate the impacts on coastal wetlands differ from the coastal inundation model for developed areas. Wetland resources are unlikely to convert/change due to an episodic storm event; rather, increasing water levels over time caused by sea level rise will be the dominant influence on the future location and condition of wetland resources. The results of this ecological assessment and modeling effort are used to answer a number of important questions specific to coastal wetland systems and sea level rise (independent of storm surge). For example, results are used to assess if specific marsh systems have adequate space to migrate landward in response to the changing climate or if their migration may be hampered by topographic features or infrastructure and developed areas. The results are also used to determine the timeframe that a marsh's accretion rate can no longer be expected to keep up with the rate of sea-level rise, or over what timeframe specific resource areas within a marsh are expected to transition (e.g., high marsh to low marsh, or low marsh to tidal flats, etc.) due to sea-level rise. By identifying a likely timeframe for these changes, coastal managers can plan their monitoring and conservation efforts most effectively.

The assessment of natural resource impacts from sea-level rise in Wareham relies on statewide modeling conducted by Woods Hole Group on behalf of the Massachusetts Office of Coastal Zone Management (Woods Hole Group, 2016) using the Sea Level Rise Affecting Marshes Model (SLAMM). Full discussion of marsh migration modeling methodology is provided in the report "Modeling the Effects of Sea-Level Rise on Coastal Wetlands" (Woods Hole Group, 2016).

High resolution elevation data are the most important SLAMM model input requirement, since the elevation data determine where one habitat type converts to another based on the frequency of inundation based on the tidal range data and sea-level rise projections. For the statewide SLAMM modeling, the most recent elevation dataset was used for all areas. In order to reduce processing time within the SLAMM model, the state was subsetted into regional panels, and areas of higher elevation

within each regional panel that are unlikely to be affected by coastal processes and sea-level rise were excluded prior to processing; all areas above an elevation of 60 feet (NAVD88) were clipped from the input files prior to initiating model runs.

In addition to detailed elevation input data, an accurate mapping of current wetland types is also required for the SLAMM model. For the statewide SLAMM modeling, the 2011 wetland layer developed by the National Wetlands Inventory (NWI) is used as the baseline source for the wetlands input file. The NWI data had two key benefits over the 1990s MassDEP wetland layer. First, the NWI data not only provided a more recent dataset, but also temporally matched the year of the input LiDAR dataset. Second, utilizing the NWI data streamlined the conversion between source wetland categories and the required SLAMM model wetland codes. Documentation provided with the SLAMM software contains a key to convert each NWI classification directly to the wetland classification system used by SLAMM.

SLAMM was intentionally run without imposing impervious surface (roads, parking lots, etc.) limitations to marsh migration. Projected changes in wetland type were driven by existing topography and projected water levels. As such, these results should be viewed with the caveat that if future wetland areas are predicted in what are developed areas today, changes would have to be made in the interim to allow that conversion to happen. For example, by 2070, the SLAMM model projects that the area south of Cove Street in Onset Heights (Figure 2-4) will begin to shift to a transitional marsh and/or regularly flooded marsh – an obviously unlikely scenario if the existing road surface remains paved and the houses remain in place.

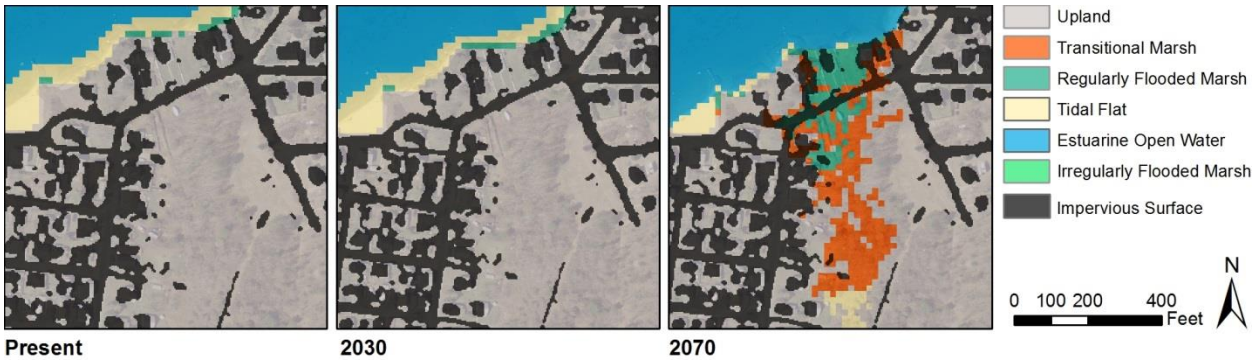


Figure 2-4. Example of impervious surface barriers to wetland migration.

2.2.2 Sea-level rise scenarios

The sea-level rise scenarios used in the SLAMM modeling are slightly different than those used in the MC-FRM, but are similar enough to produce comparable results. The 2016 statewide wetland change assessment (Woods Hole Group, 2016) relied on predictions presented by Parris et al. (2012). The highest sea-level rise scenario from Parris et al. (2012) combines thermal expansion estimates from the sea-level rise projections in the IPCC Fifth Assessment Report (AR5) with the maximum possible glacier and ice sheet loss by the end of the century. At the time, this was considered a conservative prediction to be used "in situations where there is little tolerance for risk." The global sea-level rise projection of 2.0 meters by 2100 (Parris et al. 2012) was then adjusted to relative sea-level rise conditions using a

more recent study by Kopp et al. (2014); a sea-level rise projection of 2.166 meters (7.1 feet) by 2100 was ultimately used for the Wareham area of the statewide SLAMM assessment. This is just under the 7.7 feet utilized for MC-FRM.

2.2.3 Planning Horizons

To be consistent with the inundation modeling results, the results presented from the SLAMM modeling also focus on two of the modeled out-years: 2030 and 2070. Projections for habitat and wetland change by 2030 represent a near-term change, which will be useful in driving actionable items now, while 2070 projections are useful as a long-range planning tool.

2.3 MUNICIPAL ASSET DATA

The risk-based vulnerability assessment was focused on municipally-owned assets only. The landward extent of the MC-FRM grid is set at an elevation of 8 meters (26.2 feet) NAVD88. Because much of the northern part of Town is higher than this elevation, this area is excluded from the model (Figure 2-2), and any Town-owned assets within it were screened out from further analysis, since they would have no risk from coastal flooding through 2070. An elevation of 8 meters was chosen as an inland extent because this elevation is well above the projected extent of inundation even during a large storm in 2100.

Woods Hole Group worked cooperatively with the Steering Committee to compile existing GIS-based data and information about locations of Town assets. Based on discussions with the Steering Committee, the following Town-owned assets within the model extent (Figure 2-5) will be included in the vulnerability assessment:

- Buildings and structures (151)
    - Including above ground utilities (e.g., wastewater pumping stations)
- Coastal parking lots (7)
- Recreational facilities (e.g., baseballs fields, tennis courts, etc.) (18)
- Boat ramps (3) and Onset Pier
- Roads (all within model grid)

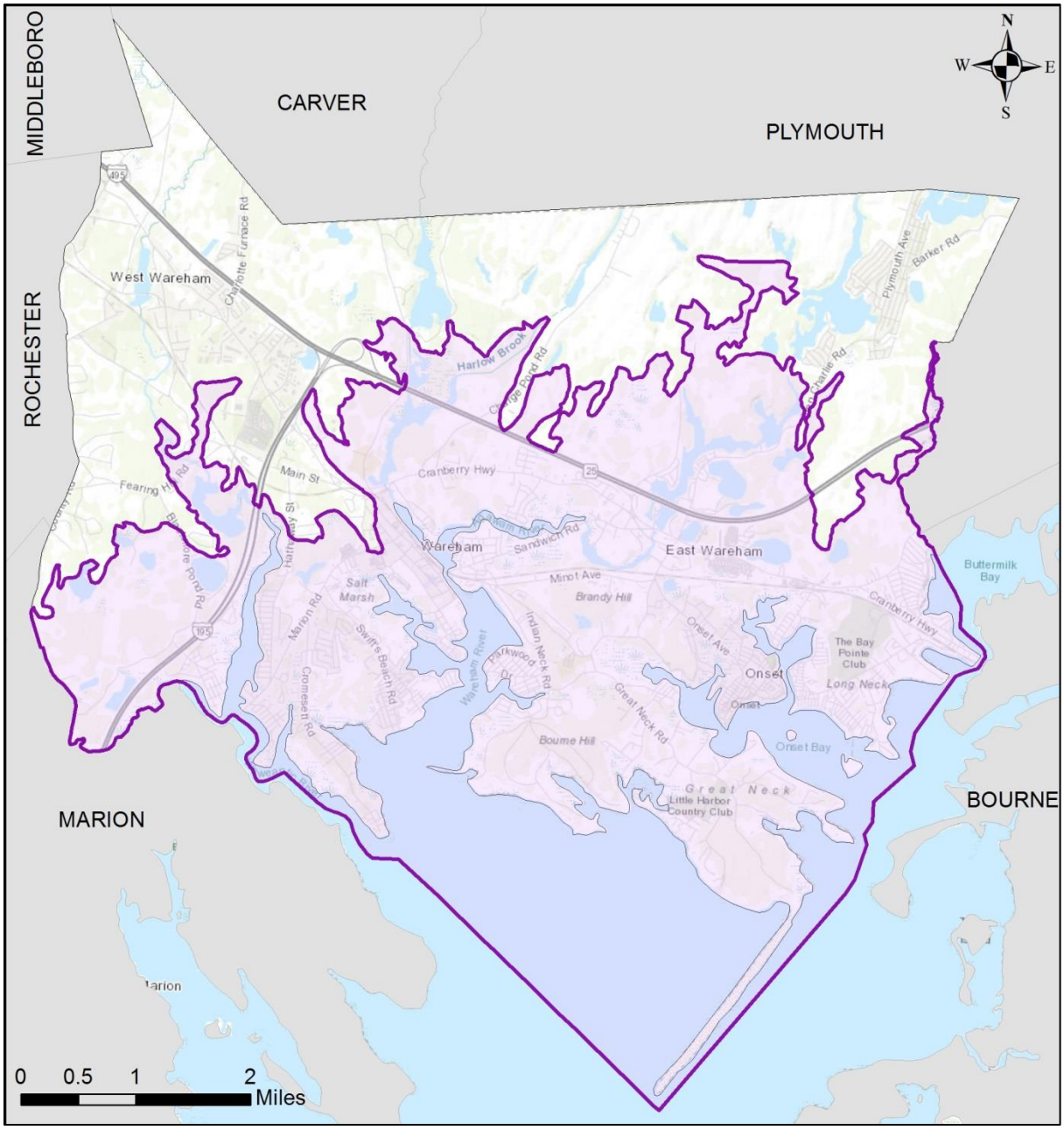


Figure 2-5. Extent of model grid in Wareham.

3. VULNERABILITY ASSESSMENT

3.1 INTRODUCTION

A climate change flood vulnerability assessment was performed for municipally-owned infrastructure subject to flooding. Municipally-owned infrastructure includes buildings and structures, sewer pump stations, roads and bridges, recreational assets and boat ramps. With the exception of roadways, infrastructure that is not municipally owned (e.g. a federal, state or privately owned asset) was not evaluated during this vulnerability assessment; several state-owned roadways, which are critical transportation in Wareham, however, are included in the vulnerability assessment. A risk-based vulnerability assessment was performed for each of the municipally-owned assets impacted by flooding. The methods used to evaluate the risk from flooding to each asset are described in the following section.

3.2 VULNERABILITY ASSESSMENT METHODS

A vulnerability assessment was completed to determine the specific, site-level vulnerabilities of municipal assets: Town-owned properties, facilities, and infrastructure. Risk is defined as the probability of an asset flooding multiplied by the consequence of that asset failing. Put into mathematical terms:

$$Risk\ (R) = Probability\ of\ Flooding\ (P) \times Consequence\ of\ Failure\ (C)$$

$$or$$

$$R = P \times C$$

Each node in MC-FRM has unique probability of exceedance data associated with it, which provides the likelihood (0-100% probability) of exceeding water surface elevations at that node. Using risk to assess the vulnerability of infrastructure allows one to take into account both how likely a damaging flood event is, and what the consequence of that damaging flood is to the community. The resulting risk scores for all assets can then be ranked to assist municipalities with the prioritization of adaptation investments over time. The overall vulnerability assessment process, which was applied to the Town of Wareham assets, is comprised of five main steps:

1. Determine Critical Assets Subject to Flooding
2. Determine Critical Elevations
3. Obtain Probability of Exceedance Data
4. Determine Consequence Scores
5. Calculate Risk Scores and Rankings

Details related to each step are provided in the subsections below.

3.2.1 Determine Critical Assets Subject to Flooding

Municipally owned infrastructure was mapped as an overlay in a GIS project map. The extent of the MC-FRM grid was then used to screen out municipal assets that are not anticipated to experience coastal flooding through 2100. The MC-FRM grid has a landward extent to elevation 8 meters (NAVD88) (Figure 2-5); all assets located above that elevation were excluded from further analysis.

As noted in Section 2.3 above, the municipally owned asset classes that were included in the vulnerability assessment were buildings and structures (including sewer pump stations), parking lots, recreational facilities (e.g., baseballs fields, tennis courts, etc.), boat ramps, and roads and bridges. (Note that boat ramps were evaluated using different approach, described after the standard risk assessment approach).

3.2.2 Determine Critical Elevations

Critical elevations are defined as that elevation at which flood water will cause the asset to cease functioning as intended. For example, the critical elevation may be the first floor of a building. In another case, the critical elevation could be a basement window sill elevation, above which water can enter the basement and damage critical mechanical equipment located in the basement. In another case, the critical elevation could be the bottom of a critical electrical transformer or electrical panel, above which flood water would damage the equipment and shut down the facility. For other assets, such as roads, parking lots, playing fields, etc., the critical elevation is the lowest ground elevation.

Municipal assets for the Town of Wareham fell into two main categories: land-based assets and water-based assets. Critical elevations for the land-based assets will be compared to the detailed Massachusetts Coast Flood Risk Model (MC-FRM) results to determine each asset's probability and depth of flooding. Because boat ramps are located in intertidal areas, there is a 100% chance that these features will be inundated in present day, even during non-storm conditions. As such, the long-term viability of these assets with respect to sea-level rise will be considered in a different way. The critical elevation for boat ramps is the elevation at the top of the boat ramp. These assets will be considered "ineffective" when the future MHW elevation is projected to be at or above the critical elevation. At that point the structure would be completely underwater during at least some portion of the day, and would no longer be functioning as intended. This also assumes that the boat ramp assets will be maintained and/or are resistant to storm damage, such that they will be functional until sea-level rise makes them ineffective.

The methods for determining the critical elevation for each type of asset are described below:

<u>Land-based assets</u>

1. **Buildings and Structures:** For most buildings and structures the critical elevation was considered to be the lowest ground elevation extracted from the 2016 Massachusetts DEM within the footprint of the structure. Where the critical elevation was clearly above ground level for a particular asset, specifically for the sewer pump stations, a site specific surveyed elevation provided by the Town was used. Details about the critical elevation source are provided in the asset table in Appendix B.

2. **Parking Lots**: The critical elevation was considered to be the lowest ground elevation extracted from the 2016 Massachusetts DEM within the boundary of each parking lot asset polygon.
3. **Recreational Facilities**: The critical elevation was considered to be the lowest ground elevation extracted from the 2016 Massachusetts DEM within the boundary of each recreational facilities asset polygon.
4. **Roads:** The critical elevation was considered to be the lowest ground elevation extracted from the 2016 Massachusetts DEM along the centerline of the road.

Water-based assets

1. **Boat Ramps:** The critical elevation was considered to be the elevation of the top of the boat ramp based on 2016 Massachusetts DEM data.

Almost 1,700 roads were evaluated as part of this study. These assets therefore greatly out number all other feature types included in this assessment. It is, however, important to consider roads in combination with other Town assets when setting priorities for municipal projects. As such, major roads are integrated into the main asset table in Appendix B, but there is also a separate table containing the results for all roads assets.

3.2.3 Obtain Probability of Exceedance Data

Probability of exceedance data for present day, 2030 and 2070 time horizons from the MC-FRM were summarized for each "land-based" municipal asset (see Section 3.2.2 above for discussion of which assets this included). Data for non-road "land-based" assets were obtained from the closest model node to the asset (maximum distance from a model node to an asset was 75 feet). Probability of exceedance data for road assets, where the critical elevation was defined as the ground surface, were extracted from the model results; the probability was extracted as the maximum value from MC-FRM along the centerline of the road.

For assets with surveyed or documented critical elevations (i.e., elevations other than the ground elevation), the critical elevations were compared to water surface elevation (WSE) distribution curves obtained for representative model nodes in the MC-FRM grid. Figure 3-1 and Table 3-1 provide examples of a WSE distribution curve and the probability of exceedance results for Wareham Harbormaster Building. For this asset, the critical elevation is 8.2 feet (NAVD88), the ground elevation around the building. The results in Figure 3-1 and Table 3-1 indicate the following:

- For the present day time frame, there is a 20% annual chance that water will exceed the critical elevation of 8.2 feet, and at a 1% event (100-year recurrence interval) the water level would be 3.9 feet above the critical elevation.

- In the 2030 time frame, the probability of exceeding the critical elevation increased to 25%, and at a 1% event (100-year recurrence interval) the water level would be 5.6 feet above the critical elevation.

- In the 2070 time frame, the probability of exceeding the critical elevation of 8.2 feet increases to 100%, while the depth of water above the critical elevation at a 1% event (100-year recurrence interval) increases to 11.7 feet.

Probabilities of exceeding each asset's critical elevation are documented (Present-day, 2030, and 2070) in the asset tables in Appendix B according to the methods described above.

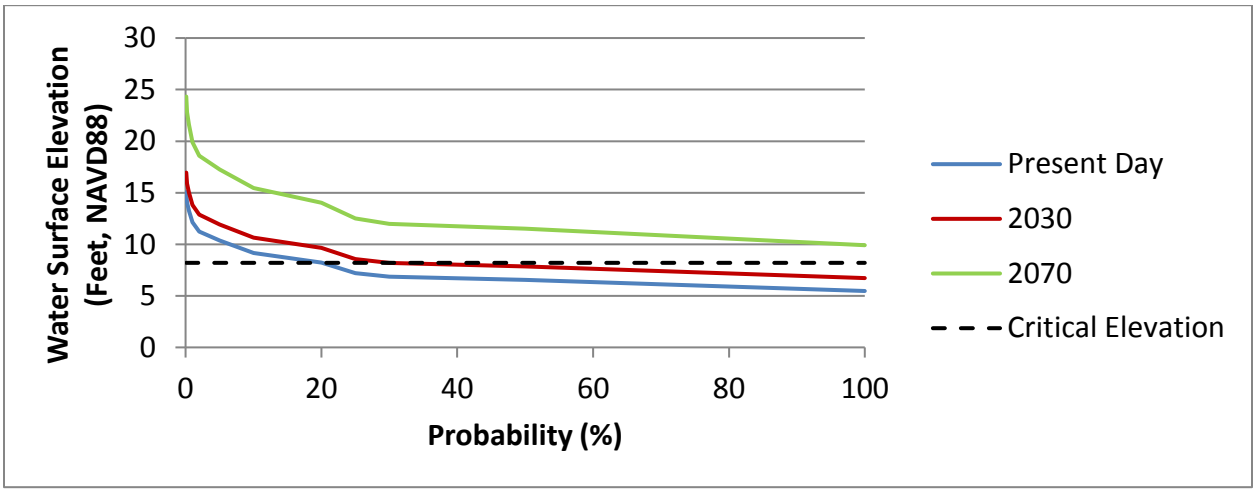


Figure 3-1. Example water surface elevation distribution curve (Harbormaster building).

The probability of inundation is 100% for "water-based" assets (i.e., boat ramps and coastal infrastructure) because these assets are purposefully built in intertidal areas. As such, the probability of exceedance data were not considered a useful measure of future sea-level rise impacts. Instead, these assets are considered "ineffective" when the future MHW elevation is projected to be at or above the critical elevation. At that point the structure would be completely underwater during at least some portion of the day, and would no longer be functioning as intended. Using the sea-level rise predictions documented in Table 2-1, the MHW elevation was adjusted for future years and compared to the critical elevation for boat ramps and coastal infrastructure, the elevation at the top of the boat ramp and the maximum elevation along the structure, respectively. The present day MHW elevation for the Wareham shoreline is 2.1 feet (NAVD88)[2]. The time frames at which this critical elevation will be exceeded by MHW based on this methodology are highlighted in Table A-2 in Appendix A.

[2] Since there is no long-term tide gage located in Wareham, the 2.1 feet was extracted from the MC-FRM.

Table 3-1. Example probability of exceedance results for the Harbormaster Building.

% Probability	Present		2030		2070	
	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.
0.1	15.1	6.9	16.9	8.8	24.3	16.1
0.2	14.1	5.9	15.9	7.7	22.8	14.6
0.5	13.3	5.1	15.0	6.8	21.6	13.4
1	12.1	3.9	13.8	5.6	19.9	11.7
2	11.2	3.0	12.9	4.7	18.6	10.4
5	10.4	2.2	11.9	3.7	17.2	9.0
10	9.2	1.0	10.7	2.5	15.5	7.3
20	8.3	0.1	9.7	1.5	14.0	5.8
25	7.21	dry	8.6	0.4	12.5	4.3
30	6.85	dry	8.19	dry	12.0	3.8
50	6.54	dry	7.86	dry	11.5	3.3
100	5.47	dry	6.72	dry	9.9	1.7

3.2.4 Determine Consequence Scores

The consequence of flooding for each asset was based on six different potential impacts in accordance with the rankings presented in Table 3-2. The score for each type of impact for each asset is determined separately, and then a composite consequence of flooding score is determined by summing all six scores and normalizing to 100 using the following equation:

$$\text{Total Consequence of Flooding Score} = \frac{\Sigma \text{ all six scores}}{30} * 100$$

Consequence scores for each asset were developed by the Steering Committee. To ensure a consistent understanding of the different scoring categories within each type of potential impact, the Steering Committee first agreed to a basic set of assumptions for each type of asset.

Table 3-2. Consequence of flooding scoring guide.

Score	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impact on Public Safety & Emergency Services	Impact on Important Economic Activities	Impact on Public Health & Environment
5	Whole Town	>30 days	>$10m	Very high	Very high	Very high
4	Multiple Neighborhoods	14 - 30 days	$1m - $10m	High	High	High
3	Neighborhood	7 - 14 days	$100k - $1m	Moderate	Moderate	Moderate
2	Locality	1 - 7 days	$10k - $100k	Low	Low	Low
1	Property	< 1 day	<$10k	None	None	None

The consequence scoring methodology and results are important tools to assist the Town in determining which assets are most important for the Town to maintain in the context of flooding, and why. This method breaks down the over-arching concept of "consequence" into more easily defined scoring categories (e.g., area of service loss, cost, impact on public safety, etc.), and can be used to compare very different types of assets. The composite consequence of flooding scores for an example subset of Town of Wareham assets are presented in Table 3-3. For the example assets presented, total consequence scores ranged from 27 to 80 out of a possible 100. The higher the score, the higher the consequence of flooding and the consequence of failure or loss of that asset are to the Town.

Table 3-3. Consequence of flooding scoring for an example subset of assets.

Asset Name	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impact on Public Safety & Emergency Services	Impact on Important Economic Activities	Impact on Public Health & Environment	Score
Onset Fire Department	5	3	4	5	2	5	80
Town Hall	5	3	4	3	4	3	73
Harbor Master Building & Restrooms	5	3	3	4	3	3	70
WPCF - Operational Building	5	2	3	2	3	5	67
Wareham High School	5	3	4	2	3	1	60
Apple Street Pump Station	3	2	4	2	2	4	57
Red Wood Park - Community Building	2	3	3	2	2	2	47
Fearing Tavern Museum	1	3	3	1	3	1	40
Onset Band Stand	1	2	3	1	3	1	37
Swifts Beach Basketball Court	1	2	1	1	2	1	27

3.2.5 Calculate Risk Scores and Rankings

The risk score for a particular asset subject to flooding for a given time horizon was calculated using the following equation:

$$R_{tn} = P_{tn} \times C_{tn}$$

Where:

R_{tn} = Risk score at a given time horizon
P_{tn} = Probability of exceedance at a given time horizon
C_{tn} = Consequence of flooding at a given time horizon
tn = Time horizon n (present day, 2030 or 2070)

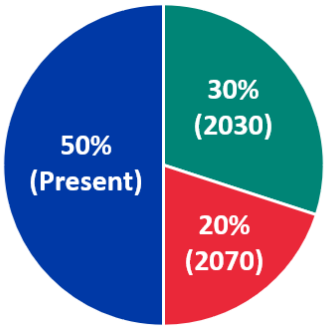
The risk score can then be used to rank overall risk to municipal assets for a given time horizon. A composite ranking can also be developed by taking into account the risk scores from all time horizons using the following equation:

$$R_{comp} = (R_{present} \times W_{present}) + (R_{2030} \times W_{2030}) + (R_{2070} \times W_{2070})$$

Where:

R_{comp} = Composite risk score for all time horizons
$R_{present}$ = Risk score for present day time horizon
R_{2030} = Risk score for 2030 time horizon
R_{2070} = Risk score for 2030 time horizon
$W_{present}$ = Weighting factor for present day time horizon
W_{2030} = Weighting factor for 2030 time horizon
W_{2070} = Weighting factor for 2030 time horizon

A weighting factor is used to give more emphasis to assets vulnerable to flooding in the nearer time horizons. For example, an asset which is susceptible to flooding today and more flooding in the future, should get more priority than an asset that is only vulnerable to flooding starting in 2070. The weighting factors can be adjusted, but for the purposes of this study the following factors were selected:



3.3 RESULTS

Composite risk scores were calculated for all municipal assets subject to flooding. These data are summarized in a master table included in Appendix B. An example of the risk scoring for the Harbormaster Building is shown in Table 3-4. Note that the consequence score remains constant over the life of the asset, and that only the probabilities of flooding (i.e., the probabilities of exceedance of the critical elevation by flood waters) change over time.

Table 3-4. Composite risk scoring example matrix for the Harbormaster Building.

Time horizon	Probability of Exceedance	Consequence Score	Risk Score	Weight	Composite Risk Score
Present	20	70	1400	0.5	2625
2030	25	70	1750	0.3	
2070	100	70	7000	0.2	

In addition to the tabular ranking of assets based on their composite risk score, Town-wide map based results were also developed. The probability-based inundation maps were developed for present day, 2030 and 2070 (see Appendix A). In addition, depth of inundation maps were also developed for two probability levels. The Steering Committee selected the 1% event flood levels (equivalent to a 100-year recurrence water level) and the 10% event flood levels (equivalent to a 10-year recurrence water level) for which to develop these depth of inundation maps.

The 1% probability level was selected because this is the benchmark for the Federal Emergency Management Agency's (FEMA's) Flood Insurance Rate Maps (FIRMs). Although FEMA FIRMs are not forward-looking and do not incorporate sea-level rise into the mapping, FEMA does periodically update their modeling to account for increased sea level rise that has occurred (as well as other changes, such as changes in topography or armoring of particular areas). As such, the 2030 and 2070 1% probability of inundation extents may provide a projection for the expected future FEMA flood zones.

The second probability level chosen for development of depth of inundation maps was the 10% event flood levels. Although some municipalities are interested in the worst case scenario (e.g., the 0.2% [500-year] or the 0.1% [1000-year] water level), the Wareham Steering Committee decided that it would be most useful for the Town to plan for the depth of flooding likely to occur during a more probable storm event.

3.3.1 Municipal Infrastructure Assets

Using this risk-based ranking methodology, the top 20 ranked assets in terms of vulnerability to flooding based on composite scores in each asset category (e.g., buildings and structures, recreational features, roads and bridges, etc.), as well as the top ranked risk scores for all assets from individual time horizons (present day, 2030 and 2070) and composite risk scores, are shown in Tables 3-5 through 3-12. For a full list of composite risk scores for all assets, see Tables B-1a and B-1b in Appendix B. Table B-1a includes all land-based assets, including buildings and structures (including sewer infrastructure),

parking lots, and recreational facilities, as well as *major* roads. Due to the considerable number of roads with a potential risk of inundation between now and 2070, a separate consequence score table, Table B-1b was developed to compile the data on *all* roads.

Table 3-5. Top 20 ranked buildings and structures assets vulnerable to flooding, ranked by composite risk score.

Rank	Asset Name	Asset Type	Consequence Score	Present Probability (%)	2030 Probability (%)	2070 Probability (%)	Composite Risk Score
1	Arnold Pump Station	Sewer	57	30	100	100	3683
2	Train Station Parking Lot Restrooms	Admin	47	50	100	100	3500
3	Tremont Nail - Freight Building	Historical	33	100	100	100	3333
4	Harbormaster Building & Restrooms	Marine	70	20	25	100	2625
5	Onset Heights Pump Station	Sewer	57	20	50	100	2550
6	Riverside Pump Station	Sewer	57	20	50	100	2550
7	Avenue A Street Pump Station	Sewer	57	25	30	100	2352
8	East Boulevard Ejector	Sewer	60	20	30	100	2340
9	Tremont Nail - Shed	Historical	23	100	100	100	2333
11	Tremont Nail - Nail Factory	Historical	40	2	100	100	2040
12	Tremont Nail - Packaging Building	Historical	40	25	50	100	1900
13	Little Harbor Restrooms	Rec	40	20	50	100	1800
14	Leonard Pump Station	Sewer	57	10	20	100	1757
16	Briarwood Beach Pump Station	Sewer	57	5	20	100	1615
17	Indian Neck Pump Station	Sewer	57	5	20	100	1615
18	Onset Pier Rental Hut	Marine	40	10	25	100	1300
19	Emergency Medical Services	Emer.	77	2	5	50	958
20	Bay Street Ejector	Sewer	57	5	10	50	878
19	Apple Street Pump Station	Sewer	57	2	10	50	793
20	Cromesett Pump Station	Sewer	57	2	5	30	482

Table 3-6. Top 7* ranked parking lot assets vulnerable to flooding, ranked by composite risk score.

Rank	Asset Name	Asset Type	Consequence Score	Present Probability (%)	2030 Probability (%)	2070 Probability (%)	Composite Risk Score
1	Besse Park Parking Lot	Parking	37	100	100	100	3667
2	Swifts Beach Parking Lot (west)	Parking	37	100	100	100	3667
3	Swifts Beach Parking Lot (east)	Parking	37	100	100	100	3667
4	12th Street Boat Ramp Parking Lot	Parking	37	50	100	100	2750
5	Little Harbor Beach Parking Lot	Parking	37	50	100	100	2750
6	Shell Point Parking Lot	Parking	37	50	100	100	2750
7	Tempest Knob Public Parking Lot	Parking	37	1	2	25	224

*Only 7 of the identified parking lot assets have any risk of inundation through 2070.

Table 3-7. Top 13* ranked recreation assets vulnerable to flooding, ranked by composite risk score.

Rank	Asset Name	Asset Type	Consequence Score	Present Probability (%)	2030 Probability (%)	2070 Probability (%)	Composite Risk Score
1	Swifts Beach Basketball Court	Basketball Court	27	100	100	100	2667
2	Onset Pier	Piers/Docks	57	20	50	100	2550
3	Hynes Baseball Field	Baseball Field	30	50	100	100	2250
4	Hynes Basketball Court (east)	Basketball Court	27	50	100	100	2000
5	Hynes Basketball Court (west)	Basketball Court	27	50	100	100	2000
6	Hynes Field Playground	Playground	30	25	50	100	1425
7	Wareham Schools South Baseball Field	Baseball Field	30	1	2	25	142
8	Wareham Schools Soccer Field	Soccer Field	27	0.5	1	20	121
9	Wareham Schools Track	Track	30	0.2	0.5	10	68
10	Spillane Baseball Field	Baseball Field	30	0.2	0.5	10	68
11	Wareham HS Football Field	Football Field	30	0.2	0.5	10	68
12	Palmer Baseball Field	Baseball Field	30	0.1	0.5	10	66
13	Wareham Schools Tennis Courts	Tennis Courts	30	0.1	0.2	5	33

*Only 13 of the identified recreational assets have any risk of inundation through 2070.

Table 3-8. Top 20 ranked road* assets vulnerable to flooding, ranked by composite risk score.

Rank	Asset Name	Asset Type	Consequence Score	Present Probability (%)	2030 Probability (%)	2070 Probability (%)	Composite Risk Score
1	Green Street	Road	53	70.9	78	88.4	4082
2	Lydias Island Road (northeastern half)	Road	43	89.5	91.5	100	3995
3	Onset Avenue (Osborne Ave to Barlow Ave)	Road	63	52.7	70.1	76.2	3966
4	Circle Drive (western half from Swifts Beach Rd)	Road	53	65.5	74.1	87.1	3861
5	South Water Street	Road	53	64.8	72.7	90.4	3855
6	Sandwich Road (Apple St to Wareham River)	Road	57	66.5	66.9	73.3	3852
7	Monument Avenue	Road	43	81.1	84.1	99.1	3709
8	Over Jordan Road (northeastern half)	Road	43	80	82.4	100	3671
9	Cranberry Highway (Water St to Cohasset Narrows Bridge)	Road	73	33.1	56.5	75.3	3561
10	Sandwich Road (RR crossing to Mayflower Ave)	Road	53	57.5	70.9	83.7	3561
11	Camp Street (North Blvd to Commonwealth Ave)	Road	37	94.5	95.4	100	3515
12	Salt Creek Road	Road	43	75.9	76	100	3499
13	Swifts Beach Road	Road	57	51.1	67.4	75.3	3447
14	Oceanside Drive	Road	50	62.6	73.2	76.9	3432
15	Old Colony Avenue	Road	43	72	75.9	100	3413
16	Pinehurst Drive (southwestern portion of Pinehurst Dr to Pigs Pt Rd)	Road	53	52.8	67.2	85.2	3392
17	Cleveland Avenue (seaward of Thrush Ave)	Road	43	72.9	75.3	94.9	3381
18	Roby Street (Shore Ave to Circle Dr)	Road	43	70.8	75.1	99.7	3374
19	Sias Point Road Extension (circle only)	Road	43	70.9	74.8	98.3	3361
20	Circle Drive (eastern half to Roby St)	Road	47	65.3	73.8	85.7	3357

*Where only a segment of a particular road is considered, the beginning and end of the road segment is indicated.

Table 3-9. Top 20 ranked assets* vulnerable to flooding, ranked by composite risk score.

Rank	Asset Name	Asset Type	Consequence Score	Present Probability (%)	2030 Probability (%)	2070 Probability (%)	Composite Risk Score
1	Onset Avenue (Osborne Ave to Barlow Ave)	Road	63	52.7	70.1	76.2	3966
2	Arnold Pump Station	Sewer	57	30	100	100	3683
3	Besse Park Parking Lot	Parking Lot	37	100	100	100	3667
4	Swifts Beach Parking Lot (West)	Parking Lot	37	100	100	100	3667
5	Swifts Beach Parking Lot (East)	Parking Lot	37	100	100	100	3667
6	Cranberry Highway (Water St to Cohasset Narrows Bridge)	Road	73	33.1	56.5	75.3	3561
7	Sandwich Road (RR crossing to Mayflower Ave)	Road	53	66.5	66.9	73.3	3561
8	Train Station Parking Lot Restrooms	Admin	47	50	100	100	3500
9	Tremont Nail - Freight Building	Historical	40	100	100	100	4000
10	Onset Avenue (Storer St to Wareham Ave)	Road	60	38.4	62.9	75.2	3187
11	Onset Avenue (Wareham Ave to 10th St)	Road	57	34.9	59.6	74.9	2851
12	12th Street Boat Ramp Parking Lot	Parking Lot	37	50	100	100	2750
13	Little Harbor Beach Parking Lot	Parking Lot	37	50	100	100	2750
14	Shell Point Parking Lot	Parking Lot	37	50	100	100	2750
15	Swifts Beach Basketball Court	Rec	27	100	100	100	2667
16	Harbormaster Building & Restrooms	Marine	70	20	25	100	2625
17	Onset Heights Pump Station	Sewer	57	20	50	100	2550
18	Riverside Pump Station	Sewer	57	20	50	100	2550
19	Onset Pier	Marine	57	20	50	100	2550
20	Sandwich Road (RR Crossing to Main St)	Road	57	29.9	49.7	74.4	2535

*Where only a segment of a particular road is considered, the beginning and end of the road segment is indicated.

Table 3-10. Top 20 ranked assets* vulnerable to flooding, ranked by present day risk score.

Rank	Asset Name	Asset Type	Consequence Score	Present Probability (%)	Present Day Risk Score
1	Besse Park Parking Lot	Parking Lot	37	100	3667
2	Swifts Beach Parking Lot (West)	Parking Lot	37	100	3667
3	Swifts Beach Parking Lot (East)	Parking Lot	37	100	3667
4	Onset Avenue (Back St to Topeka Ave)	Road	63	52.7	3338
5	Tremont Nail - Freight Building	Historical	33	100	3300
6	Sandwich Road (RR Crossing to Mayflower Ave)	Road	53	57.5	3067
7	Swifts Beach Basketball Court	Recreation	27	100	2667
8	Cranberry Highway (Water St to Cohasset Narrows Bridge)	Road	73	33.1	2427
9	Train Station Parking Lot Restrooms	Admin	47	50	2333
10	Tremont Nail - Shed	Historical	23	100	2333
11	Onset Avenue (Storer St to Wareham Ave)	Road	60	38.4	2304
12	Onset Avenue (Wareham Ave to Tenth St)	Road	57	34.9	1978
13	12th Street Boat Ramp Parking Lot	Parking Lot	37	50	1833
14	Little Harbor Beach Parking Lot	Parking Lot	37	50	1833
15	Shell Point Parking Lot	Parking Lot	37	50	1833
16	Narrows Road	Road	60	30	1800
17	Arnold Pump Station	Sewer	57	30	1700
18	Sandwich Road (RR Crossing to Main St)	Road	57	29.9	1694
19	Main Street (Center St to Sandwich Rd)	Road	60	26.5	1590
20	Hynes Baseball Field	Rec	30	50	1500

*Where only a segment of a particular road is considered, the beginning and end of the road segment is indicated.

Table 3-11. Top 20 ranked assets* vulnerable to flooding, ranked by 2030 risk score.

Rank	Asset Name	Asset Type	Consequence Score	2030 Probability (%)	2030 Risk Score
1	Arnold Pump Station	Sewer	57	100	5667
2	Train Station Parking Lot Restrooms	Admin	47	100	4667
3	Onset Avenue (Back St to Topeka Ave)	Road	63	70.1	4440
4	Cranberry Highway (Water St to the Cohasset Narrows Bridge)	Road	73	56.5	4143
5	Tremont Nail - Nail Factory	Historical	40	100	4000
6	Sandwich Road (Charge Pond Rd to Cabral Way)	Road	53	70.9	3781
7	Onset Avenue (Storer St to Wareham Ave)	Road	60	62.9	3774
8	Besse Park Parking Lot	Parking Lot	37	100	3667
9	Swifts Beach Parking Lot (West)	Parking Lot	37	100	3667
10	Swifts Beach Parking Lot (East)	Parking Lot	37	100	3667
11	12th Street Boat Ramp Parking Lot	Parking Lot	37	100	3667
12	Little Harbor Beach Parking Lot	Parking Lot	37	100	3667
13	Shell Point Parking Lot	Parking Lot	37	100	3667
14	Onset Avenue (Wareham Ave to Tenth St)	Road	57	59.6	3377
15	Tremont Nail - Freight Building	Historical	33	100	3333
16	Hynes Baseball Field	Recreation	30	100	3000
17	Onset Heights Pump Station	Sewer	57	50	2833
18	Riverside Pump Station	Sewer	57	50	2833
19	Onset Pier	Marine	57	50	2833
20	Sandwich Road (RR Crossing to Main St)	Road	57	49.7	2816

*Where only a segment of a particular road is considered, the beginning and end of the road segment is indicated.

Table 3-12. Top 20 ranked assets vulnerable to flooding, ranked by 2070 risk score.

Rank	Asset Name	Asset Type	Consequence Score	2070 Probability (%)	2070 Risk Score
1	Harbormaster Building & Restrooms	Marine	70	100	7000
2	East Boulevard Ejector	Sewer	60	100	6000
3	Arnold Pump Station	Sewer	57	100	5667
4	Onset Heights Pump Station	Sewer	57	100	5667
5	Riverside Pump Station	Sewer	57	100	5667
6	Onset Pier	Marine	57	100	5667
7	Avenue A Street Pump Station	Sewer	57	100	5667
8	Leonard Pump Station	Sewer	57	100	5667
9	Briarwood Beach Pump Station	Sewer	57	100	5667
10	Indian Neck Pump Station	Sewer	57	100	5667
11	Cranberry Highway (Water St to the Cohasset Narrows Bridge)	Road	73	75.3	5522
12	Cranberry Highway (Bryant St to Water Street)	Road	73	72.2	5295
13	Cranberry Highway (Sean Cir to Main Ave)	Road	73	69.9	5126
14	Onset Avenue (Osborne Ave to Barlow Ave)	Road	63	76.2	4826
15	Cranberry Highway (Cardis to Water Wizz)	Road	73	65.2	4781
16	Train Station Parking Lot Restrooms	Admin	47	100	4667
17	Onset Avenue (Topeka Ave to Wareham Ave)	Road	60	75.2	4512
18	Narrows Road	Road	60	74.5	4470
19	Main Street (Center St to Sandwich Rd)	Road	60	74.4	4464
20	Sandwich Road (RR Crossing to Mayflower Ave)	Road	53	83.7	4464

*Where only a segment of a particular road is considered, the beginning and end of the road segment is indicated.

3.3.2 Natural Resources

In addition to the built assets evaluated above, impacts to natural resources, including beaches, salt marshes and other coastal wetlands, were assessed on a semi-quantitative basis. Woods Hole Group utilized the SLAMM results developed for the Massachusetts Office of Coastal Zone Management (CZM) to model the effects of sea-level rise on coastal wetlands and natural resources. Final model results for the 2030 and 2070 out years for the "High" SLR projection for the Town of Wareham are described below.

Natural coastal resources provide numerous valuable ecosystem services, from fisheries habitat, to carbon sequestration and storm damage protection. They are also an important component of the identity of the Town of Wareham and a significant driver for the local tourism industry. However, they are also vulnerable to climate change impacts like sea level rise.

3.3.2.1 *Town-wide summary*

SLAMM results were produced for the entire Town. Maps of the town-wide SLAMM wetland categories for present day, as well as the 2030 and 2070 projected wetland areas, are provided in Appendix D. Town-wide areas of each type of wetland classification are summarized in Table 3-13.

One of the major habitat changes that is projected to occur between present day and 2070 is an overall loss of salt marsh. Figure 3-2 shows the combined areas of both irregularly flooded salt marsh (i.e., high marsh) and regularly flooded salt marsh (i.e., low marsh) in present day, 2030 and 2070. In present day, the combined total area for high and low salt marsh areas in Wareham is 870 acres. By 2030, although the overall salt marsh acreage has only decreased by 9 acres, there is beginning to be a shift in the percentage of high and low marsh; this is due to high marsh converting to low marsh as sea-level rises. By 2070, a significant overall loss of salt marsh area is expected, with the combined area of both high and low salt marsh predicted to cover only 332 acres.

Another major trend to note is the change in total area of combined open water habitats and combined wetland habitats (Figure 3-3), as well as the associated change that this infers on the total upland area. Between present day and 2070 the combined open water areas in the Town of Wareham are expected to increase from 3,685 to 3,979 acres. This increase of 294 acres of open water, in addition to an increase in wetland area by 201 acres, combines to result in a loss of almost 500 acres of upland by 2070.

Table 3-13. Summary SLAMM results for wetland areas town-wide.

	Area (acres)		
	Present Day	2030	2070
Upland	14,907.2	14,887.8	14,412.0
Nontidal Swamp	1,815.4	1,815.1	1,785.1
Inland Fresh Marsh	170.8	168.2	148.5
Tidal Fresh Marsh	15.8	14.2	6.9
Transitional Marsh/Scrub-Shrub	-	7.4	149.8
Regularly Flooded Marsh	39.1	104.8	261.5
Estuarine Beach/Tidal Flat	101.2	138.3	756.7
Ocean Beach	158.2	151.3	263.1
Ocean Flat	40.4	21.3	1.9
Inland Open Water	1,117.7	1,117.0	1,109.2
Estuarine Open Water	1,106.2	1,090.7	1,288.5
Open Ocean	1,461.0	1,494.1	1,581.3
Irregularly Flooded Marsh	830.3	755.7	70.4
Tidal Swamp	108.6	105.9	36.7

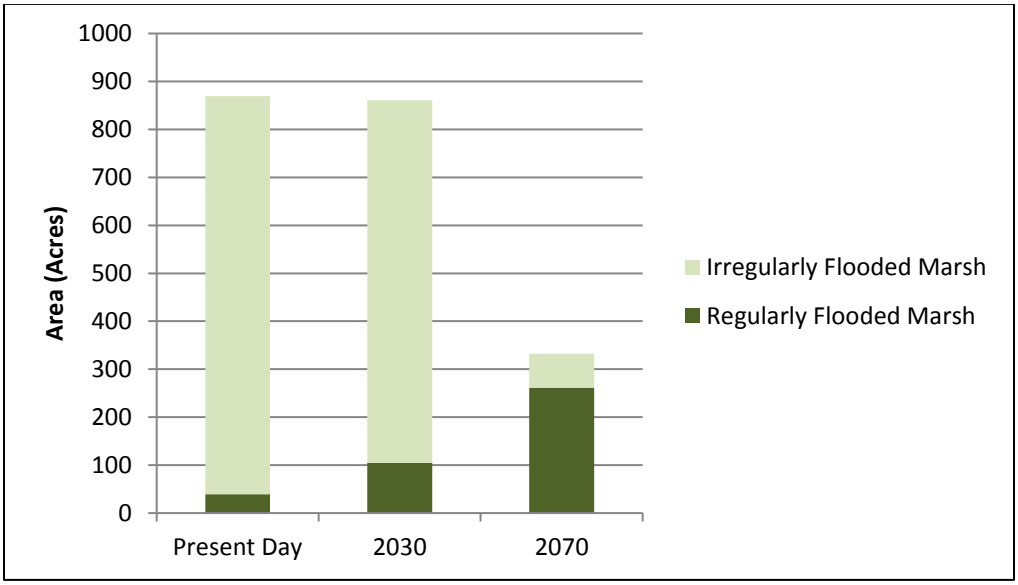


Figure 3-2. Summary of town-wide salt marsh area changes over time.

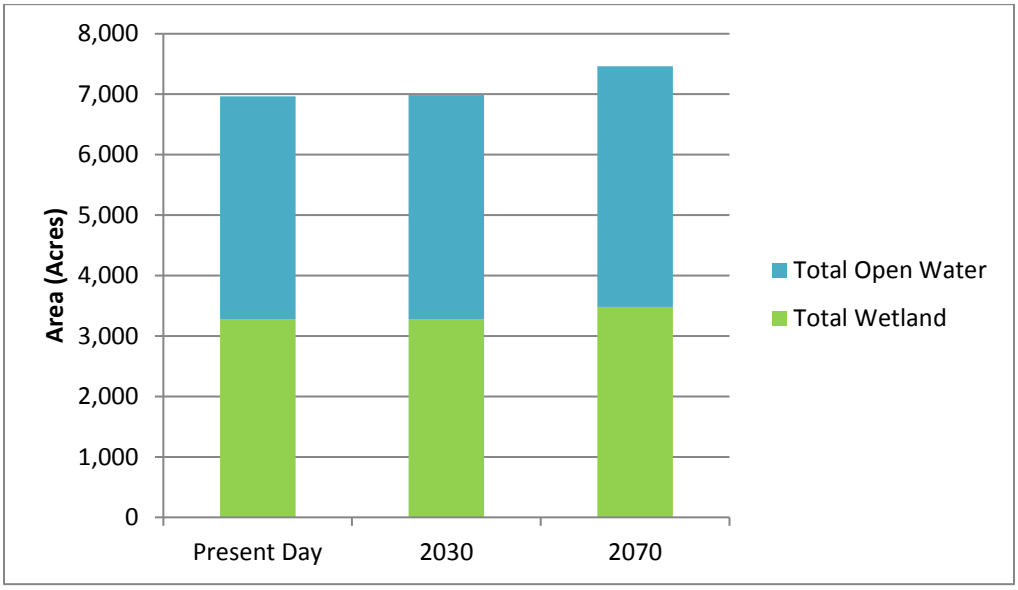


Figure 3-3. Summary town-wide open water and wetland area changes over time.

These trends indicate a lack of long-term resilience in Wareham's salt marsh systems and an inability to keep pace with sea level rise, as is the case for many communities throughout Massachusetts (where trends are a general conversion to low marsh by 2030 and tidal flat or open water by 2070). Additionally, the topography in Wareham is such that there is very little low-lying land around the periphery of existing salt marshes, affecting their ability to migrate inland with the rising tide. Salt marshes provide a natural sponge to buffer inland areas from storm surge, and act as a natural break, absorbing wave energy. Conversion of low marsh areas to tidal flats and open water would result not only in a reduced capacity for Wareham's salt marsh systems to protect inland areas, but also in an overall loss of salt marsh habitat for the Town.

Therefore, it will be important for the Town to support salt marsh migration where possible by removing barriers and limiting development in potential migration areas. Additionally, any actions to further increase salt marsh resilience and stem the conversion from high marsh to low marsh (and, eventually, to tidal flat or open water) will preserve important marsh ecosystem services, such as coastal flood protection, into the future. On the other hand, it is notable that a Town-wide loss of 500 acres of upland may also have significant environmental, social, and/or economic impacts depending on the nature and disposition of the upland converted to wetland area.

3.3.2.2 Area-specific results

Although it is useful to look at town-wide projected changes, in order to better observe the finer details in wetland area changes and be able to quantify those changes in areas of specific concern, results were also evaluated within 14 different areas of interest throughout Town. These areas included all public beaches:

- Briarwood Beach
- Little Harbor Beach
- Minot Forest Beach
- Onset Beach
- Point Independence Beach
- Shell Point Beach
- Swifts Beach

Major estuaries and large areas of salt marsh were also identified as areas likely to experience significant changes. The additional areas that were considered as part of this study include:

- Broad Cove
- Broad Marsh
- Cromesett
- Little Harbor
- Muddy Cove
- Sunset Cove
- Wareham River
- Weweantic River

In many cases, a public beach and major estuary or salt marsh area were co-located and are considered within the same evaluation area. In this way, the 15 natural resource areas listed above were combined into 9 evaluation areas (Figure 3-4). Map-based results, as well as area summary tables, are presented for each evaluation area in Appendix D.

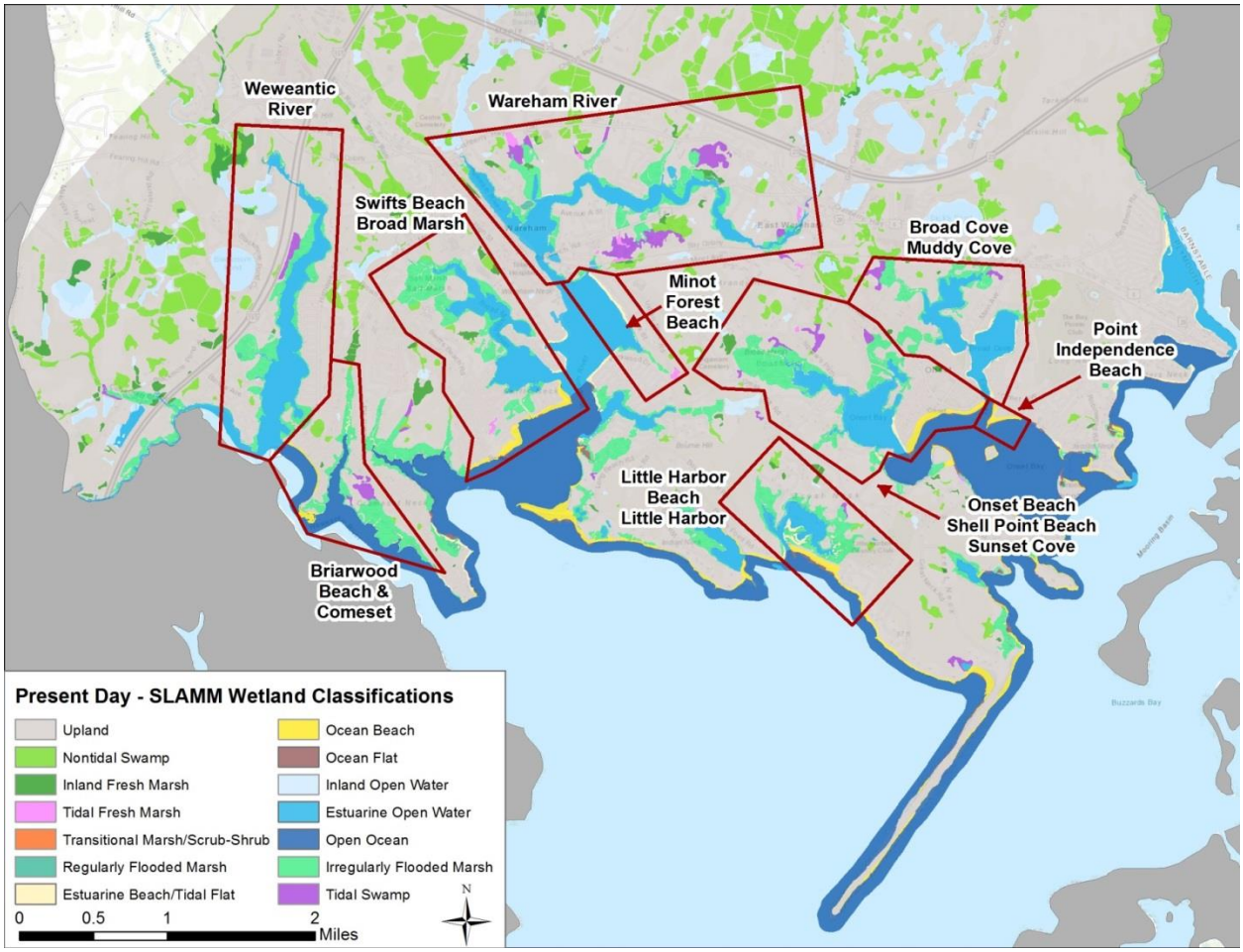


Figure 3-4. Area-specific natural resources evaluation areas.

3.3.3 Neighborhood results

As part of this assessment, flooding impacts to residential neighborhoods were also evaluated. This was accomplished by evaluating the developed residential parcels throughout the entire Town on a neighborhood-by-neighborhood level. Neighborhood delineations used for the evaluation are shown in Figure 3-5. This section summarizes the risk to the developed residential parcels within each of the 24 neighborhoods (i.e., the number of parcels within each neighborhood that was assigned a particular percent risk was determined by selecting probability of inundation at the centroid of each developed residential parcel).

The results of this analysis are summarized in two ways: quantitatively in Tables 3-14 through 3-16 below and visually in neighborhood-specific maps included in Appendix E. Tables 3-14 through 3-16 show both the number and percent of developed residential parcels within each neighborhood that have a particular level of risk. Note that the numbers of parcels listed under each inundation risk are discrete counts. For example, if a parcel has a 60% risk of inundation, it is counted in the 100 to 50% Inundation Risk column. That parcel is not also counted in the 50 to 25% Inundation Risk column, even though it would also be vulnerable to flooding during this larger storm event. In other words, to calculate the total number of parcels at risk to water levels up to the 25% event, you would need to sum the counts from both the 100 to 50% and the 50 to 25% Inundation Risk columns. This quantified risk to each neighborhood is presented for present day, 2030, and 2070.

A number of overall key findings from this analysis include:

- There are five (5) neighborhoods (Maple Springs, Onset Well Fields, Spectacle Pond, Tihonet, and White Island) that do not have any developed residential parcels at risk of inundation through 2070, as these neighborhoods are located the farthest from the coast and at the highest elevations.
- The neighborhood of Onset has the highest number of developed residential parcels within the highest risk level for inundation (100% to 50% probability) for all three time frames evaluated, with 77 parcels falling into this category in present day, 160 in 2030 and 364 in 2070.
- Although it does not have the highest number of parcels at risk, the neighborhood of Briarwood has the highest percentage of developed residential parcels within the highest risk level for inundation (100% to 50% probability) for all three time frames evaluated, with 21% of parcels falling into this category in present day, 35% in 2030 and 86% in 2070. In fact, by 2070, all developed residential parcels within the Briarwood neighborhood have a greater than 10% chance of inundation in any given year.

To better evaluate neighborhood by neighborhood impacts of flooding, please refer to the neighborhood-specific risk maps included in Appendix E.

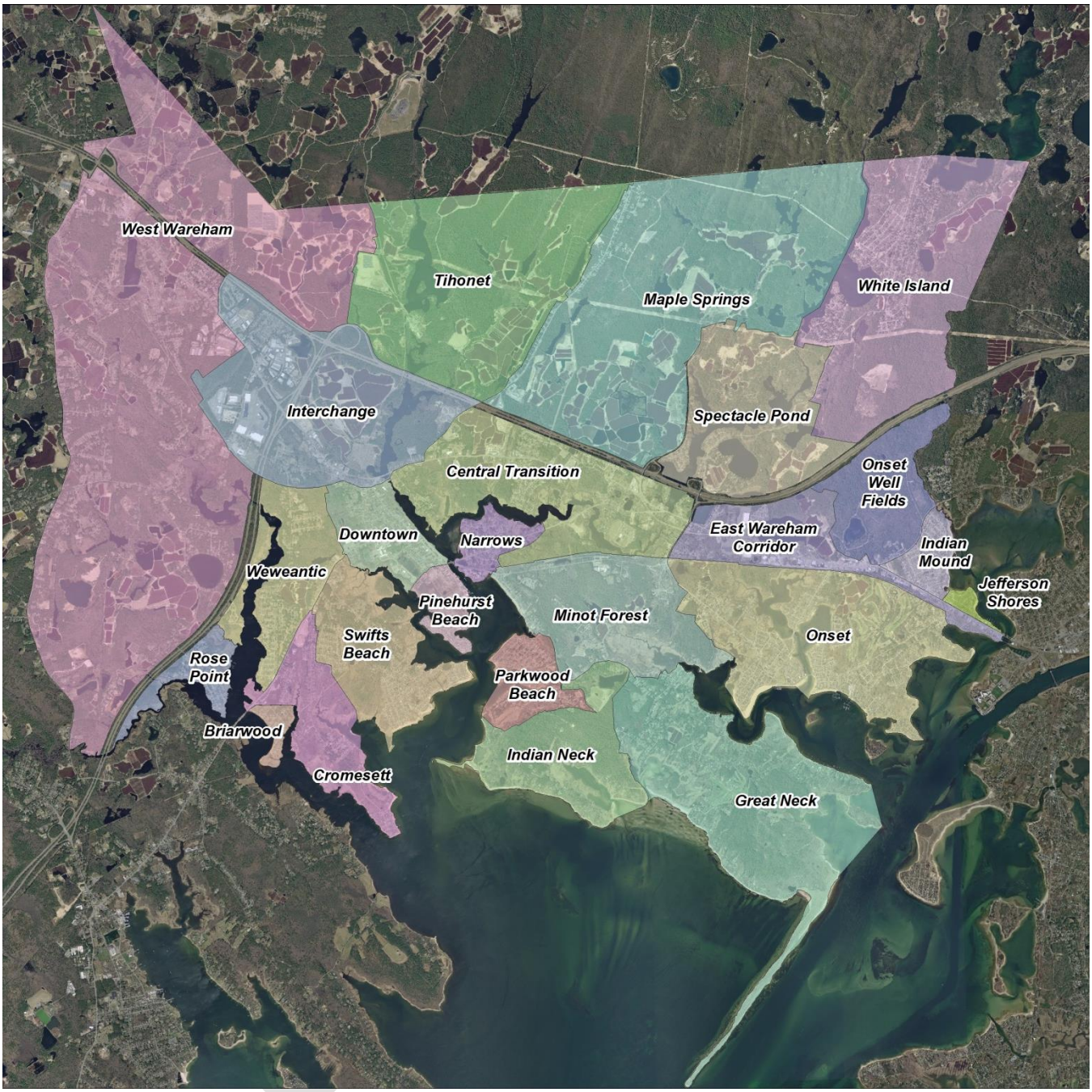


Figure 3-5. Wareham neighborhood delineations to be used for the residential evaluation.

Table 3-14. Results for developed residential parcels at risk from coastal flooding – present day.

Neighborhood Name	Total Parcels in Neighborhood	Number and Percent of Developed Residential Parcels at Risk of Inundation – Present Day													
		100 to 50% Inundation Risk		50 to 25% Inundation Risk		25 to 10% Inundation Risk		10 to 5% Inundation Risk		5 to 1% Inundation Risk		< 1% Inundation Risk		Dry	
		#	%	#	%	#	%	#	%	#	%	#	%	#	%
Briarwood	134	28	21%	31	23%	37	28%	17	13%	18	13%	3	2%	0	0%
Central Transition	554	7	1%	59	11%	15	3%	10	2%	19	3%	32	6%	412	74%
Cromesett	285	7	2%	14	5%	25	9%	14	5%	58	20%	93	33%	74	26%
Downtown	296	1	0%	0	0%	0	0%	2	1%	6	2%	17	6%	270	91%
East Wareham Corridor	104	0	0%	0	0%	3	3%	3	3%	8	8%	9	9%	81	78%
Great Neck	482	21	4%	35	7%	47	10%	23	5%	42	9%	56	12%	258	54%
Indian Neck	68	6	9%	4	6%	5	7%	0	0%	10	15%	9	13%	34	50%
Indian Mound	479	0	0%	1	0%	3	1%	2	0%	7	1%	6	1%	460	96%
Interchange	112	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	112	100%
Jefferson Shores	71	0	0%	4	6%	5	7%	1	1%	5	7%	14	20%	42	59%
Maple Springs	118	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	118	100%
Minot Forest	275	1	0%	10	4%	13	5%	8	3%	20	7%	29	11%	194	71%
Narrows	161	2	1%	5	3%	5	3%	8	5%	18	11%	27	17%	96	60%
Onset	2042	77	4%	113	6%	112	5%	99	5%	144	7%	211	10%	1286	63%
Onset Well Fields	17	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	17	100%
Parkwood Beach	436	4	1%	30	7%	29	7%	25	6%	44	10%	59	14%	245	56%
Pinehurst Beach	405	4	1%	43	11%	50	12%	134	33%	46	11%	52	13%	76	19%
Rose Point	220	11	5%	25	11%	37	17%	16	7%	29	13%	20	9%	82	37%
Spectacle Pond	323	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	323	100%
Swifts Beach	1287	35	3%	88	7%	132	10%	71	6%	143	11%	497	39%	321	25%
Tihonet	29	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	29	100%
West Wareham	1067	6	1%	1	0%	1	0%	0	0%	2	0%	12	1%	1045	98%
Weweantic	392	8	2%	12	3%	11	3%	8	2%	30	8%	63	16%	260	66%
White Island	1010	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1010	100%

Table 3-15. Results for developed residential parcels at risk from coastal flooding – 2030.

Neighborhood Name	Total Parcels in Neighborhood	Number and Percent of Developed Residential Parcels at Risk of Inundation – 2030													
		100 to 50% Inundation Risk		50 to 25% Inundation Risk		25 to 10% Inundation Risk		10 to 5% Inundation Risk		5 to 1% Inundation Risk		< 1% Inundation Risk		Dry	
		#	%	#	%	#	%	#	%	#	%	#	%	#	%
Briarwood	134	47	35%	45	34%	26	19%	9	7%	7	5%	0	0%	0	0%
Central Transition	554	13	2%	67	12%	14	3%	9	2%	23	4%	32	6%	396	71%
Cromesett	285	12	4%	29	10%	32	11%	28	10%	76	27%	61	21%	47	16%
Downtown	296	1	0%	0	0%	2	1%	1	0%	18	6%	10	3%	264	89%
East Wareham Corridor	104	0	0%	2	2%	4	4%	3	3%	7	7%	12	12%	76	73%
Great Neck	482	36	7%	42	9%	55	11%	14	3%	51	11%	57	12%	227	47%
Indian Neck	68	8	12%	3	4%	4	6%	3	4%	11	16%	7	10%	32	47%
Indian Mound	479	0	0%	2	0%	4	1%	3	1%	5	1%	9	2%	456	95%
Interchange	112	0	0%	0	0%	0	0%	0	0%	0	0%	3	3%	109	97%
Jefferson Shores	71	2	3%	4	6%	4	6%	0	0%	12	17%	7	10%	42	59%
Maple Springs	118	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	118	100%
Minot Forest	275	4	1%	13	5%	14	5%	13	5%	19	7%	28	10%	184	67%
Narrows	161	5	3%	8	5%	9	6%	13	8%	12	7%	26	16%	88	55%
Onset	2042	160	8%	122	6%	145	7%	77	4%	169	8%	184	9%	1185	58%
Onset Well Fields	17	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	17	100%
Parkwood Beach	436	11	3%	35	8%	40	9%	23	5%	49	11%	63	14%	215	49%
Pinehurst Beach	405	21	5%	56	14%	154	38%	23	6%	51	13%	34	8%	66	16%
Rose Point	220	23	10%	35	16%	36	16%	16	7%	16	7%	22	10%	72	33%
Spectacle Pond	323	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	323	100%
Swifts Beach	1287	94	7%	118	9%	121	9%	83	6%	273	21%	519	40%	79	6%
Tihonet	29	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	29	100%
West Wareham	1067	7	1%	1	0%	0	0%	2	0%	5	0%	15	1%	1037	97%
Weweantic	392	14	4%	9	2%	18	5%	14	4%	35	9%	88	22%	214	55%
White Island	1010	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1010	100%

Table 3-16. Results for developed residential parcels at risk from coastal flooding – 2070.

Neighborhood Name	Total Parcels in Neighborhood	Number and Percent of Developed Residential Parcels at Risk of Inundation – 2070													
		100 to 50% Inundation Risk		50 to 25% Inundation Risk		25 to 10% Inundation Risk		10 to 5% Inundation Risk		5 to 1% Inundation Risk		< 1% Inundation Risk		Dry	
		#	%	#	%	#	%	#	%	#	%	#	%	#	%
Briarwood	134	115	86%	16	12%	3	2%	0	0%	0	0%	0	0%	0	0%
Central Transition	554	85	15%	28	5%	25	5%	14	3%	34	6%	65	12%	303	55%
Cromesett	285	63	22%	58	20%	79	28%	26	9%	41	14%	15	5%	3	1%
Downtown	296	3	1%	12	4%	9	3%	5	2%	18	6%	22	7%	227	77%
East Wareham Corridor	104	2	2%	10	10%	7	7%	6	6%	20	19%	26	25%	33	32%
Great Neck	482	93	19%	52	11%	56	12%	25	5%	63	13%	70	15%	123	26%
Indian Neck	68	10	15%	13	19%	7	10%	3	4%	4	6%	6	9%	25	37%
Indian Mound	479	1	0%	5	1%	7	1%	4	1%	10	2%	13	3%	439	92%
Interchange	112	0	0%	0	0%	0	0%	0	0%	8	7%	1	1%	103	92%
Jefferson Shores	71	5	7%	7	10%	9	13%	4	6%	7	10%	6	8%	33	46%
Maple Springs	118	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	118	100%
Minot Forest	275	16	6%	25	9%	27	10%	15	5%	27	10%	34	12%	131	48%
Narrows	161	22	14%	17	11%	25	16%	7	4%	19	12%	11	7%	60	37%
Onset	2042	364	18%	159	8%	177	9%	96	5%	153	7%	238	12%	855	42%
Onset Well Fields	17	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	17	100%
Parkwood Beach	436	52	12%	54	12%	63	14%	26	6%	113	26%	88	20%	40	9%
Pinehurst Beach	405	187	46%	73	18%	56	14%	17	4%	15	4%	13	3%	44	11%
Rose Point	220	73	33%	36	16%	20	9%	9	4%	22	10%	13	6%	47	21%
Spectacle Pond	323	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	323	100%
Swifts Beach	1287	308	24%	185	14%	349	27%	245	19%	189	15%	11	1%	0	0%
Tihonet	29	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	29	100%
West Wareham	1067	8	1%	1	0%	9	1%	6	1%	13	1%	7	1%	1023	96%
Weweantic	392	27	7%	37	9%	37	9%	42	11%	116	30%	61	16%	72	18%
White Island	1010	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1010	100%

4. ADAPTATION STRATEGIES

4.1 INTRODUCTION

There are generally four types of adaptation strategies that may be applicable to adapt to the risks of flooding from sea level rise and storm surge. While in some cases they can be used alone, in other situations a combination of approaches may be most appropriate. The four adaptation strategies are:

- Avoid Risk,
- Accommodate (Adapt),
- Protect, and
- Retreat (Managed).

These types of strategies are conceptually illustrated and described in Figure 4-1, from CoastAdapt (NCCARF, 2019).

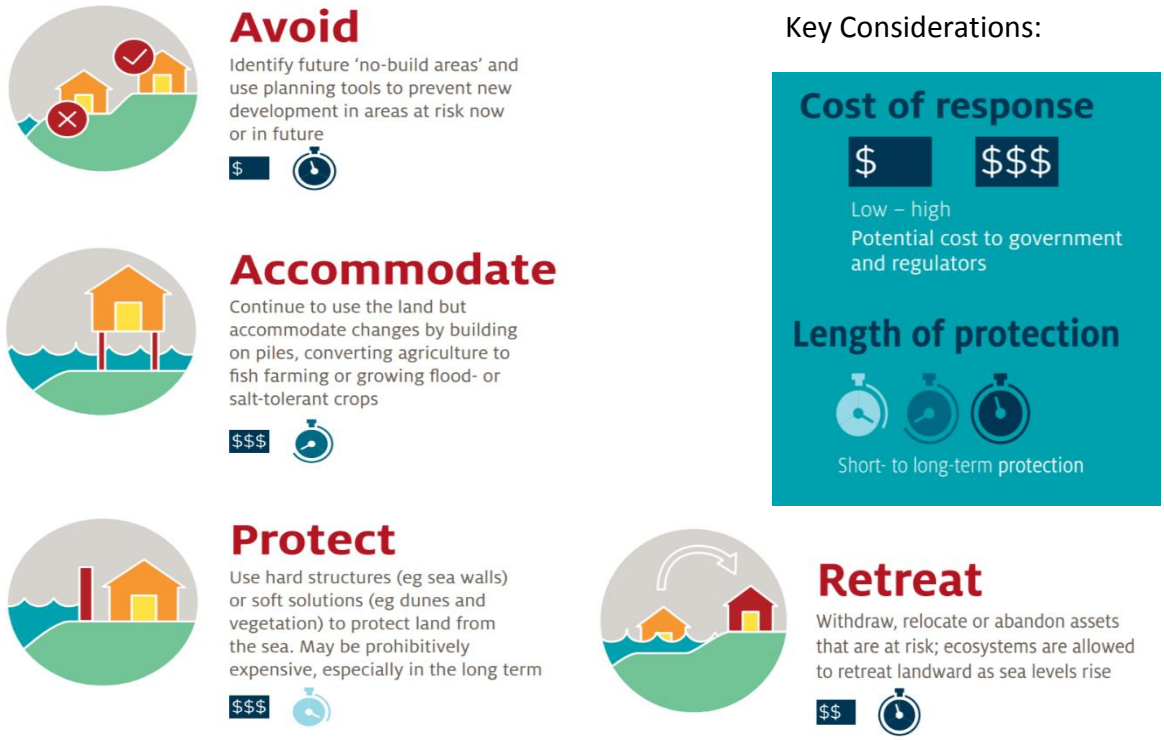


Figure 4-1. Conceptual illustrations of adaptation options (from NCCARF, 2019).

Avoid Risk: Avoidance strategies typically involve planning level activities to prohibit future development in areas subject to coastal hazards, such as sea level rise and storm surge impacts, or in areas where the current level of risk is low but with increase over time. This may involve identifying "no-build" areas and the adoption of bylaws or policies to limit development in these areas. Zoning is one possibility for accomplishing this goal. Locally, Chatham recently

adopted zoning bylaw designating "conservancy districts," which encompass all land within the 100-year floodplain. Within these conservancy districts, uses are divided into three categories: permitted uses, special permit uses, and prohibited uses, as seen in Figure 4-2. The goal of establishing this bylaw was to protect people, property, and resources from flood risks, by restricting or limiting certain uses in flood-prone areas.

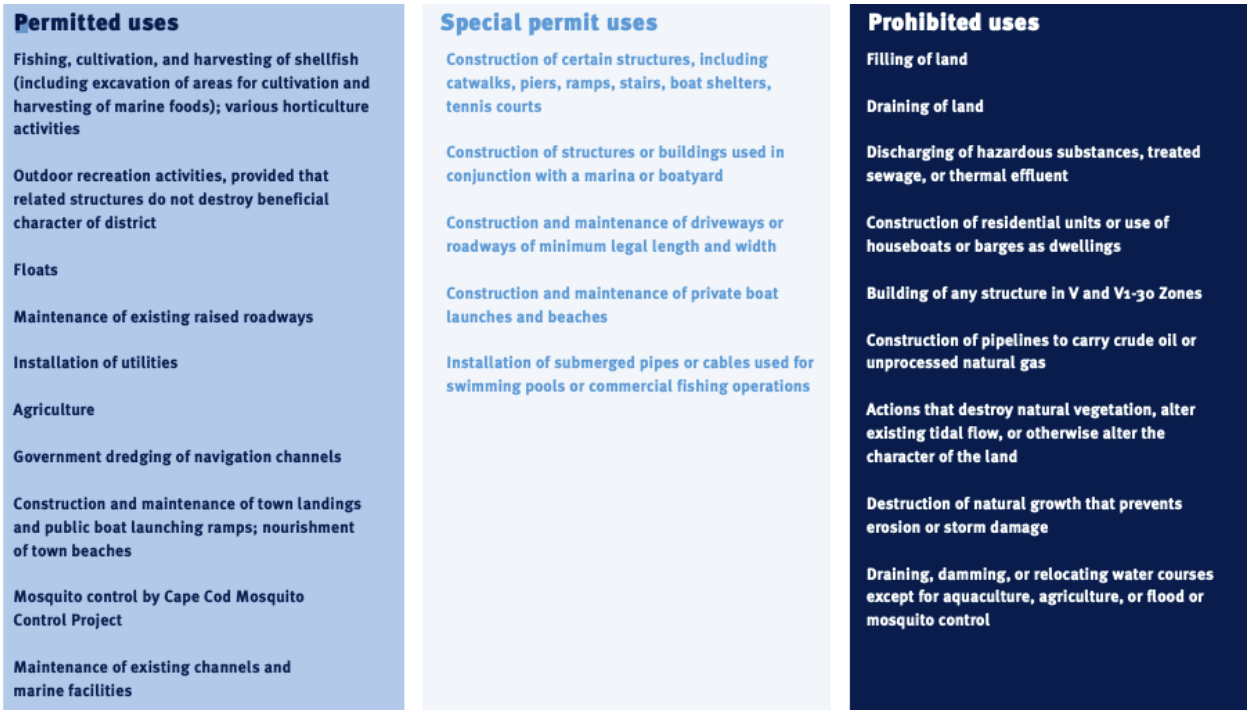


Figure 4-2. Chatham conservancy district uses.

Accommodate: Accommodate or adaptation strategies allow continued use of the land or assets within a higher risk area by implementing changes to human activities and/or the buildings and infrastructure to improve resiliency to occasional flooding. This strategy does not stop flood waters from reaching essential infrastructure, but takes action to minimize and control the damage that would be caused during such an event. Accommodation strategies may include physical, operational, or regulatory actions. Physical measures may include construction of artificial floodways to convey flood water away from roads or homes, raising new and existing structures above flood elevation, and retrofitting structures with floodproofing measures. Operational measures may include improved evacuation or emergency planning, additional training for first responders, or providing education and resources to residents and business owners in high risk areas. Finally, regulatory measures may include updates to the building code or zoning bylaws, or increasing setbacks.

Protect: Protect strategies utilize hard (e.g., revetments, seawalls, flood barriers) or soft (e.g., dune enhancement, living shorelines) solutions to protect upland infrastructure from damage due to flood impacts. In many cases, existing infrastructure will likely need to be raised

incrementally to continue providing adequate protection in the future, given projected sea level rise and increased storm intensity.

Retreat: Retreat strategies involve withdrawing, relocating or abandoning assets that are at risk. These strategies acknowledge that some areas may be too costly or technically infeasible to protect against sea level rise, flood impacts and storm surge. As hard infrastructure is relocated, previously developed areas along the coast can be restored to healthy ecosystems, which can provide valuable ecosystem services. Retreat strategies could also allow ecosystems, such as salt marshes, to migrate landward as sea level rises. Municipalities can implement retreat adaptation strategies through property buyouts, relocation of roads, utilities and other infrastructure, and implementation of new zoning or other regulations limiting new development or reconstruction.

4.2 Recommendations for Municipal Assets

For specific critical municipal infrastructure assets and buildings, it may be necessary or preferable to implement resilience strategies at the asset level to reduce the risk from flooding. Asset level strategies are especially needed for critical assets located in high flood risk areas that are either outside the scope of district flood protection strategies or that have not been selected for district flood protection strategies for technical, political, or financial reasons. Asset level adaptations are also preferable for very critical assets that cannot afford to wait until district solutions are implemented.

The highest risk municipal assets, according to their composite risk score ranking, are shown in Table 3-11. They are predominantly roads and sewer pump stations located in low-lying areas. However, there are also a significant number of other low-lying critical facilities, such as buildings and structures, parking lots, and recreational facilities with high composite risks scores (Tables 3-5 to 3-8). One characteristic that many of these assets share is that they are projected to flood annually by the 2070 timeframe, if climate change continues as projected. In the following sections, adaptation options are recommended for assets in each asset category, with additional guidance for decision makers and designers. Order-of-magnitude cost estimates, in 2019 dollars are provided, where possible, for long-term planning purposes. These costs are in no way meant to represent actual estimates of total project costs as no surveying, subsurface exploration, engineering design, permitting and escalation of costs was performed as part of this project, all of which are necessary to establish true project costs required to design and construct a project.

While the strategies presented below are not an exhaustive list of resiliency strategies that the Town should consider, the hope is that these adaptation strategies can be used as templates for developing solutions for similar assets throughout Town.

4.2.1 Buildings and Structures

There is a general suite of options for adaptations specific to buildings and structures. These strategies may be applied as needed to vulnerable facilities in the Town of Wareham, following further site-specific investigations and suitability analyses. These asset-specific strategies are

intended to reduce damages caused by flooding. These strategies range from major building modifications, such as elevating the structure, to interior modifications, such as moving internal equipment to a higher location in the building, that strive to protect individual, critical elements inside the asset from flood damages. These general building adaptation strategies include:

1. **Full Building Elevation**: If a building or structure has a high probability of flood inundation, consideration should be given to elevating the entire structure above the base flood elevation (BFE) to avoid critical damages from sea level rise, storm surge, and increased precipitation. Depending on the construction type and architectural style of the structure, it could be elevated onto stilts or pilings, which allow water to pass under the structure without causing structural damage to the building, or the structure can be elevated onto a solid concrete foundation. Any elevation project will require the installation of additional stairs or a ramp to access the new elevated entryway.

2. **Interior Elevation:** If a building or structure has a high probability of flood inundation, but full building elevation is not possible, consideration could instead be given to elevating just the first floor from the interior. This strategy is most appropriate for buildings constructed of a non-porous, flood-resistant material (e.g., masonry), where the most significant risk comes from flood water entering the structure through openings in the building (e.g., doorways, windows, etc.). This is a particularly attractive option when there is a strong desire to maintain the existing aesthetic of the building's exterior, such as with historic preservation sites. However, interior elevation only works if there is an adequate floor to floor height to accommodate the floor elevation.

3. **Dry Floodproofing**: Dry floodproofing involves using multiple strategies to ensure that no floodwater enters through the exterior of the building, the basement, or any of the buildings openings. This might involve installing deployable flood shields at any doors or windows below the BFE. Traditional flood shields require permanent hardware to be installed on the frame of the opening so that barriers can be easily deployed prior to a flood event. However, there are some 'light-footprint' site strategies, such as sandbags or Tiger Dam systems that can be deployed. While these systems cannot necessarily ensure that the structure itself is completely sealed from flooding, they can lessen the damages. Dry floodproofing can also involve sealing the existing exterior face of the building with an impervious coating that stops floodwaters from penetrating pre-existing porous materials.

4. **Wet Floodproofing**: Unlike dry floodproofing, wet floodproofing does not aim to stop water from entering a building or structure. Instead, it aims to reduce flood damages by allowing flood water to pass through the structure so that the forces of the water on the building's exterior do not cause significant damage to the structure itself. Because of this, wet floodproofing requires retrofitting the building's interior with 'floodable' materials and protecting mechanical and utility equipment so that these components will not suffer permanent damage when water passes through.

5. **Mechanical Systems**: Whenever possible, mechanical systems should be elevated above the base flood elevation (BFE). For low flood inundation probabilities, or if it is not feasible to relocate the mechanical system outside of the lower level, systems should be elevated on a platform to protect from subgrade flooding. Systems should always be anchored so as not to shift during a flood event, which could potentially damage other areas.

Site-Specific Building & Structure Adaptation Recommendations:

MC-FRM results indicate that the Arnold Pump Station is the most vulnerable municipal structure in the Town of Wareham. Four other sewer infrastructure assets fall within the top 10 municipal assets: Onset Heights Pump Station, Riverside Pump Station, Avenue A Street Pump Station, and the East Boulevard Ejector. All five of these sewer assets were selected for conceptual-level site adaptation planning. Other high-ranking building and structure assets, based on the composite risk score, include the Harbormaster Building & Restrooms (#4), and other Onset Pier structures (#15 and #18). Conceptual-level site adaptation recommendations are also provided for these locations.

Arnold Pump Station:

The sewer pump station located on Arnold Street in Rose Point has individual components situated in different locations. The station consists of a ground-level hatch (at an elevation of 6.8 feet NAVD88) covering a submersible pump, as well as multiple elevated components at the top of a small hill: the control panel and generator. These upper components are located on top of concrete foundation blocks, at an elevation of 13.9 feet (NAVD88). While the first point at which water could enter the generator housing is 11 inches above the concrete foundation (at an elevation of 14.8 feet NAVD88), water could enter the control panel housing at the level of the concrete foundation (13.9 feet, NAVD88). This pump station services 220 households (all of Rose Point), as it is also a collection point from both the French Street and Leonard Street Pump Stations. This study conservatively assumed that if water was above the wet well hatch (i.e., higher than 6.8 feet NAVD88), the equipment below would be flooded and damaged.

Figure 4-3. Arnold Pump Station.

The flood risk to this site can be considered in two different ways: 1) the potential for daily tidal inundation, and 2) the probability of periodic inundation during storms. Both types of flood risk are presented in Figure 4-4. With regards to the potential for daily tidal flooding, the lower elevation components of Arnold Pump Station site will be at risk from daily high tide flooding by 2070. However, because the other critical components of this asset are elevated on a small hill, daily tides won't impact the functioning of the upper equipment within the 2070 time frame. Access will, however, become more difficult since the road to the pump station will be inundated at high tides by 2050. When considering the probability of periodic inundation during storms, the lower elevation components (e.g., submersible pump) have a 30% probability in any given year of flooding during a storm event in present day, and a 100% probability in 2030 and 2070. The upper elevation components (e.g., control panel, generator) have a much lower probability of flooding. There is a 0.5% chance that storm inundation will impact these assets in present day conditions, and a 1% and 20% probability in any given year of flooding in 2030 and 2070, respectively.

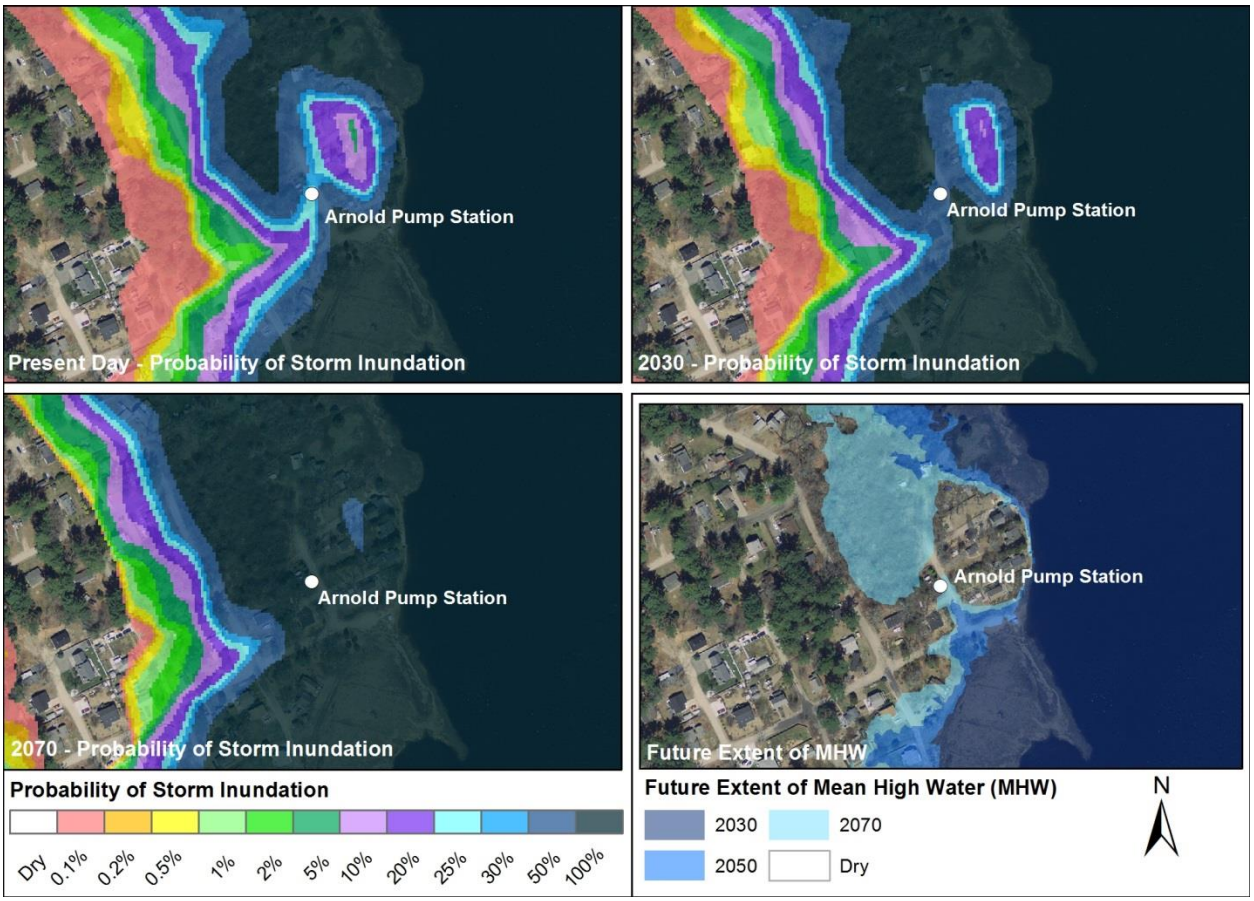


Figure 4-4. Present and future flood risk from storm inundation and daily tides for the Arnold Pump Station.

Recommendations:

- (Present) Properly dry floodproof lower hatch, if necessary. (Approximate cost = $600)
- (2030) Protect control panel and generator with flood wall or other water proof barrier. (Approximate cost = $340,000)
- (2050/2070) Consider access issues to this location, as the southern part of Arnold Street will start to experience daily tidal inundation by 2050.

<u>Onset Heights Pump Station:</u>

The Onset Heights Pump Station (Figure 4-5) is a submersible pump station that was constructed in 1996. This pump station also has multiple individual components situated at different elevations. The station consists of a ground-level hatch (at an elevation of 7.4 feet NAVD88) covering a submersible pump, as well as multiple elevated components at the top of a small hill: a control panel and a generator. Both of these higher elevation components rest on a concrete foundation that is at an elevation of 13.1 feet (NAVD88). While the first point at which water could enter the generator housing is 9.5 inches above the concreate foundation (at an

elevation of 13.9 feet NAVD88), water could enter the control panel housing at the level of the concrete foundation (13.1 feet, NAVD88). This pump station services 89 households. This study conservatively assumed that if water was above the wet well hatch (i.e., higher than 7.4 feet NAVD88), the equipment below would be flooded and damaged.

Figure 4-5. Onset Heights Pump Station.

The flood risk to this site can be considered in two different ways: 1) the potential for daily tidal inundation, and 2) the probability of periodic inundation during storms. Both types of flood risk are presented in Figure 4-6. With regards to the potential for daily tidal flooding, all components of the Onset Height Pump Stations are outside of the area likely to experience daily tidal inundation by 2070. However, access to this station, as well as the northeastern portion of this neighborhood, will become more difficult since Cove Street will be inundated at high tides by 2070. When considering the probability of periodic inundation during storms, the lower elevation components have a 20% probability in any given year of flooding during a storm event in present day, and a 50% and 100% probability in 2030 and 2070, respectively. The upper elevation components (e.g., control panel, generator) have a much lower probability of flooding. There is a 0.5% chance that storm inundation will impact these assets in present day conditions, and a 1% and 20% probability in any given year of flooding in 2030 and 2070.

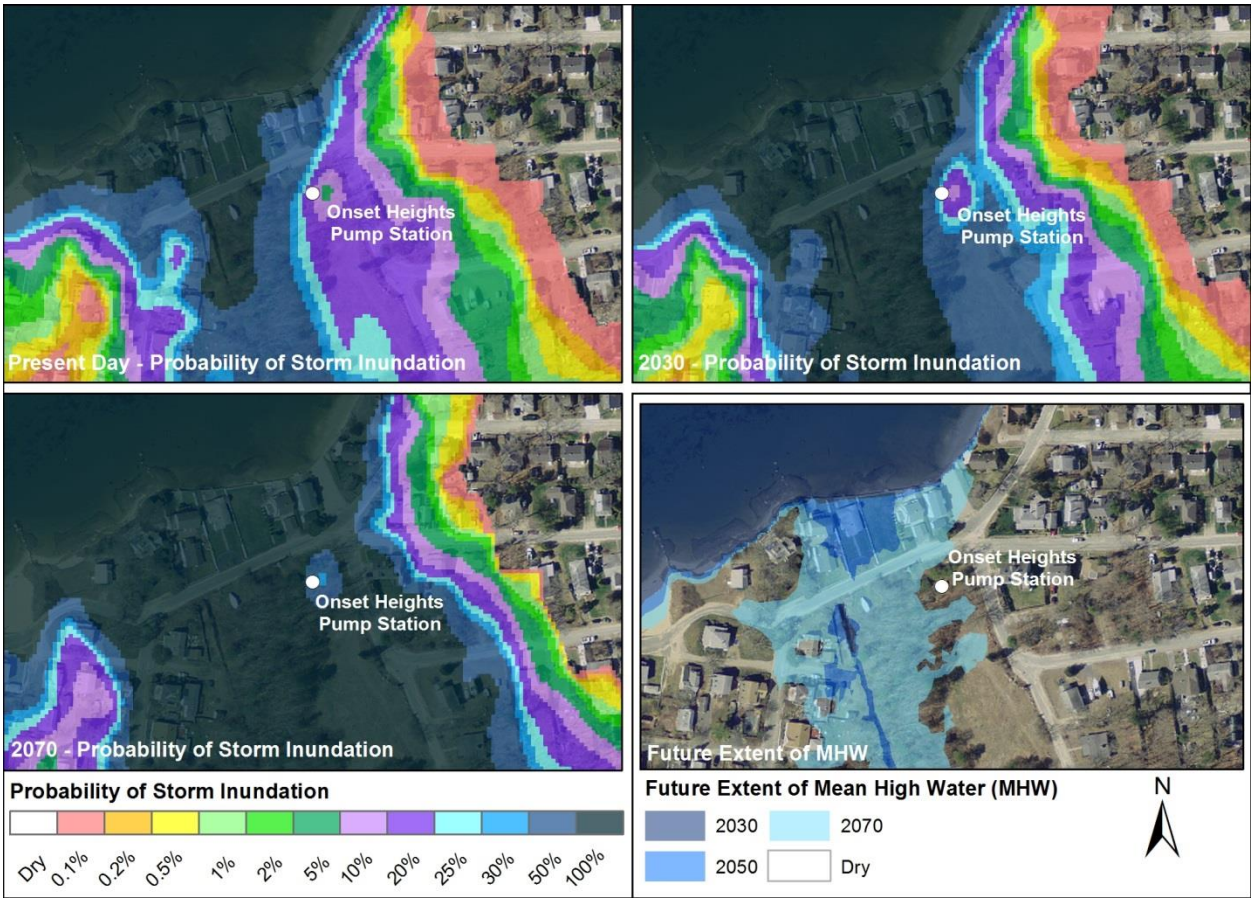


Figure 4-6. Present and future flood risk from storm inundation and daily tides for the Onset Heights Pump Station.

Recommendations:

- (Present) Properly dry floodproof lower hatch, if necessary. (Approximate cost = $600)
- (2030) Protect control panel and generator with flood wall or other water proof barrier. (Approximate cost = $295,000)
- (2050/2070) Consider access issues to this location, as Cove Street will start to experience daily tidal inundation by 2070. Approximately 400 linear feet of roadway may need to be elevated (Approximate cost = $280,000), not only to ensure access to the pump station, but to continue to provide reliable access to the residential properties that rely on this road as a sole means of access.

Riverside Pump Station:

The Riverside Pump Station (Figure 4-7) is a submersible pump station that was constructed in 1996. This pump station also has a control panel and generator that are located at a higher elevation farther north along Riverside Road. There is a ground-level hatch, at an elevation of 7.3 feet NAVD88, covering the submersible pump. Both the control panel and generator are

situated on a concrete pad that is at elevation 28.2 feet (NAVD88). This pump station services 81 households. This study conservatively assumed that if water was above the submersible pump hatch (i.e., higher than 7.3 feet NAVD88), the system below would be flooded and damaged.

The flood risk to this site can be considered in two different ways: 1) the potential for daily tidal inundation, and 2) the probability of periodic inundation during storms. Both types of flood risk are presented in Figure 4-8. With regards to the potential for daily tidal flooding, the hatch to the Riverside Pump Station submersible pump is right at the boundary of the area expected to experience daily high tide flooding by 2070. In addition, access to this station will become more difficult since a portion of Riverside Drive will be inundated at high tides by 2070. Access to the pump station, as well as to the northern part of this neighborhood may need to be rerouted through 20th Street. When considering the probability of periodic inundation during storms, the lower elevation components have a 20% probability in any given year of flooding during a storm event in present day, and a 50% and 100% probability in 2030 and 2070, respectively. The control panel and generator located at a higher elevation have no chance of storm inundation through the year 2070.

Figure 4-7. Riverside Pump Station.

Recommendations:

- (Present) Properly dry floodproof lower hatch, if necessary. (Approximate cost = $600)

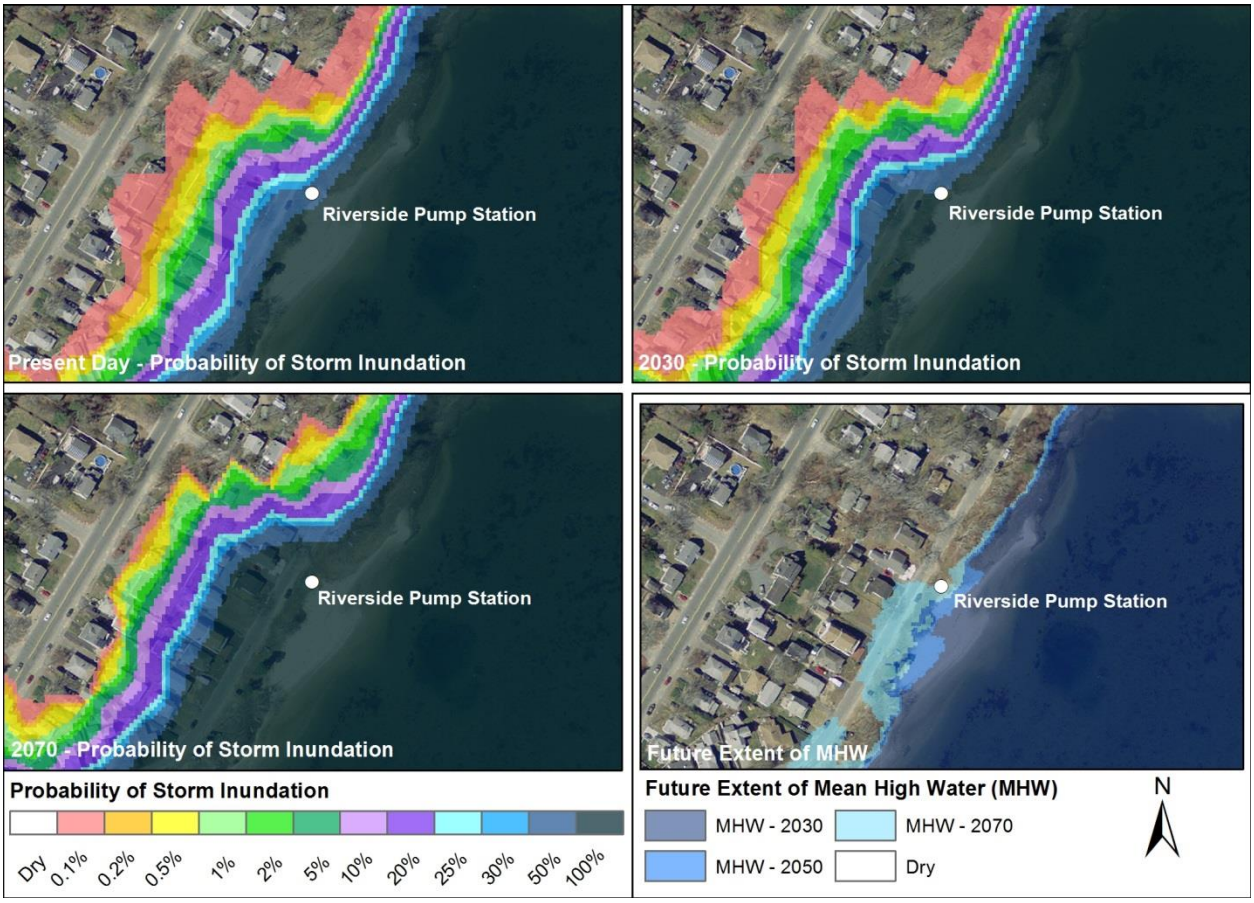


Figure 4-8. Present and future flood risk from storm inundation and daily tides for the Riverside Pump Station.

Avenue A Pump Station:

The Avenue A Pump Station (Figure 4-9) is a submersible pump station that was constructed in 2011. This pump station also has multiple individual components situated at different elevations. The station consists of a ground-level hatch (at an elevation of 7.1 feet NAVD88) covering a submersible pump, as well as multiple elevated components at the top of a small hill: a control panel and a generator, which are situated on top of concrete foundations at an elevation of 15.0 feet (NAVD88). While the first point at which water could enter the generator housing is 7.5 inches above the concreate foundation (at an elevation of 15.6 feet NAVD88), water could enter the control panel housing at the level of the concrete foundation (15.0 feet, NAVD88). This pump station (along with the Apple Street Pump Station) services 84 households. This study conservatively assumed that if water was above the submersible pump hatch (i.e., higher than 7.1 feet NAVD88), the system would be flooded and damaged.

Figure 4-9. Avenue A Pump Station.

The flood risk to this site can be considered in two different ways: 1) the potential for daily tidal inundation, and 2) the probability of periodic inundation during storms. Both types of flood risk are presented in Figure 4-10. With regards to the potential for daily tidal flooding, all components of the Avenue A submersible pump are outside the area expected to experience daily high tide flooding by 2070. When considering the probability of periodic inundation during storms, the lower elevation components have a 25% probability in any given year of flooding during a storm event in present day, and a 30% and 100% probability in 2030 and 2070, respectively. The upper elevation components (e.g., control panel, generator) have a much lower probability of flooding. There is a 0.1% chance that storm inundation will impact these assets in present day conditions, and a 0.2% and 10% probability in any given year of flooding in 2030 and 2070.

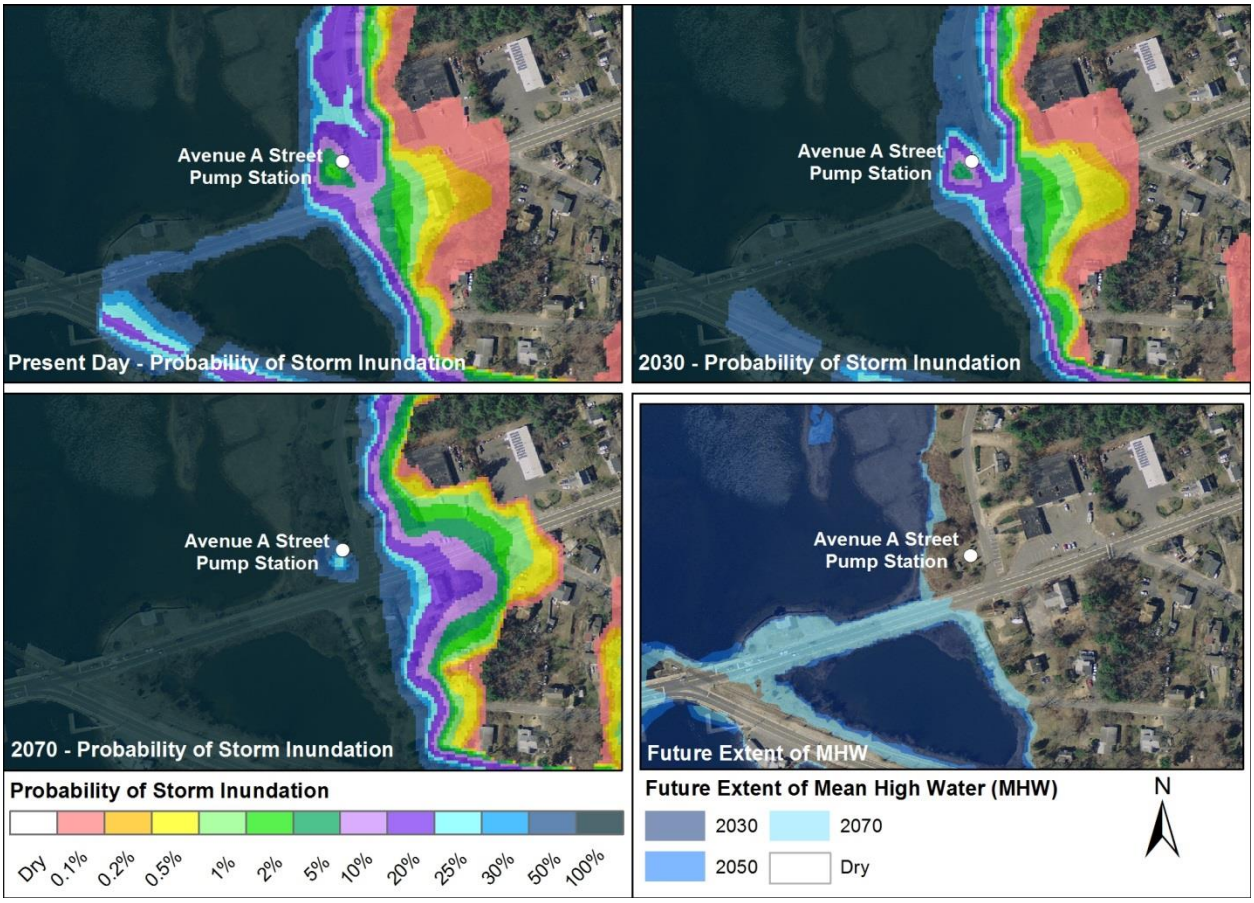


Figure 4-10. Present and future flood risk from storm inundation and daily tides for the Avenue A Pump Station.

Recommendations:

- (Present) Properly dry floodproof lower hatch, if necessary. (Approximate cost = $600)
- (2050) Elevate or protect control panel and generator with flood wall or other water proof barrier. (Approximate cost = $360,000)

East Boulevard Ejector:

The East Boulevard Ejector (Figure 4-11) is an ejector pump station that was constructed in 1971. All components of this pump station are completely encased within a concrete structure with a watertight door. The base of the doorway is at elevation 5.9 feet (NAVD88), the vent openings are at elevation 14.5 feet (NAVD88), and the roof of the structure, where there is a skylight and a potential additional entry point for flood water, is at elevation 16.5 feet (NAVD88). Given that the door is watertight, the first points of water entry into this structure are the vents. However, given the age of this structure, it is uncertain whether the structure itself would be able to withstand the buoyancy forces of significant flooding. As such, the critical elevation chosen for this structure is 8.1 feet (NAVD88), the elevation at which the

structure could be theoretically compromised[3]. This pump station (along with the North Boulevard Pump Station) services 306 households.

Figure 4-11. East Boulevard Ejector Pump Station.

The flood risk to this site can be considered in two different ways: 1) the potential for daily tidal inundation, and 2) the probability of periodic inundation during storms. Both types of flood risk are presented in Figure 4-12. With regards to the potential for daily tidal flooding, the East Boulevard Ejector Pump Station is in an area that is likely to begin to experience daily high tide flooding by 2070. When considering the probability of periodic inundation during storms, the critical elevation (i.e., 8.1 feet, NAVD88) has a 20% probability in any given year of being exceeded during a storm event in present day, and a 30% and 100% probability in 2030 and 2070, respectively. There is also a 0.1% chance in present day, and a 0.5% and 10% chance in 2030 and 2070, respectively, that water elevations exceed the elevation of the vent openings in the rear of the structure and flood the station.

[3] This critical elevation of 8.1 feet (NAVD88) was taken from the 2016 GHD report *Town of Wareham Risk and Vulnerability Assessment*.

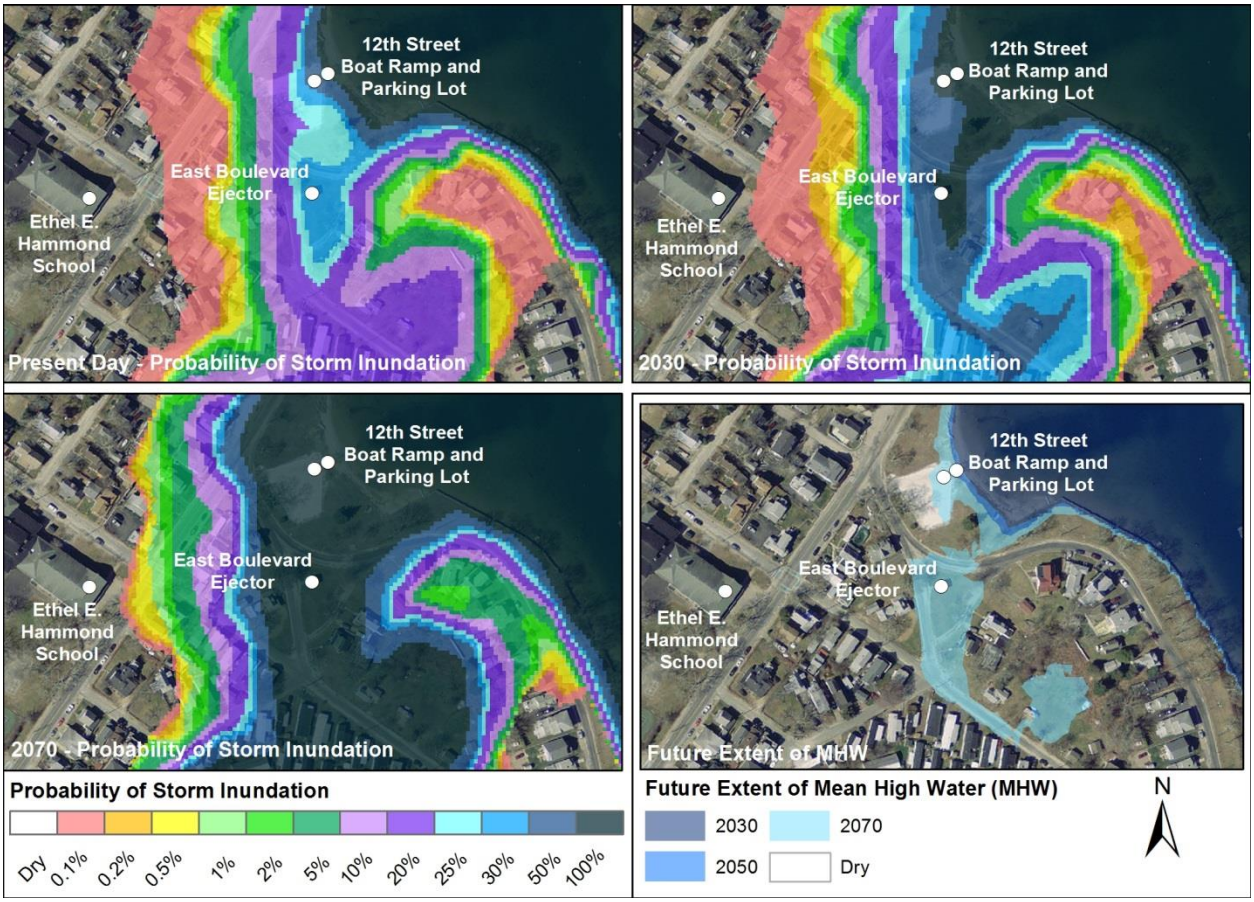


Figure 4-12. Present and future flood risk from storm inundation and daily tides for the East Boulevard Ejector Pump Station.

Recommendations:

- (Present) Either properly dry floodproof the structure (Approximate cost = $5,000) or, given the age and condition of the equipment, consider replacing the pump station with more recent technologies. If the Town opts for replacement equipment, consider the usable lifetime of that equipment (see long-term recommendation below).
- (2050) Consider whether this pump station may need to be relocated or elevated, or how regrading may need to occur to keep this location accessible in light of the projected extent of daily tidal inundation in 2070 and long-term plan for this area and the Onset Beach Resort Mobile Home Park district adaptation recommendations in Section 4.4.2.

Onset Pier Assets:

The Onset Pier contains a number of municipally owned structures, including the Harbormaster Building and restrooms (Figure 4-13), a rental hut and parking booth, as well as a large public parking lot. The Harbormaster building contains the administrative computers and equipment

of the Harbormaster's office, as well as public restrooms. The rental hut serves as the base of operations for a number of local marine businesses, including Cape Cod Canal Cruises and Neat Lady Fishing. Since the Town switched to electronic parking meters, the parking booth is no longer used, but the structure remains at the northeast corner of the parking lot. The elevations across the parking lot surface range from 7.2 to 8.3 feet (NAVD88). The lot has a capacity for approximately 110 cars.

Figure 4-13. Harbormaster Building at Onset Pier.

The flood risk to this site can be considered in two different ways: 1) the potential for daily tidal inundation, and 2) the probability of periodic inundation during storms. Both types of flood risk are presented in Figure 4-14. With regards to the potential for daily tidal flooding, the elevation of Onset Pier is high enough that daily tides will not flood the parking lot area between now and 2070. When considering the probability of periodic inundation during storms, however, the entire pier structure and all the assets on it are vulnerable to flooding. The Harbormaster building, for example, has a 20% probability in any given year of flooding during a storm event in present day, and a 25% and 100% probability in 2030 and 2070, respectively. The probability of inundation during storm events is similar for the other Onset Pier assets, as well.

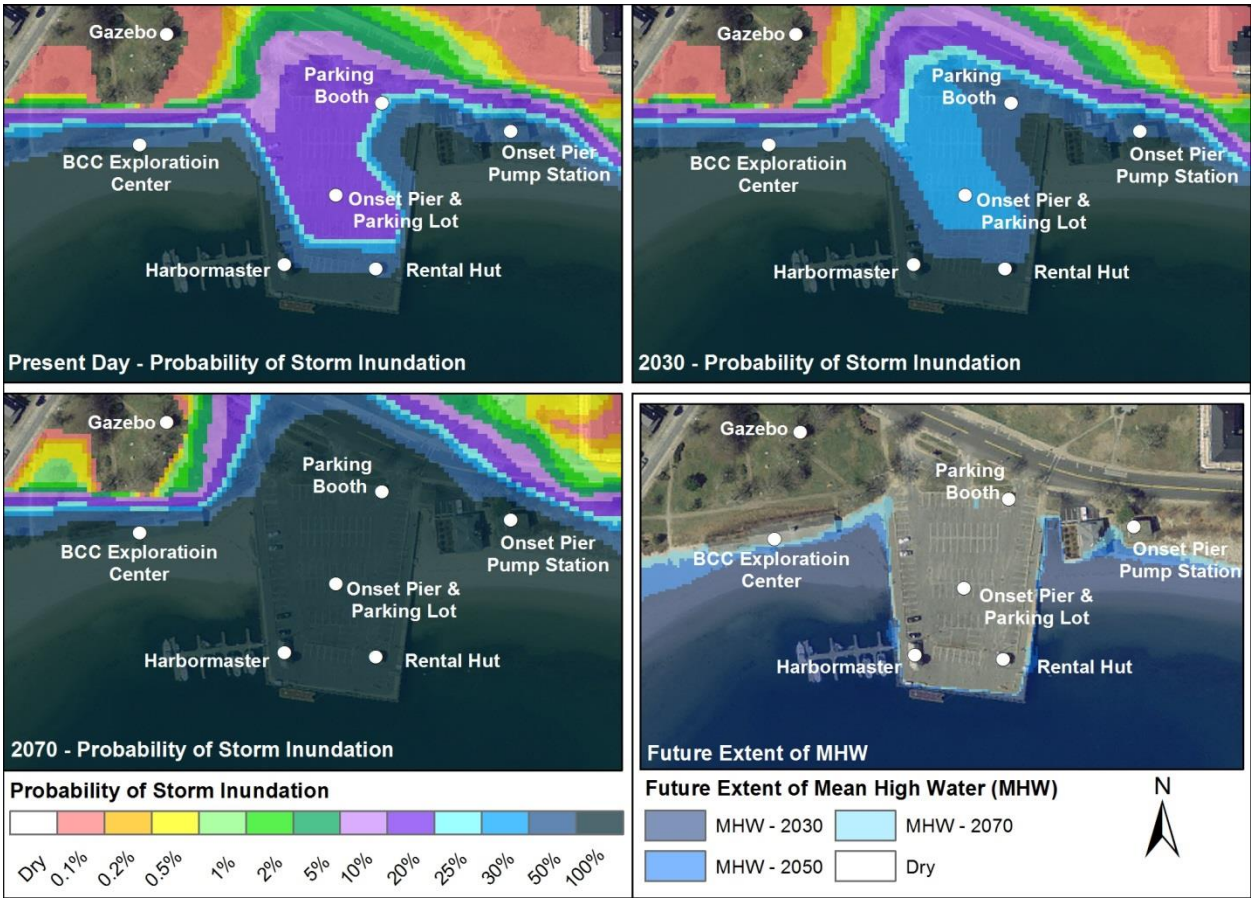


Figure 4-14. Present and future flood risk from storm inundation and daily tides for Onset Pier.

Recommendations:

- (Present) Wet floodproof the structures, such that the pier and the buildings on it could flood during a storm, but no damage would occur to the contents of the buildings (Approximate cost = $8,000 [Harbormaster Building]; $3,500 [Rental Hut]).
- (2030/2050) When the overall structure of Onset Pier requires repair or upgrades, consider creating a pier that would have the flexibility to be elevated in the future. This could be accomplished by over designing the piles that support the structure, such that an elevated structure could be added on in the future (Approximate cost = $2,900,000 for the first phase of a modular pier).

4.2.2 Parking Lots and Recreational Assets

Most of the Town parking lots that are extremely vulnerable to flooding are those associated with public beaches. Although these are important assets to the Town for recreation and tourism, these lots are not used during a storm event, and there is very little damage expected to occur to the parking lot itself from flooding (although there are potential impacts from wave

induced erosion, those impacts are outside the scope of this project). Therefore, in general, the risk is to other assets in and around the parking lots, rather than the parking lots themselves. The risk is slightly different for parking lots that are close enough to the coast to receive impacts from waves, potentially resulting scour and erosion, and therefore higher maintenance and repair costs. Town parking lots that have the highest potential for significant wave impacts include:

- Besse Park Parking Lot
- Swifts Beach Parking Lots (east and west lots)
- 12 Street Boat Ramp Parking Lot
- Little Harbor Beach Parking Lot
- Shell Point Parking Lot
- Tempest Knob Public Parking Lot

The MC-FRM results indicate that the Besse Park Parking Lot and the Swifts Beach Parking Lots are the most vulnerable municipal parking lots in the Town of Wareham. They all have a 100% risk of inundation under present day conditions.

In addition, the Town of Wareham has a proud tradition of providing open space and recreational opportunities. From the large tracts of preserved open space to boat ramps and piers to playing fields and playgrounds, the availability of high-quality recreation and open spaces are important to the people of Wareham. While many of these assets are located in higher elevation areas throughout Town, and are not vulnerable to coastal flooding, a number of the Town's recreational assets are located in low lying coastal areas; the longevity and recurring maintenance costs for these assets will need to be considered with regards to probability of flooding due to sea-level rise and storm impacts.

Besse Park:

Besse Park consists of a U-shaped parking lot off the southern portion of Main Street (Figure 4-15), which contains a dozen parking spaces. In addition to the parking lot, the park consists of a grassy lawn with benches and picnic tables, a long, shore-parallel floating dock, which is accessed by a small fixed pier (elevation 5.2 feet, NAVD88), and an L-shaped fixed elevation fishing pier (elevation 6.5 feet, NAVD88). There is a concrete walkway at elevation 5.2 feet (NAVD88) along the shoreline that forms the top of a vertical bulkhead. The entire site has relatively low elevations, but the lowest elevation within the parking lot itself is only 4.6 feet (NAVD88).

Figure 4-15. Besse Park.

The flood risk to this site can be considered in two different ways: 1) the potential for daily tidal inundation, and 2) the probability of periodic inundation during storms. Both types of flood risk are presented in Figure 4-16. With regards to the potential for daily tidal flooding, the Besse Park Site, including the parking lot, is in an area that is likely to begin to experience daily high tide flooding between 2030 and 2050. When considering the probability of periodic inundation during storms, shore parallel sidewalk and the parking lot have a 100% probability in any given year of flooding during a storm event in present day, 2030 and 2070.

Recommendations:

- See Main Street Area district solution in Section 4.4.1.

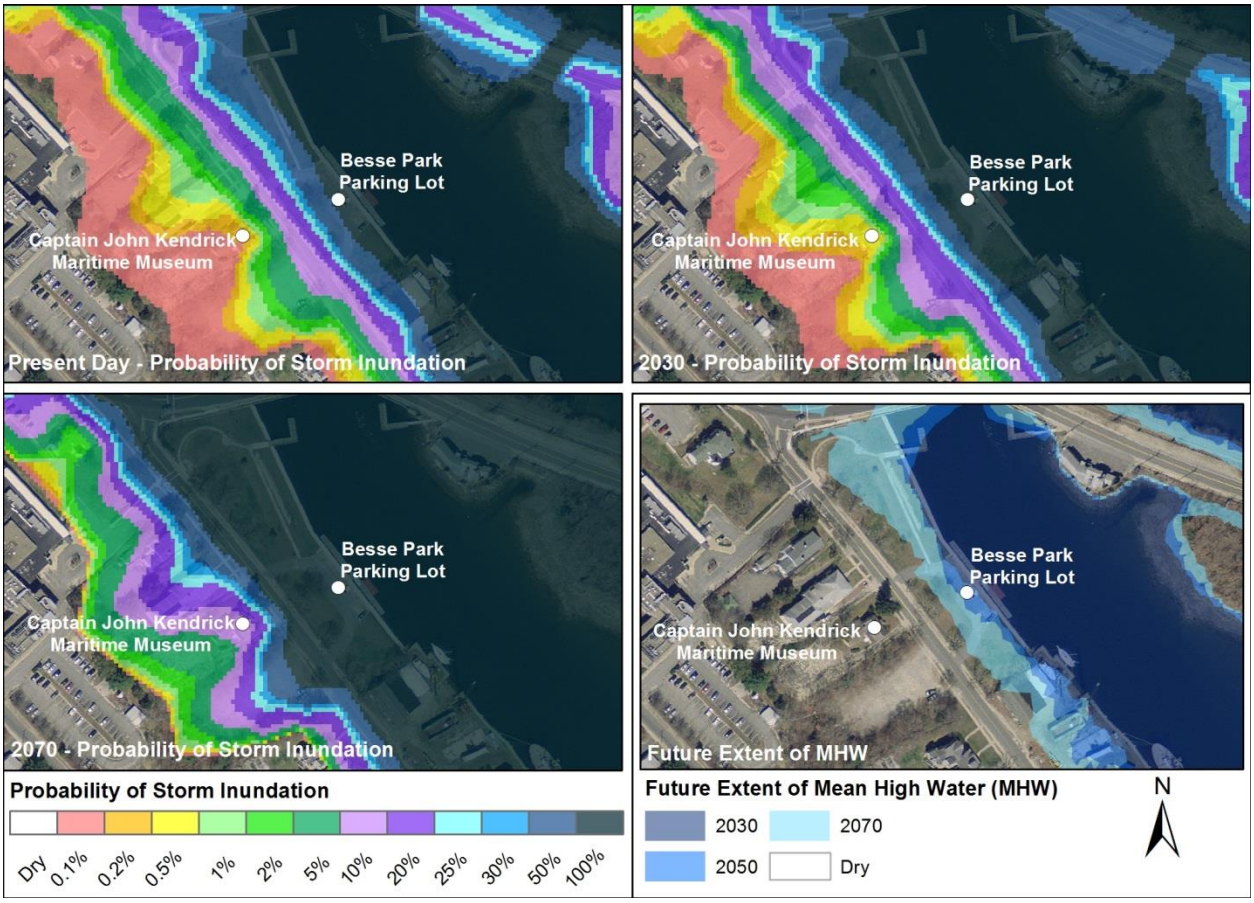


Figure 4-16. Present and future flood risk from storm inundation and daily tides for Besse Park.

Swifts Beach:

The Swifts Beach area consists of two public parking lots (Figures 4-17 and 4-18). The eastern parking lot can accommodate approximately 25 cars, and also provides access to a public boat ramp. The larger western parking lot can hold approximately 60 cars. Both parking lots terminate at the sandy beach, with little to no coastal dune fronting the lots to provide wave and storm damage protection. Landward of the western parking lot is a large recreational area, consisting of a grass field, a basketball court, and a playground. The entire site, all the way back to the northern end of the playground has relatively low elevations, but the lowest elevations within the parking lots themselves are 3.8 and 3.6 feet (NAVD88), for the western and eastern parking lots respectively. There are no permanent public facilities at either parking lot.

Figure 4-17. Aerial overview of the Swifts Beach area.

Figure 4-18. Western parking lot at Swifts Beach.

The flood risk to this site can be considered in two different ways: 1) the potential for daily tidal inundation, and 2) the probability of periodic inundation during storms. Both types of flood risk are presented in Figure 4-19. With regards to the potential for daily tidal flooding, areas within the recreational field will to begin to experience daily high tide flooding by 2030, while the rest of the site will begin to experience daily tidal inundation by 2050. When considering the

probability of periodic inundation during storms, the entire site has a 100% probability in any given year of flooding during a storm event in present day, 2030 and 2070.

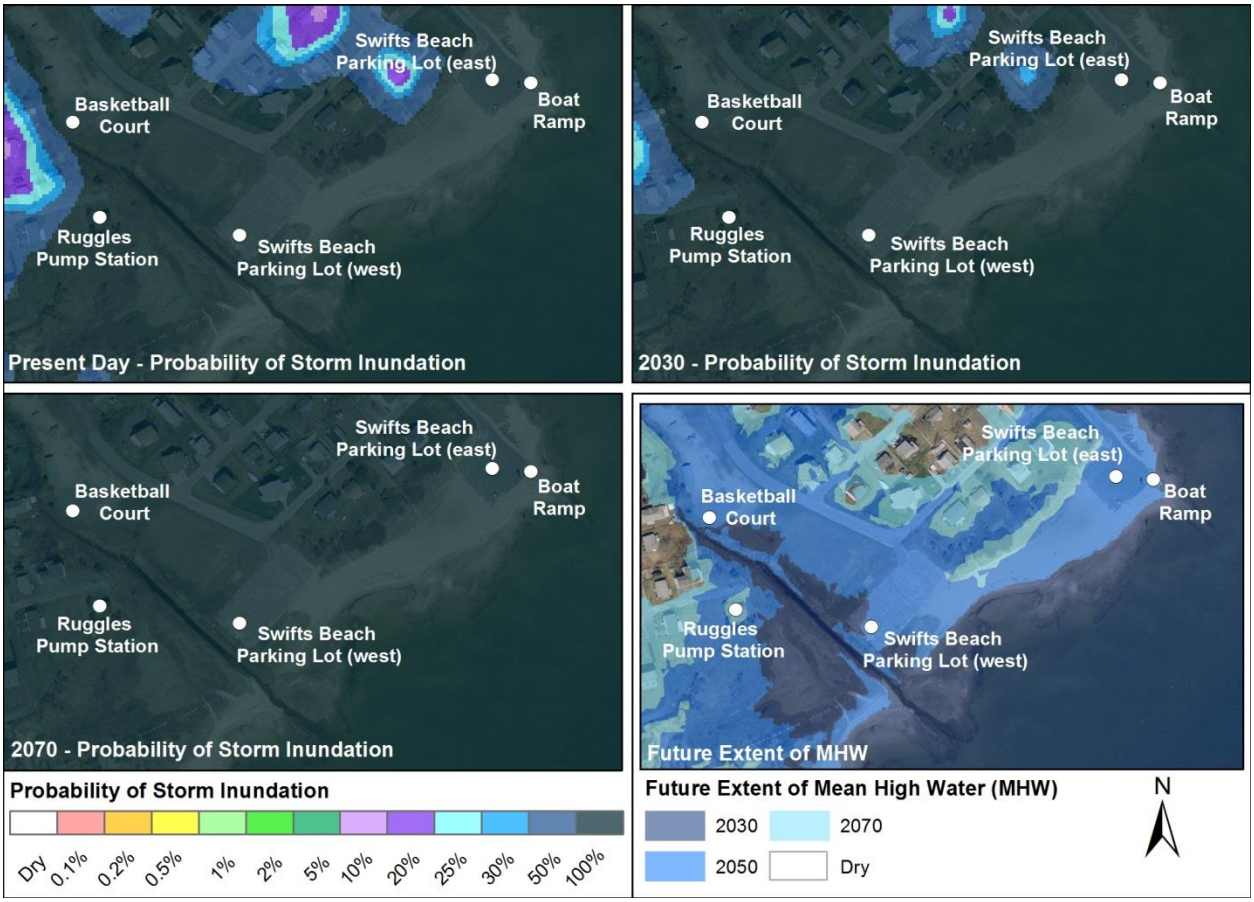


Figure 4-19. Present and future flood risk from storm inundation and daily tides for the Swifts Beach Area.

Recommendations:

- (Present) Enhance and/or restore the coastal beach and coastal dune resources areas. This would involve beach nourishment, as well as dune creation and enhancement (Approximate cost = $480,000). This will not stop the area from flooding, especially during a storm, but it will provide storm damage protection to the parking lot and the homes behind the beach.
- (2030) Begin developing a phased exit strategy for the private residences in this neighborhood; by 2050 many of the roads will be flooded by daily tidal inundation, and many of the yards and homes will be impacted by 2070. The goal should be to allow residents to remain as long as possible, and sea level rise over the next couple decades should be monitored to see if it is rising faster or slower than predicted. But planning for this ultimate eventuality will take time, funding, and likely changes to the local zoning and building regulations.

- (2050/2070) Much of the area currently used as parking lots and recreational fields will likely need to be converted to open space, consisting predominantly of salt marsh and coastal beach resource areas. A new expanded beach area and potential boardwalks through the salt marsh could allow this area to continue as a recreational hub for the Town.

4.2.3 Boat Ramps

Boat ramps are located right at the water's edge and have higher probabilities of flooding than most roadways and facilities, which are generally located further inland and upland. As such, the traditional vulnerability assessment methods were not utilized on these features.

Based on the highest elevations at each boat ramp that was assessed, the following features will become completely inundated (i.e., MHW will be higher than the highest elevation of the structure) at the year specified below:

- Swifts Beach Boat Ramp – 2050
- 12th Street Boat Ramp (Onset) – 2070
- Tempest Knob Boat Ramp – N/A*
  **The highest elevation at the Tempest Knob boat ramp is higher than the projected 2070 MHW elevation; this boat ramp will therefore be useable at its current location until at least that time*.

The existing conditions of the Town's boat ramps should be assessed. As repairs and/or upgrades are required in the future, projected sea level elevations should be consulted and planned for in future designs, so that the boat ramps can continue functioning as intended throughout their design lifetime.

4.2.4 Roads

Roadways are by far one of the most vulnerable infrastructure features to flooding in the Town of Wareham (Figure 4-20). Segments of major roads and evacuation routes in low-lying areas received the highest risk scores in this assessment. In general, there are a variety of options for adapting roadways to sea-level rise and storm surge impacts. These adaptation measures range in intensity based on the criticality of the road, as well as the type of inundation that needs to be addressed (e.g. non-essential roads may be allowed to overwash in storms if emergency access is not necessary, but should be designed to be resilient to storm surge impacts and resistant to future daily tidal flooding). MassDOT is currently developing a roadway adaptation handbook, which can be consulted for a variety of adaptation strategies. Strategies can include a simple raising of the roadbed, resilient side slope green infrastructure treatments to reduce undermining, causeway installation, or bridge construction. Specifics of the site and environmental conditions will inform the selection of appropriate interventions.

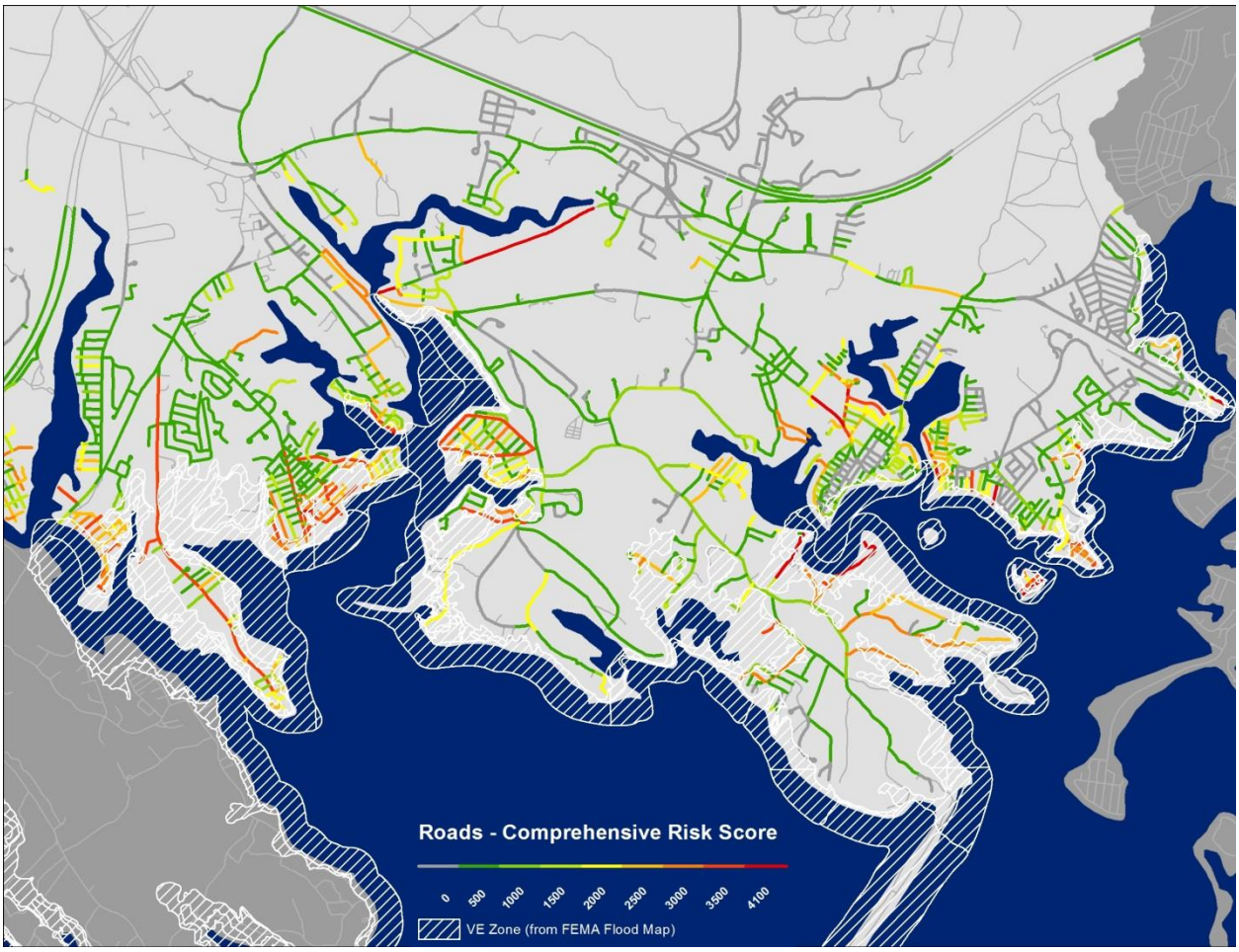


Figure 4-20. Comprehensive risk score for all roads.

Low portions of Onset Avenue and Sandwich Road were identified as high-risk roadways through this assessment, and were advanced for conceptual-level adaptations. Onset Avenue is one of only three points of entry to Onset village; and Sandwich Road is a main access route between the downtown Main Street area and the commercial area along Route 6 in East Wareham. Both are critical roadways for emergency services. It is hoped that the solutions developed for this suite of roadway examples may also be leveraged at other similar sites in Wareham.

Onset Avenue

Onset Avenue extends from the intersection with Great Neck Road and Depot Street, through the village of Onset, across the East River Bridge, and all the way to Route 6 near Cohasset Narrows. Approximately 1,200 linear feet of the road, from just south of Back Street to West Boulevard in the south, is extremely low lying and has areas of salt marsh on both sides of the street (Figure 4-21).

Figure 4-21. Onset Avenue, looking northeast from the intersection with Wareham Avenue. (Image from GoogleEarth, 2018)

As with other assets, the flood risk to Onset Avenue can be considered in two different ways: 1) the potential for daily tidal inundation, and 2) the probability of periodic inundation during storms. With respect to periodic inundation during storms, the entire road is vulnerable to flooding during a storm event today, with the lowest portion of the road (in the vicinity of Stevie B's) having a 53% probability of inundation each year. The depth and likelihood of inundation during a storm event increases in the future, with many areas of the road having a 50-100% probability of flooding in a given year by 2070. Additionally, due to the low elevation of the roadway, a large portion of this road will also begin to experience daily tidal inundation by 2070 (Figure 4-22).

Recommendations:

- (Present/2030) Begin creating a long-term plan for this area now, even though daily tidal inundation won't impact the roadway until approximately 2070. Given that Onset Avenue is one of the only ways into and out of Onset village, it will be important to increase the coastal resiliency of this section of road. At a minimum, approximately 1,200 linear feet of road will need to be elevated. This could be done through the creation of a causeway, section by section. As part of this plan, consider what key side streets should also be elevated, essentially creating "fingers" of higher ground. Other infrastructure, including houses and other buildings, within the projected tidal inundation area would also need to be elevated (Approximate cost = $850,000, to raise 1,200 linear feet of the road 3 feet).

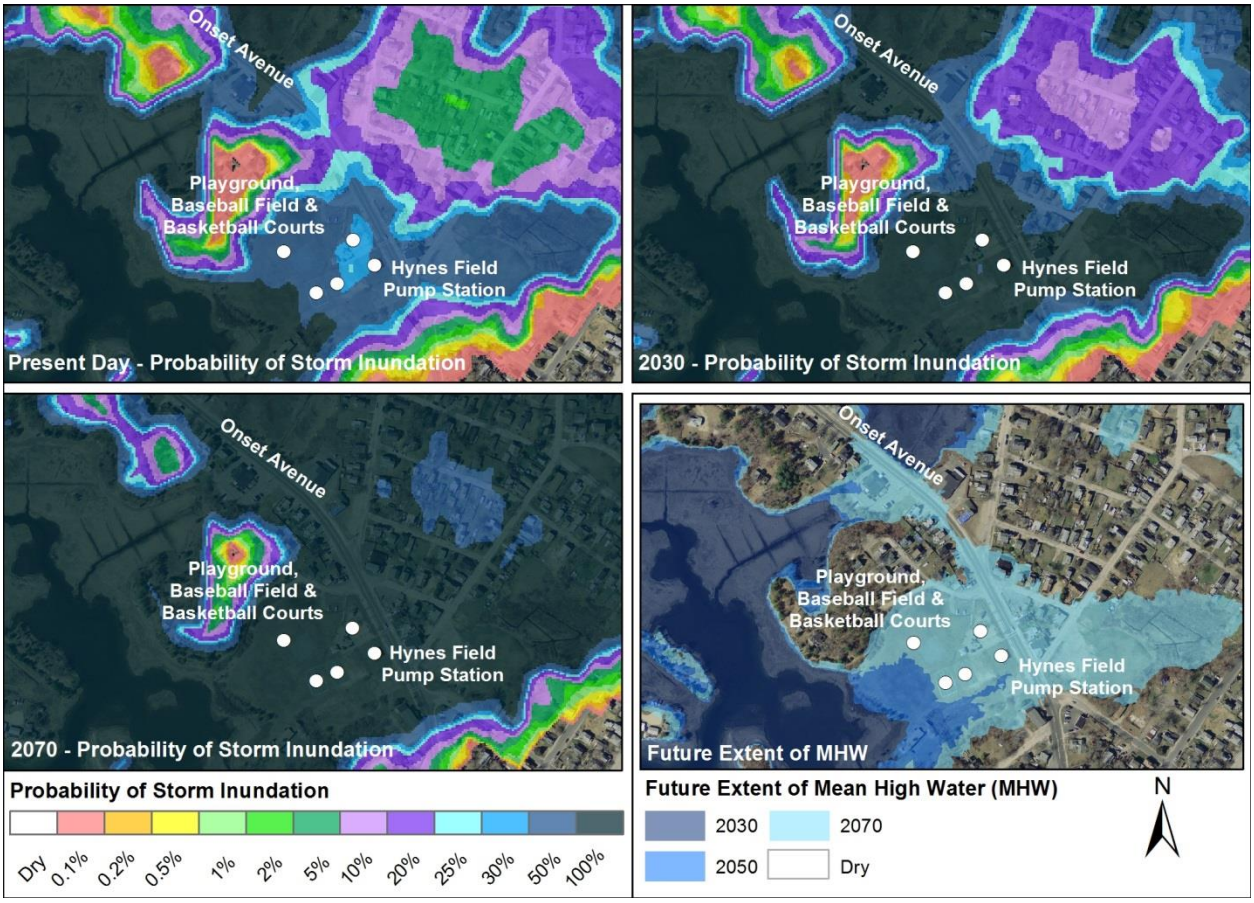


Figure 4-22. Present and future flood risk from storm inundation and daily tides for the Onset Avenue area.

Sandwich Road

Sandwich Road, which is also part of Route 6, stretches from Main Street at the Narrows in the west to the intersection with Route 28 and Cranberry Highway in the east, and serves as a major transportation route through Town. Between the Emergency Medical Services building and the Wareham River Bridge, Sandwich Road is extremely low lying and is bracketed on both sides by significant wetland areas. Although it is a State-owned roadway, it is a major transportation corridor and critical roadway for the Town.

Figure 4-23. Sandwich Road, facing east, near the Golf Shots Driving Range. (Image from GoogleEarth, 2018)

As with other assets, the flood risk to Sandwich Road can be considered in two different ways: 1) the potential for daily tidal inundation, and 2) the probability of periodic inundation during storms. In terms of episodic flooding due to storms, much of Sandwich Road falls within a 20% probability of flooding in present day, and a 50% and 100% probability in 2030 and 2070, respectively. With respect to daily tidal inundation, much of Sandwich Road will begin to experience daily tidal inundation by 2070.

Recommendations:

- (Present/2030): Earthen berms could be constructed along the lowest section of the road to reduce the risk of flooding during more frequent storm events. (Approximate cost = $3,400,000 to 5,100,000 depending on length). At the same time, the culvert under the road could be enhanced to facilitate tidal exchange with the wetlands on the south side of the road. (Approximate cost = $1,250,000, assuming a culvert replacement with associated studies). Through coordination with the homeowners along the north side of the road, it might be possible to place this berm in such a way as to protect their homes, as well as the road.
- (2050/2070): If an earthen berm is not constructed, more than 2,000 linear feet of road will need to be elevated through the construction of an elevated causeway, to avoid the daily tidal inundation projected by 2070 (Approximate cost = $1,500,000 to raise the road 2 feet), or abandoned. Elevating the road will allow regular transportation to continue past 2070, but it will make accessing the private driveways and homes more difficult.

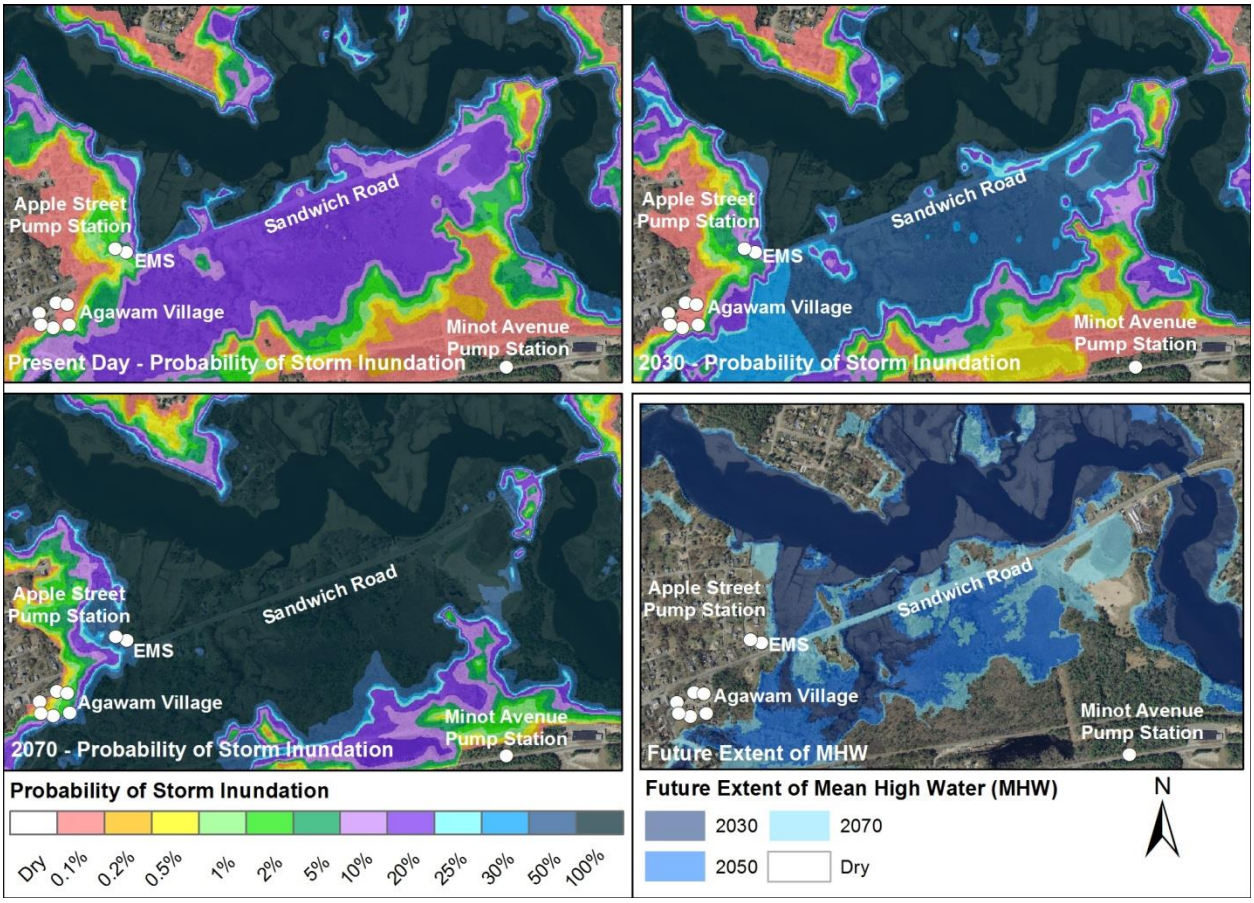


Figure 4-24. Present and future flood risk from storm inundation and daily tides for the area around Sandwich Road.

4.3 Recommendations for Natural Resources

Strategies to adapt and protect the Town of Wareham's natural resources in the face of rising tides and increasing storm intensity should be multi-layered, and will focus on maintaining the conditions that allow coastal resource areas to thrive, restoring degraded systems to enhance existing coastal resource areas, implementing green infrastructure and living shoreline solutions to fortify existing natural resource features, and accommodating the migration of natural resources over time, both vertically and horizontally.

Based on the town-wide SLAMM results presented in Section 3.3.2, the Wareham Steering Committee selected two coastal areas for which to develop conceptual level adaptation plans for. Those areas are:

1. Lopes Park, and
2. Wareham River.

Both of these areas are addressed in detail below.

4.3.1 Lopes Park

The Leonard C. Lopes Park is a 4-acre site with a gravel parking area. The site consists of a playground, a baseball field and two basketball courts. The property also includes picnic tables, benches and a covered picnic shelter. The back of the park borders a salt marsh area at the head of Sunset Cove.

Patterns of habitat change predicted for Lopes Park area show that by 2050, the southwestern portions of the field will begin to transition to Transitional Marsh, while areas that had previously been Irregularly Flooded Marsh (i.e., high salt marsh) transition to Regularly Flooded Marsh (i.e., low salt marsh) (Figure 4-25). By 2070, almost the entire park area is predicted to transition to some kind of wetland, predominantly Transitional Marsh and Regularly Flooded Marsh (i.e., low salt marsh).

Recommendations for this area, with regards to natural resources management, mainly involve encouraging and facilitating the salt marsh habitat migration within the Lopes Park property. In the short term, no action is needed and the recreational assets can continue to be used and maintained. As time goes on, however, the Town should consider the expected lifetime of a particular investment on this property in light of the fact that this property will begin to experience daily tidal inundation by 2070. In the long term, the structures within the park (e.g., picnic shelter, playground features, benches, etc.), as well as the paved basketball court areas, should be removed to allow salt marsh vegetation to establish. If desired, the property can continue to be used as recreational open space: a viewing platform or boardwalk could be built to facilitate access to and enjoyment of this new tidal wetland area.

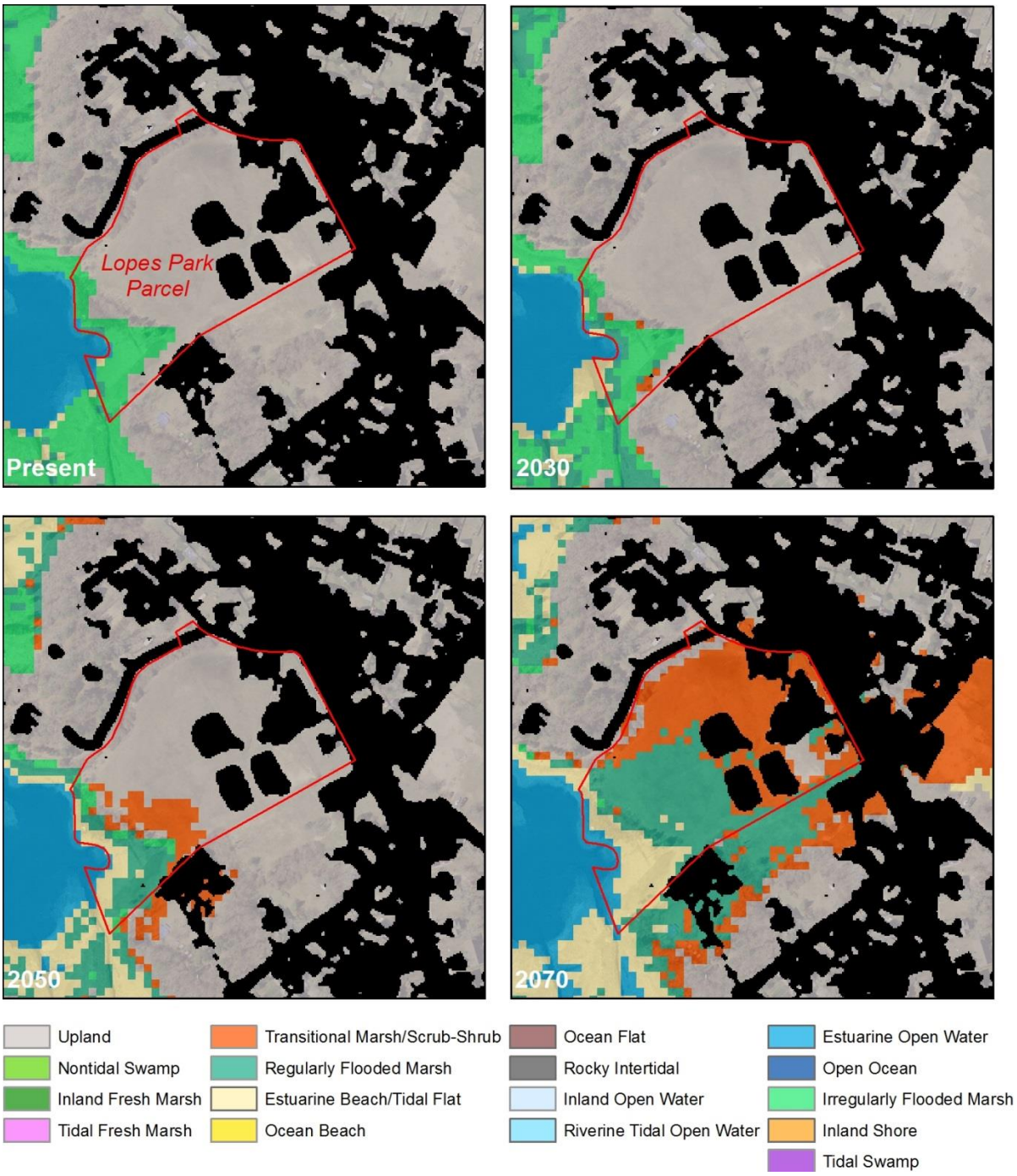


Figure 4-25. SLAMM results for the Lopes Park area. (Black areas represent existing impervious surfaces)

4.3.2 Wareham River

Above the Narrows, the Wareham River forks into two main branches: one branch continues northwest, parallel to Main Street towards the Tremont Nail Factory and the Parker Mills Pond Dam; the other, also known as the Agawam River, winds to the east, crossing under Route 6 a number of times before reaching the dam and fish ladder at Agawam Mill Pond. This tidal river is flanked by salt marsh along much of its shoreline, and in some cases, its tidal influence extends through culverts into auxiliary wetland areas. One of the largest of these auxiliary wetlands is between Route 6/Sandwich Road and the railroad tracks and Minot Ave. Approximately 100 acres of this wetland is on a parcel owned by the Town of Wareham.

Based on the existing conditions wetland habitat mapping, this wetland currently consists of a mix of wetland types, ranging from a small area of irregularly flooded salt marsh (i.e., high marsh), tidal fresh marsh, tidal swamp, and inland fresh marsh (Figure 4-28). As sea level rises, these habitats are predicted to transition over to more salt tolerant vegetation. By 2050, much of the existing freshwater wetlands are likely to convert to high marsh, and by 2070, that area will transition to low marsh, while the fringes of that wetland (i.e., areas that are upland today) will transition to transitional marsh (Figure 4-26).

As described in the section on Sandwich Road above in Section 4.2.4, efforts will likely need to be taken to protect the roadway itself from flooding, but that does not preclude enhancing the tidal connection to the wetlands between Sandwich Road and Minot Avenue. In conjunction with flood protection for the road, the culvert(s) under the road could be enhanced to facilitate tidal exchange with the wetlands to the south. This is essentially a “protect and connect” strategy, letting the marsh migrate and expand, while at the same time protecting the roadway as long as possible.

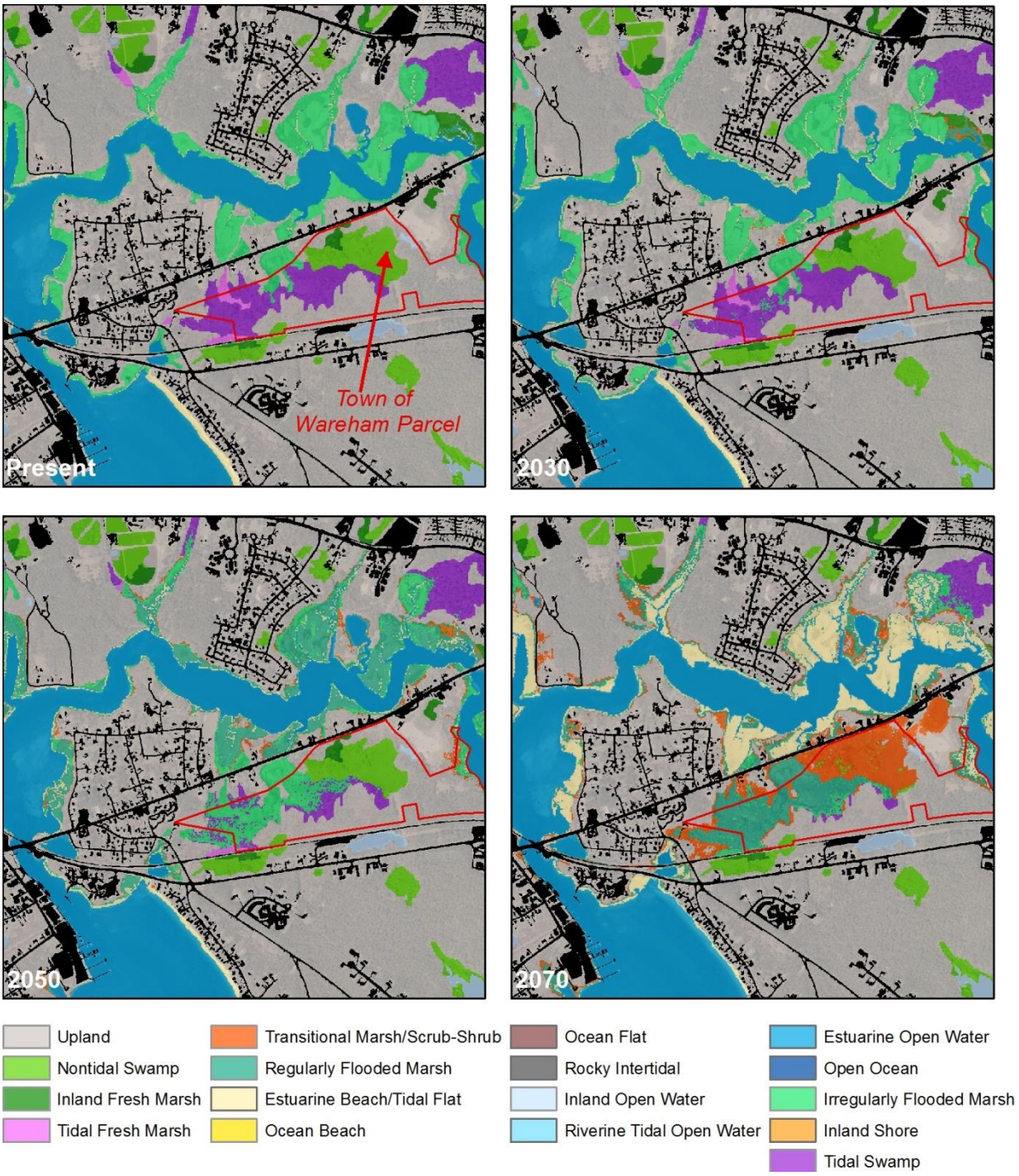


Figure 4-26. SLAMM results for the Wareham River area.

4.4 District Adaptation Strategies

District-wide adaptation strategies aim to reduce flood risks across a geographical area that may contain multiple critical municipally owned assets, as well as privately-owned assets including buildings, roadways, and other infrastructure. Some of the areas at risk of coastal flooding in Wareham are at risk because of "flood pathways", which are low-lying strips of land that permit coastal flood waters to flow further inland into other (often much larger) low-lying areas where there is existing development (areas that are usually dry). Solutions to close these flood pathways, or otherwise address them, are referred to in this report as district strategies. In other cases, district strategies may be related to improving the protective value of existing natural protections (e.g., dunes, beach) or man-made coastal structures along an entire stretch of coastline. In some areas, a discrete "flood pathway" may not exist, but due to the importance of the infrastructure present, and their geographic proximity to each other, it is often useful to develop resiliency building solutions at a district, rather than asset-specific, level.

Although district strategies can be expensive to implement, they can be more cost-effective and straightforward to implement by providing significant reduction in flood risk for a large number of beneficiaries through a single project, as compared to the cost of a site-by-site approach of many independent projects. Implementation of district strategies to address flood risks in the 2070-time horizon, when most of the Town will face significant risks, may face higher technical, political, and financial challenges than the less extensive near-term district solutions or site-specific adaptations.

The three areas selected by the Wareham Steering Committee for development of district adaptation strategies include:

1. Main Street and the Narrows,
2. Onset Beach Resort Mobile Home Park, and
3. The Middle and High School Campus.

The adaptation strategies presented for these areas can be used as templates for developing solutions for other areas of Town.

4.4.1 Main Street and the Narrows

Throughout Section 4, two types of flood risk have been addressed: 1) the potential for daily tidal inundation, and 2) the probability of periodic inundation during storms. In the case of the Main Street/Narrows area, flooding from daily tidal inundation will start to impact the roads, businesses and railroad tracks by 2070 (Figure 4-27). There is, however, a fairly high probability of periodic inundation due to storm events, even in the near term. Due to the topography of this area, there is no discrete flood pathway; instead the flooding originates along the entire shoreline of the Wareham River. This area includes municipal assets, such as the Wareham Fire District Fire Department and Headquarters, the Narrows Pump Station, Besse Park, and the Captain John Kendrick Maritime Museum, as well as important transportation corridors, including roads, bridges, and the railroad. This area also contains one of the main commercial areas of Town, as well as the main access point to Toby Hospital. An adaptation action for this area would need to be fairly large, extending along the full length of the Wareham River shoreline, in order to be effective; any smaller flood protection solution would be flanked on either side by flood water.

A district solution for this area of Town could consist of an expanded waterfront park on the riverside of the businesses along Main Street (Figure 4-28). With the incorporation of higher elevation land and flood protection features (e.g., flood walls and earthen berms), the expanded waterfront would not only provide important recreational and aesthetic value to the area with a Riverwalk feature, but would also help to protect the adjacent roads and businesses. This expanded waterfront park may require the expansion of the current landform (i.e., filling portions of the river) and/or eliminating some of the parking along the back side of the buildings. Any filling of the river could incorporate salt marsh restoration and the installation of living shoreline designs to help improve the habitat value of the project.

In order to ensure reliable transportation access into the future, the bridges (including the railroad bridge) will need to be elevated. In addition to elevating the Main Street/Sandwich Road Bridge, the section of Sandwich Road between the railroad crossing and Avenue A would also need to be elevated to avoid daily tidal flooding by 2070 (Figure 4-28).

South of the bridges, the bulkhead along Besse Park should be raised. If this is done using a modular bulkhead, it can be raised incrementally and flexibly in the future. With features such as marine bulkheads, docks and piers, raising structures too early can cut off access to the water. Along with a raised bulkhead, the L-shaped fish piers on either side of the river will also need to be elevated before 2070 to keep these structures dry during daily high tides.

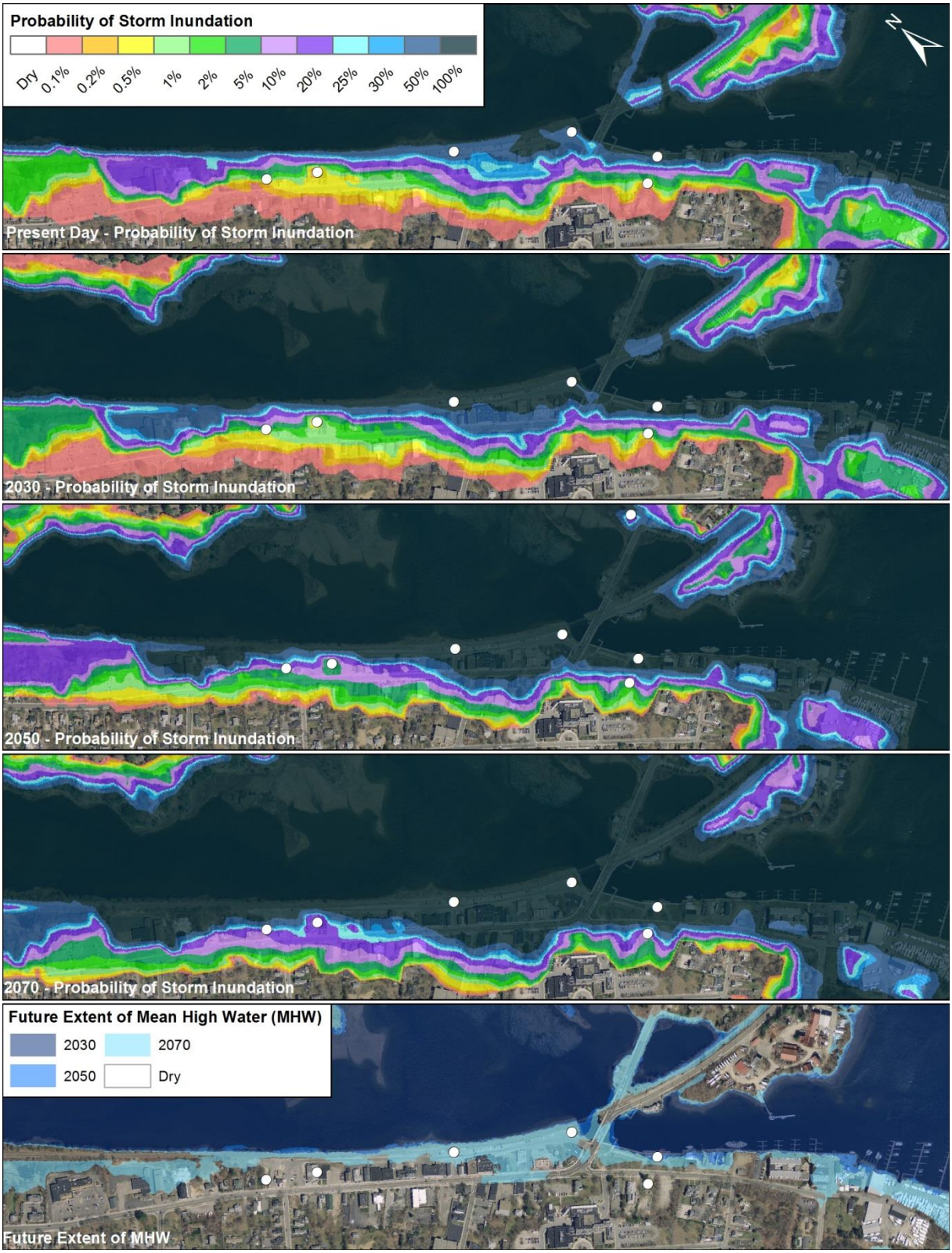


Figure 4-27. Probability of inundation for the Main Street/Narrows area. (White dots indicate municipally-owned assets that were evaluated as part of this study.)

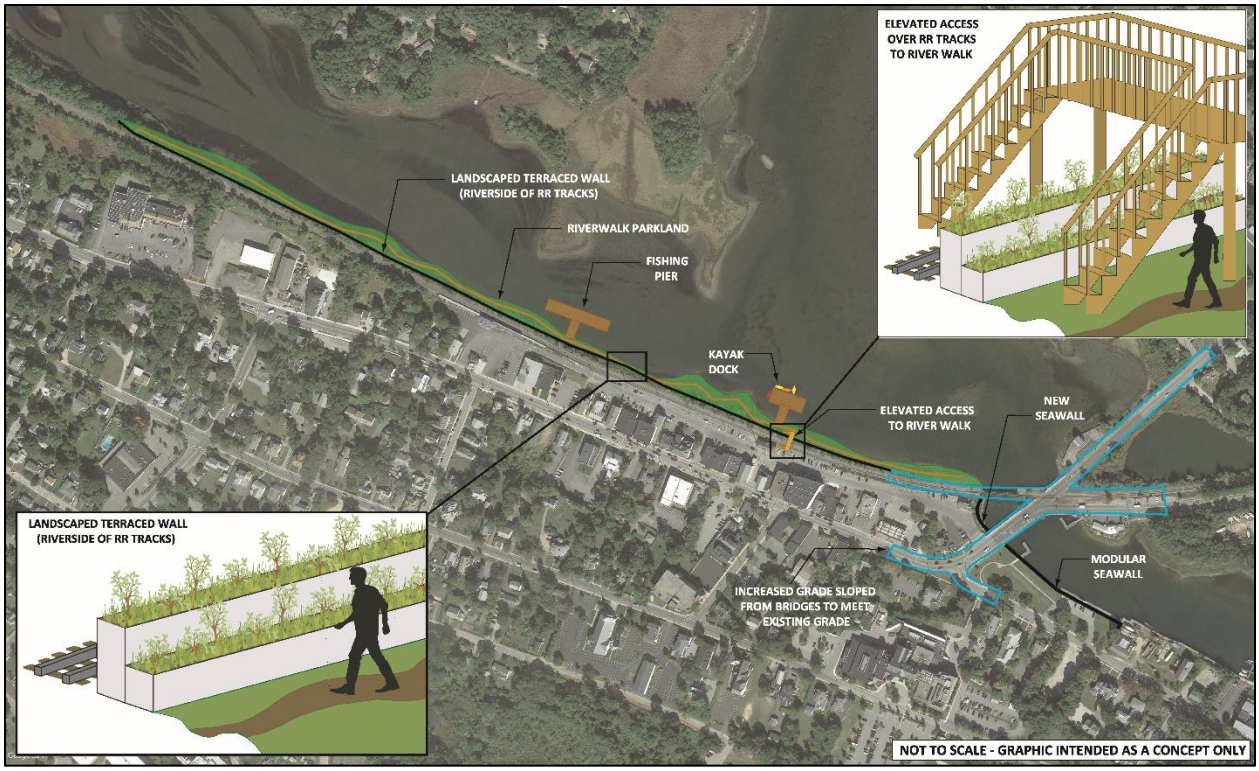


Figure 4-28. Overall adaptation approach for the Main Street/Narrows area.

4.4.2 Onset Beach Resort Mobile Home Park

The Onset Beach Resort Mobile Home Park is located between Waban Avenue and 11th Street in the village of Onset, and has 63 mobile home sites. This community consists of a series of looping private roads, including Amos Way, Kins Court, and Dot's Lane. This area is situated in a topographic depression on the landscape, resulting in present-day drainage issues after large rain storms. There is also a discrete flood pathway from the 12th Street Boat Ramp and parking lot, allowing flood water to enter the Onset Beach Resort Mobile Home Park during a storm event. There is a 20% annual chance of inundation during a storm in present day, a 30% annual chance in 2030, and a 50-100% annual chance of inundation in 2050 and 2070 (Figure 4-29).

There are three very different options to improve the flood vulnerability of this area:

1. Create a flood barrier in the lawn area around the 12th Street Boat Ramp and the East Boulevard Ejector to keep flood water out of this area during a storm; if sited correctly, this could also reduce the flood risk to the East Boulevard Ejector. This action would, however, require more intensive stormwater management, since natural drainage out of this community will be reduced.
2. Allow this area to transition to a natural wetland. This would require abandoning the Onset Beach Resort Mobile Home Park in the long term, as well as relocating the East Boulevard Ejector or regrading around it to keep it out of the future wetland. As the Mobile Home Park is privately owned, this would require coordination with the owners.

Having an alternative site on higher ground that this community could be relocated to would likely be helpful in this process.

3. Raise the elevation of the ground within the Onset Beach Resort Mobile Home Park property. As with option #2, since the Mobile Home Park is privately owned, this would require coordination with the owners. It would also require at least the temporary relocation of the Mobile Home Park residents. Ultimately, the site could be re-established as a mobile home park but with a lower risk of flooding during storms. Alternatively, this site could be redeveloped in a different way: apartments, a parking garage, small shops, or some combination of these features.

The resulting change in flood risk from each of these three alternatives is presented in Figure 4-30 for the 2050 timeframe.

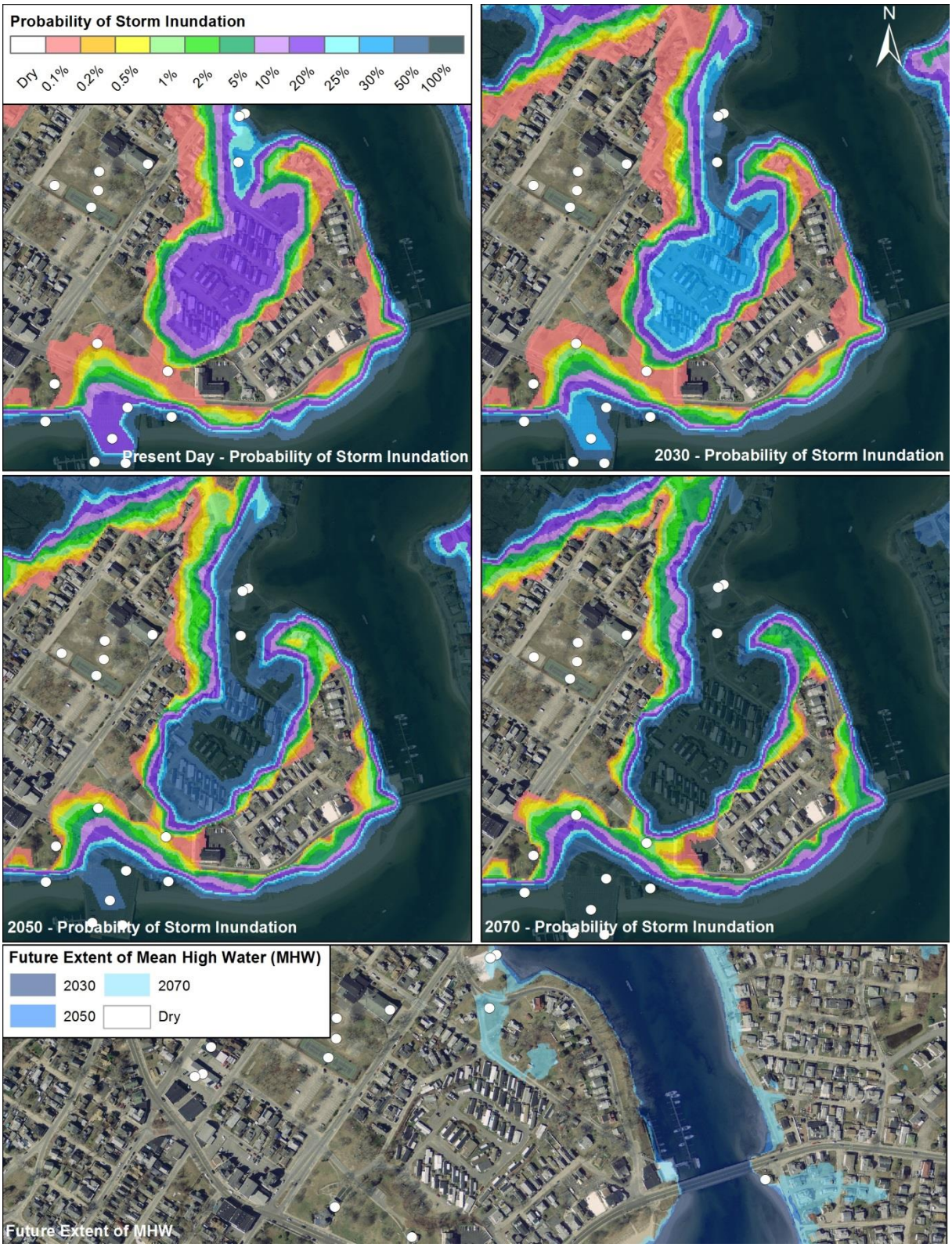


Figure 4-29. Probability of inundation for the Kins Court neighborhood area. (White dots indicate municipally-owned assets that were evaluated as part of this study.)

Figure 4-30. Resulting inundation risk from the three alternatives. (See above for discussion)

4.4.3 The Middle and High School campus.

There are two types of flood risk to consider in this area: 1) the potential for daily tidal inundation, and 2) the probability of periodic inundation during storms. In the area around the Wareham Middle and High School campuses, there is little risk of daily tidal flooding through 2070 (Figure 4-31). Additionally, although the probability of inundation during a storm is relatively low for the high consequence score school assets in present day, by 2050 and 2070 the flood risk to these facilities should be addressed. By 2050, the Middle and High School have a 1% and 5% annual chance of inundation, respectively. By 2070, these risks increase to 5% and 10%.

To reduce the risk of flooding to the Wareham schools campus in the long-term, by 2050, the Town should start thinking about floodproofing the lower elevation portions of the buildings or installing a flood risk reduction project. An earthen berm could be installed around the edge of the salt marsh along the outer perimeter of the school property. In addition, there's a secondary flood pathway that comes in from the Wareham River through the wetlands just south of Zecco's Marina at the southern end of Main Street. An additional flood protection berm could be constructed just south of Cedar Street to eliminate this secondary flood pathway as well.

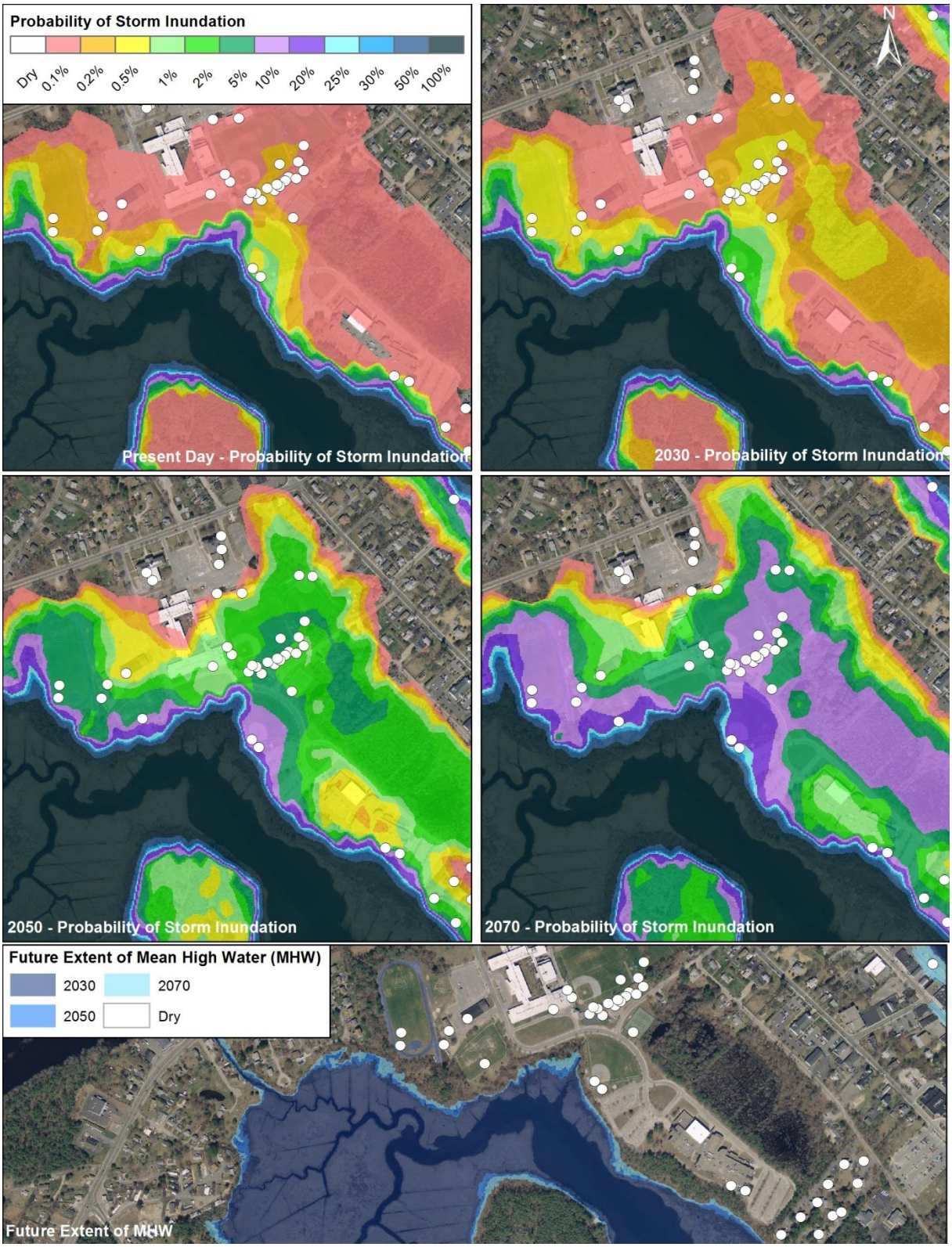


Figure 4-31. Probability of inundation for Wareham Schools area. (White dots indicate municipally-owned assets that were evaluated as part of this study.)

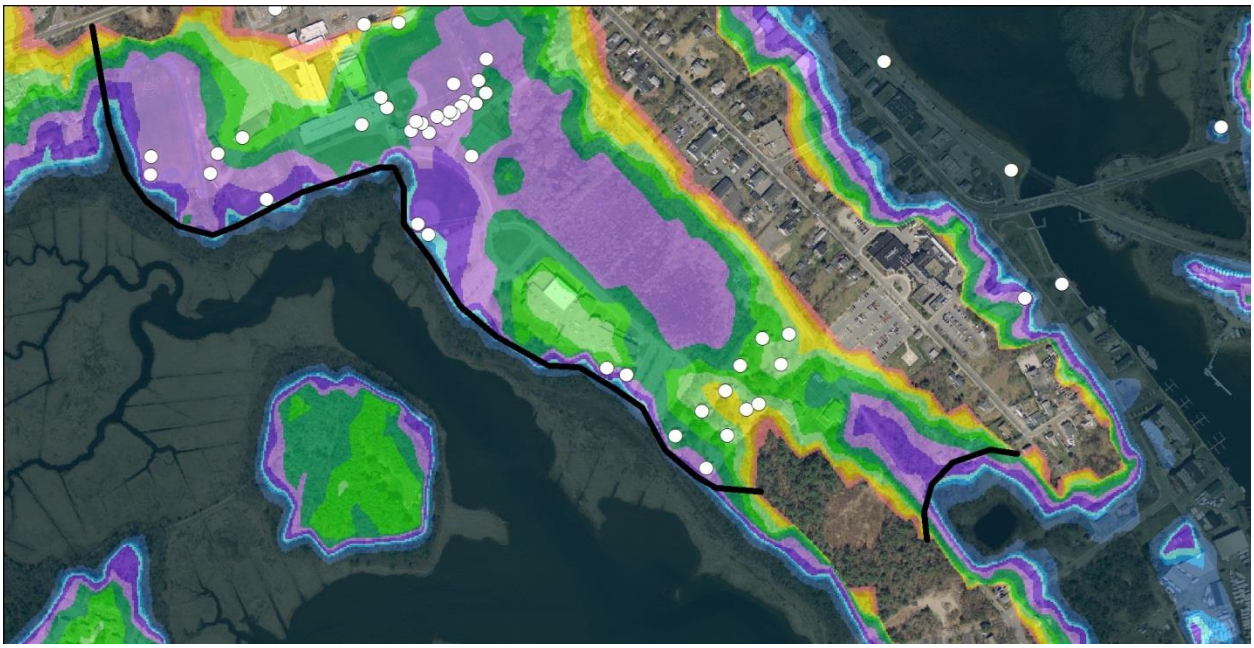


Figure 4-32. Potential earthen berm locations to reduce the flood risk for the Wareham Middle and High School area.

4.5 Recommendations for Policy and Regulations Changes

While many of the recommendations provided in this report can be implemented within the current regulatory environment, other sea level rise planning actions, such as restrictions on new construction or major repairs to buildings within high flood risk areas, will likely require updated municipal policies or regulations. Recommendations for changes to municipal policies and regulations are listed below:

1. **Targeted municipal planning**: In many cases, planning for future risks and implementing appropriate adaptation strategies requires coordination between and leadership from all of the municipal departments and committees, from the Board of Selectmen and the Finance Committee to the Conservation and Planning Departments to emergency responders. Because it will be important for all municipal departments to keep climate change, sea level rise and flood risks at the forefront of their planning, one recommendation would be create a local committee dedicated to thinking about and providing recommendations to the Board of Selectmen regarding risks from coastal flooding, erosion and sea level rise. This committee could meet regularly (e.g., quarterly) with department heads and the municipal administration to further discuss the findings presented in this report, and develop targeted actions and plans for implementing the adaptation recommendations.

2. **Incentives for municipal projects that incorporate sea level rise or climate change planning**: In order to promote local projects that are adequately planning for the impacts of climate change and sea level rise, the Town could either require, or give preference to, Town-funded projects that clearly demonstrate how they have taken the predicted impacts of long-term sea level rise into account.

3. **Land acquisition for coastal resources migration:** The results of this study showed the likelihood of large reductions in salt marsh habitat by 2070. This is largely the result of vertical marsh accretion not being able to keep pace with sea level rise so the marsh cannot maintain itself in place. Furthermore, the fact that many salt marshes today abut steeper topography or impervious surfaces on their upland edge prohibits landward migration as sea level rises. Coastal dune and coastal beach resources will also need space to overtop and migrate landward in order to be able to naturally maintain themselves during storms (in the short term) and sea level rise (in the long term). The Town should continue acquiring (or work with local land trusts to acquire) land adjacent to coastal resource areas to accommodate changing conditions. The Town should consider the natural resources information provided in this report to identify priority areas for acquisition. Any areas or properties identified as a priority for acquisition should be included in the next update to Wareham's Open Space and Recreation Plan.

4. **Develop and adopt a Multi-Hazard Mitigation Plan:** The Town of Wareham does not currently have a FEMA-approved Multi-Hazard Mitigation Plan. The Town is, however, in the process of developing this plan. The hazard information on flooding and sea-level rise based on this report should be included. Once finalized and adopted by the Board of

Selectmen, it will need to be updated and resubmitted to MEMA and FEMA every 5 years to remain up-to-date.

5. **Adopt special zoning for high risk areas:** As discussed in Section 4.1, one way to avoid damage from flooding and storms is to designate areas of Town that would have specific bylaws or policies, such as "no-build" restrictions, or limitations on how many times a structure can be repaired if significantly damaged during a storm. Zoning is one possibility for accomplishing this goal. Within these areas, the Town could also mandate or incentivize resiliency improving retrofits and infrastructure adaptations, depending on the property's repetitive loss history and location within the projected flood area.

6. **Long range planning and retreat for low lying neighborhoods:** The results of this study clearly identified some areas of Town that are not only at extremely high risk of inundation during a storm event today, and increasingly so into the future, but that are also likely to experience daily tidal inundation due to sea level rise by the 2050 to 2070 timeframe. In these areas, protecting and maintaining all types of infrastructure may not be feasible. In addition to eliminating ongoing costly repair and maintenance on repeatedly damaged infrastructure, managed retreat also permits valuable ecosystems to migrate landward as sea level rises. Practically, however, retreat is often the most controversial adaptation strategy because it asks so much of the people. There are, however, a number of methods a Town can pursue to encourage managed retreat:

    a. **Buy outs and incentives for relocation**: Buy outs are one mechanism for encouraging retreat. Buy out programs are most effective when initiated immediately after a natural disaster (Siders 2013). It is also helpful to incentivize homeowners to relocate elsewhere within Wareham; this not only assists in maintaining a tax base, but also retains a greater sense of community. This can be done by offering bonus payments for homeowners to relocate nearby or by developing new housing areas (Siders 2013).

    b. **Withholding of services and disinvestment from infrastructure:** In addition to direct buy-outs, another mechanism for encouraging retreat from high-risk areas is the withholding of services and disinvestment from infrastructure (Scarano, 2017). The withdrawal of services ranging from public amenities like road maintenance and sewer service can be an efficient way to facilitate coastal retreat from some areas. The primary obstacle to doing so, however, is a takings liability. But with a clear strategy and under appropriate circumstances, municipalities should be able to withdraw some services in order to facilitate coastal retreat without resulting in a taking. A Town could decide not to invest its limited resources in repairing repeatedly damaged coastal infrastructure, such as roadways or sewer lines. Residents who wish to remain could (at least in theory) privately repair and maintain this infrastructure. The added cost of doing so, would make relocation more appealing. In addition, the Town could pair phased divestment from infrastructure with relocation assistance and buyouts.

5. SUMMARY AND CONCLUSION

5.1 SUMMARY

The adaptation recommendations in this report present a varied suite of strategies, some general and some specific, that the Town of Wareham may consider for future coastal resiliency building to reduce risks from sea level rise and storm surge hazards. In many cases, these strategies are preliminary in nature and would need further refinement in the design phase. Monitoring for implementation thresholds, as well as adjusting risk and vulnerability assessments over time given evolving projections will be important elements in the Town's coastal resilience program. Additionally, these coastal resilience initiatives would benefit from a cross-departmental discussion of risk tolerance and cumulative risk. This vulnerability assessment and adaptation plan defaults, in many cases, to the 1% chance inundation events (i.e. the 100-year return period events), but certain assets may be better designed to higher or lower risk thresholds.

The analyses conducted for this project and described in this document are also a resource for conducting Town-wide vulnerability assessments for non-municipal assets, residential impacts, and other planning efforts. The supporting MC-FRM, SLAMM, and asset data accompany this report as digital files.

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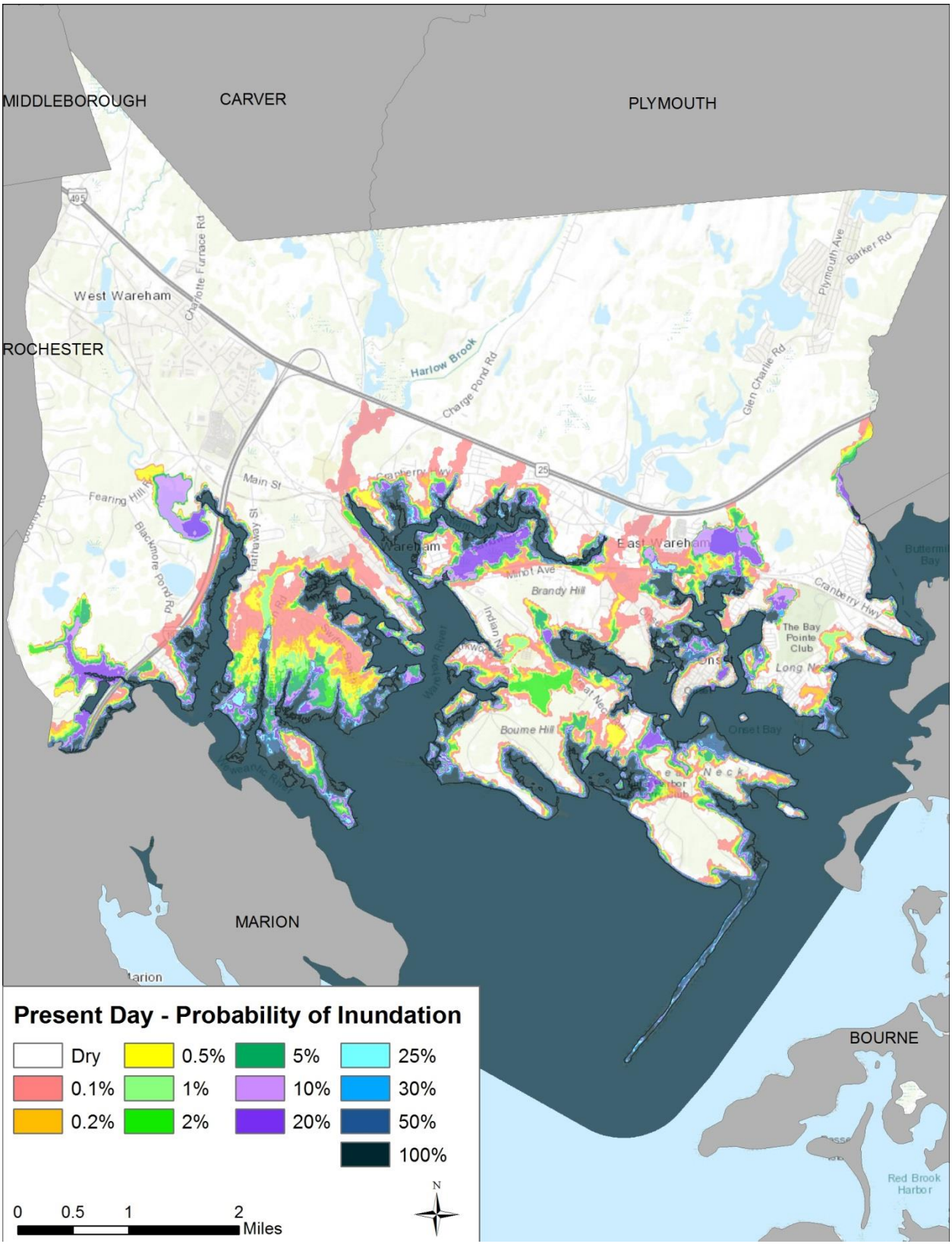
APPENDIX A. INUNDATION MAPS


MIDDLEBOROUGH
CARVER
PLYMOUTH
West Wareham
ROCHESTER
MARION
BOURNE
Present Day - Probability of Inundation
Dry
0.1%
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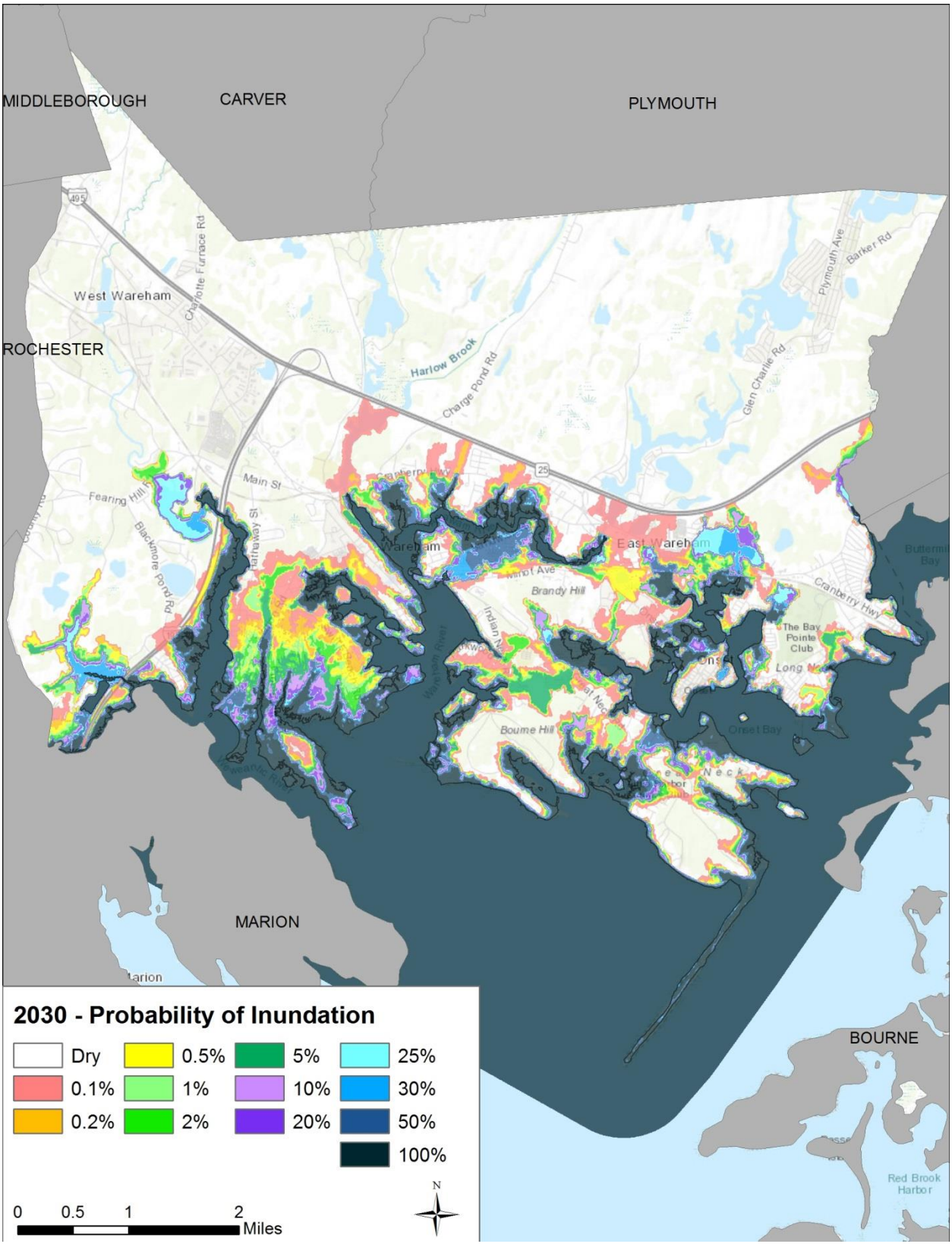
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Harlow Brook
Charge Pond Rd
Charlotte Furnace Rd
Plymouth Ave
Barker Rd
Glen Charlie Rd
Main St
Fearing Hill
Blackmore Pond Rd
Cranberry Hwy
Brandy Hill
Bourne Hill
The Bay Pointe Club
2030 - Probability of Inundation
Dry
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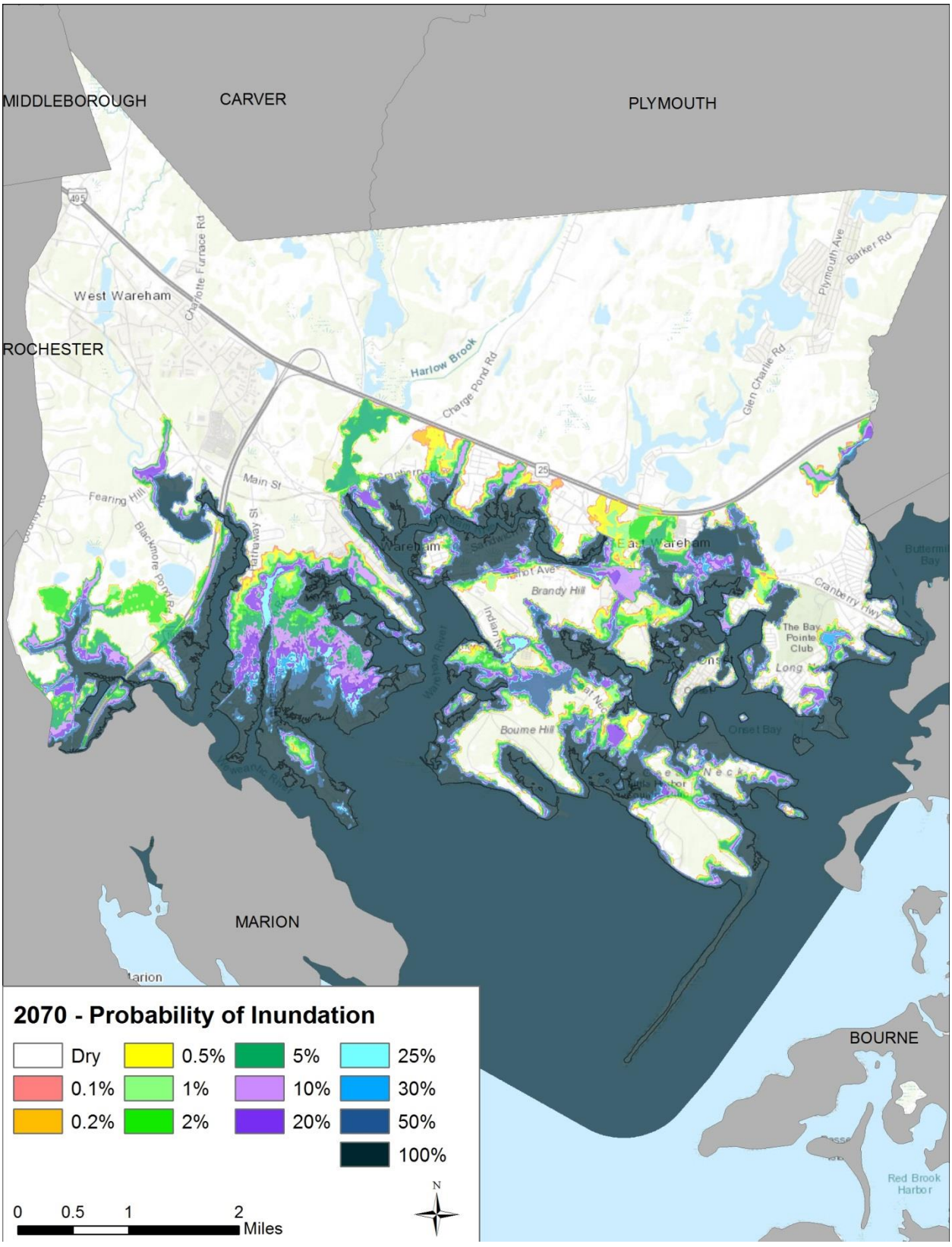
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Hathaway St
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East Wareham
Brandy Hill
Indian Neck
Cranberry Hwy
The Bay Pointe Club
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MARION
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Red Brook Harbor
2070 - Probability of Inundation
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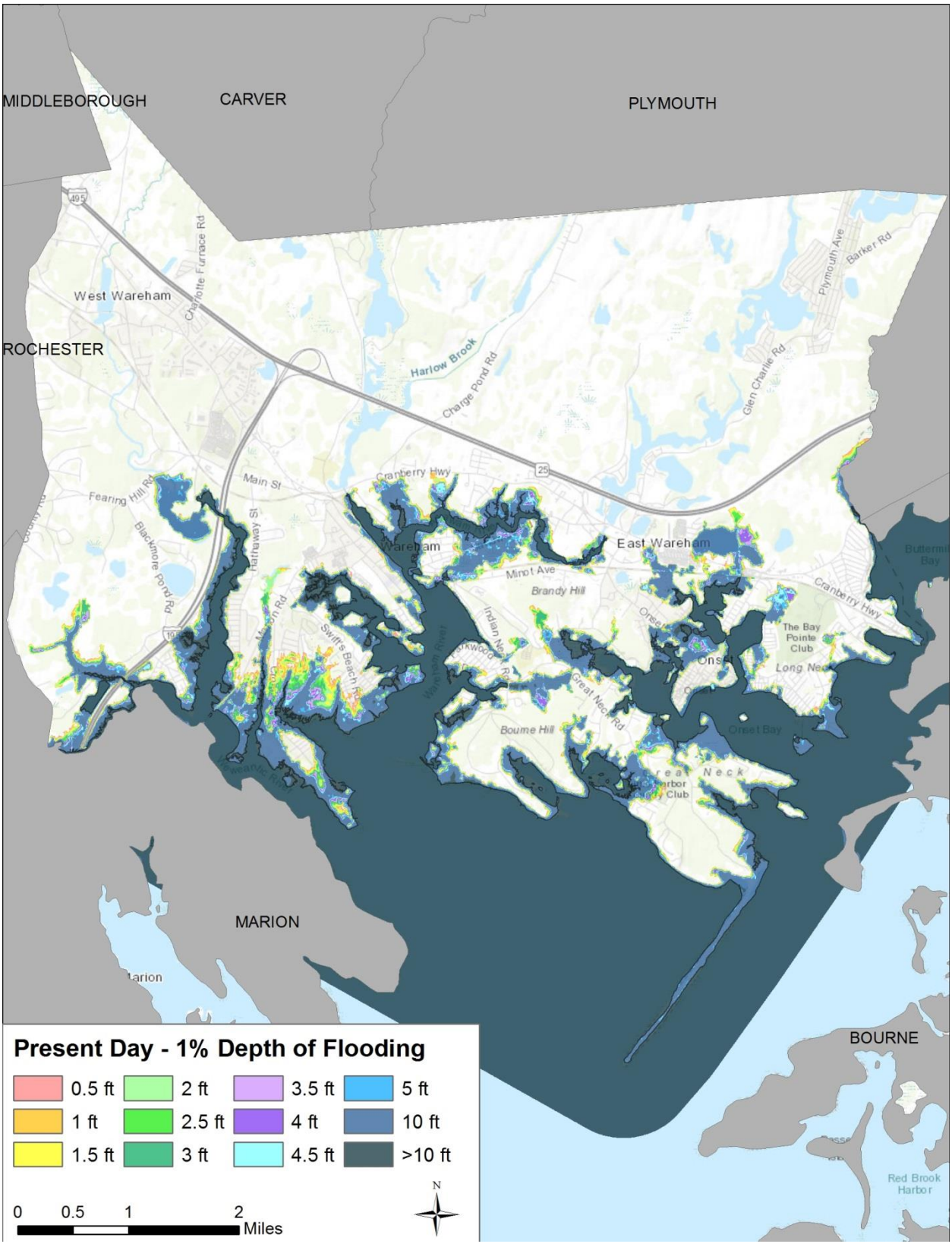
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Glen Charlie Rd
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Barker Rd
Cranberry Hwy
Main St
Fearing Hill Rd
Blackmore Pond Rd
Hathaway St
Wareham
East Wareham
Minot Ave
Brandy Hill
Swift's Beach
Indian Neck Rd
Great Neck Rd
Boume Hill
Onset Bay
The Bay Pointe Club
Onset
Long Neck
MARION
BOURNE
Red Brook Harbor
Present Day - 1% Depth of Flooding
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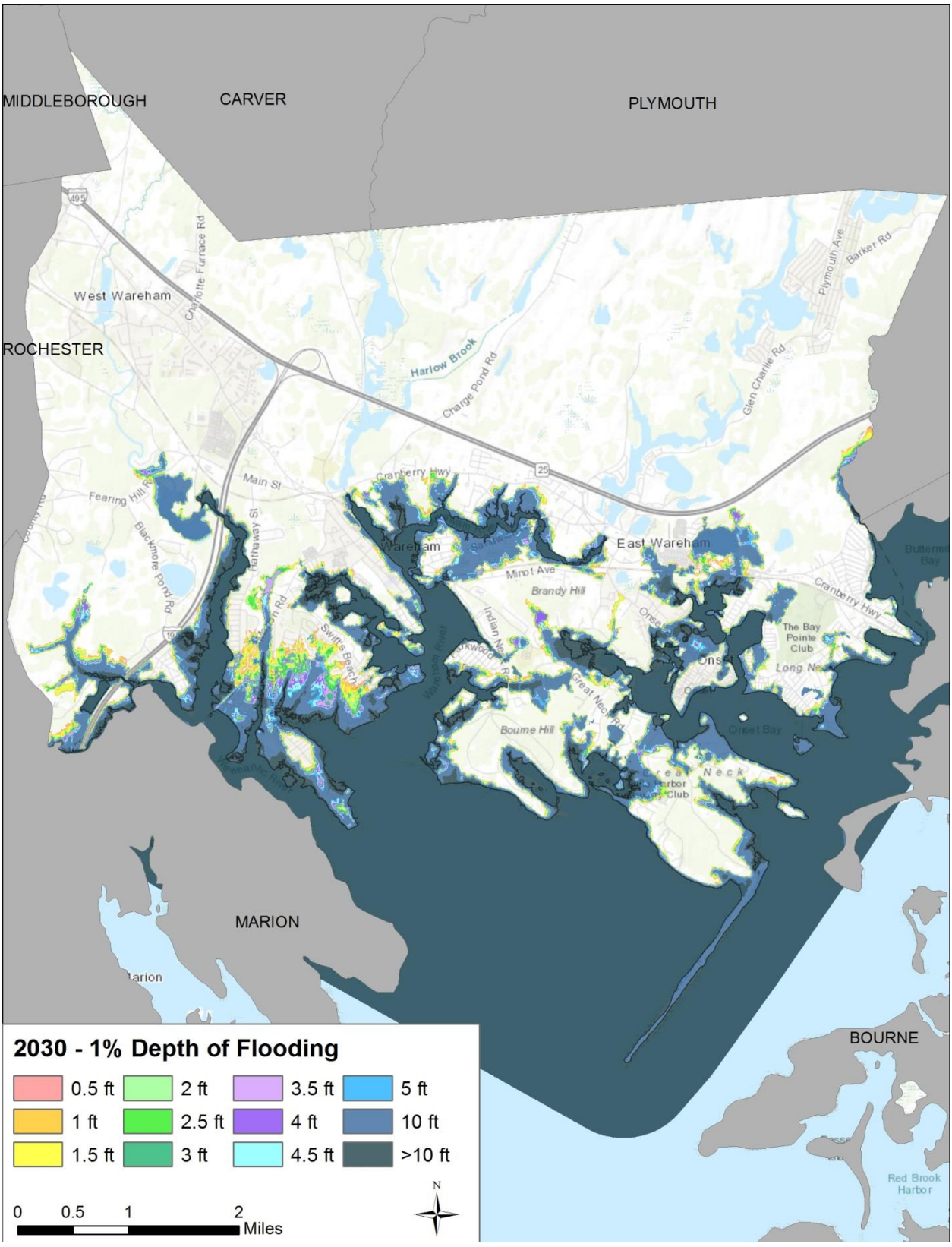
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Harlow Brook
Charge Pond Rd
Cranberry Hwy
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Minot Ave
Brandy Hill
Boume Hill
Fearing Hill Rd
Blackmore Pond Rd
Hathaway St
Swift's Beach
Indian Neck Rd
Great Neck Rd
Glen Charlie Rd
Plymouth Ave
Barker Rd
Charlotte Furnace Rd
The Bay Pointe Club
Red Brook Harbor
2030 - 1% Depth of Flooding
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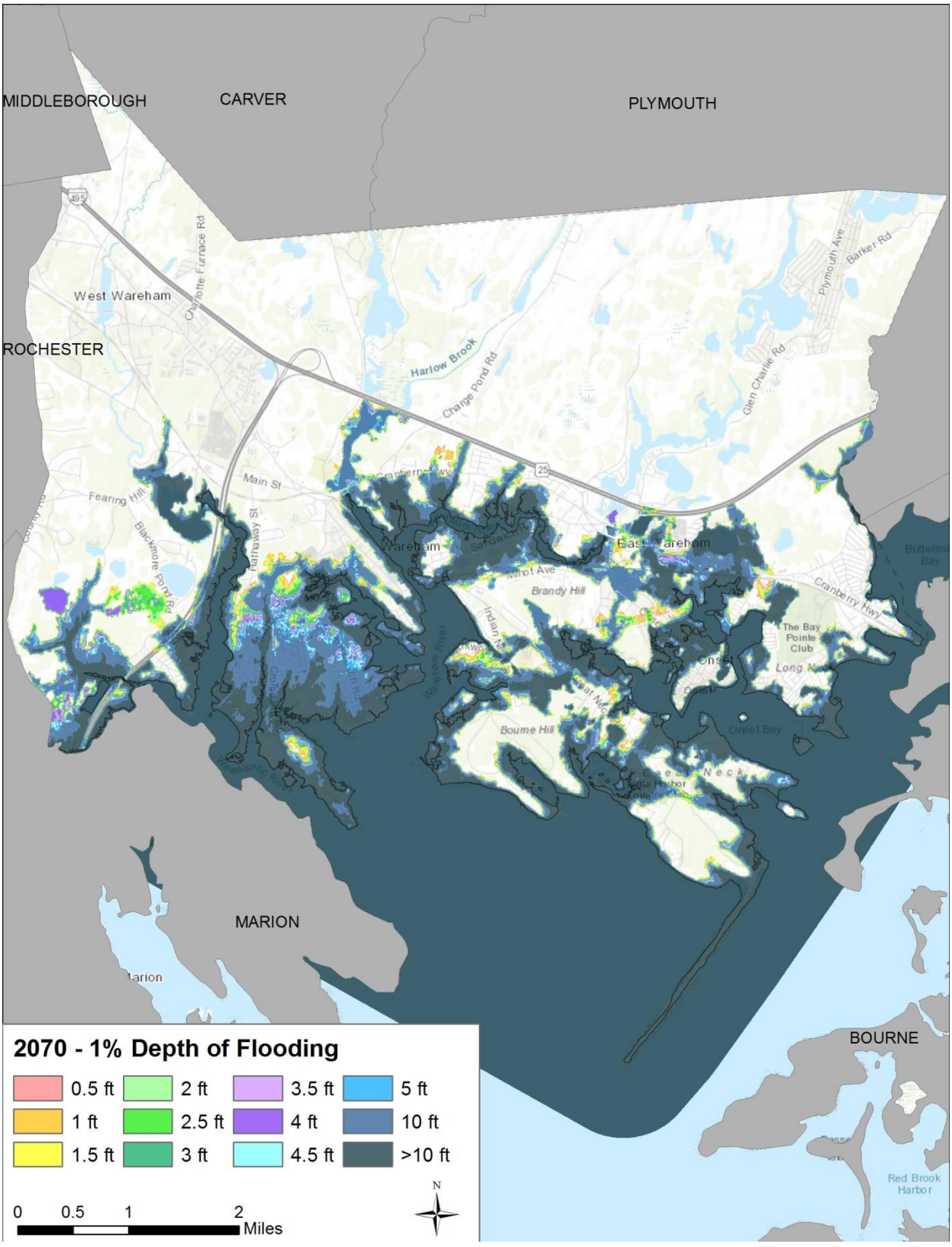
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Charge Pond Rd
Main St
Fearing Hill
Blackmore Pond Rd
Hathaway St
Brandy Hill
Cranberry Hwy
Glen Charlie Rd
Barker Rd
Plymouth Ave
Charlotte Furnace Rd
Indian Neck
Boume Hill
The Bay Pointe Club
2070 - 1% Depth of Flooding
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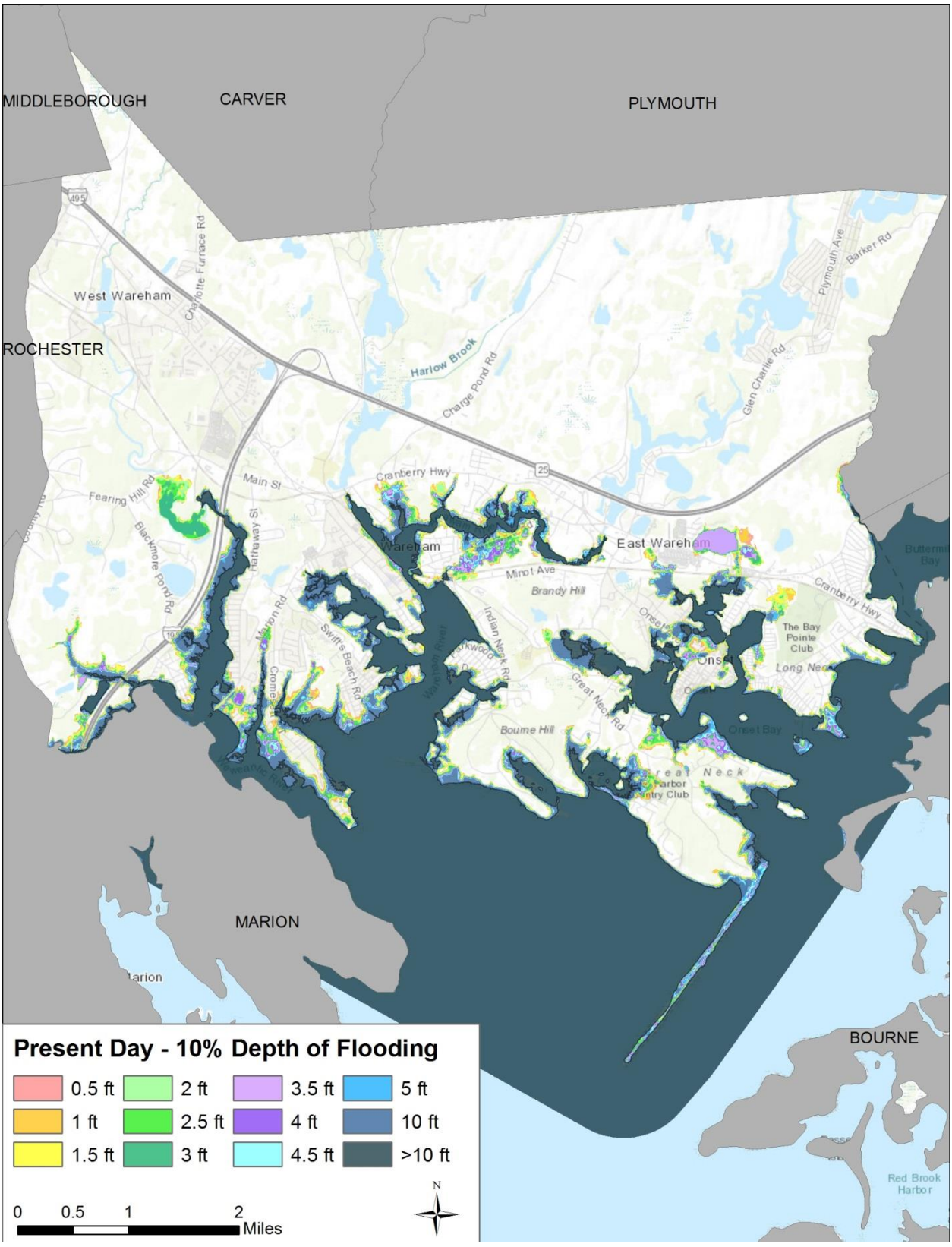
MIDDLEBOROUGH
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West Wareham
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Charlotte Furnace Rd
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Glen Charlie Rd
Plymouth Ave
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Cranberry Hwy
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Fearing Hill Rd
Blackmore Pond Rd
Hathaway St
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East Wareham
Minot Ave
Brandy Hill
Indian Neck Rd
Great Neck Rd
Boume Hill
Onset Bay
The Bay Pointe Club
Long Neck
Great Neck
Harbor Country Club
MARION
BOURNE
Red Brook Harbor
Present Day - 10% Depth of Flooding
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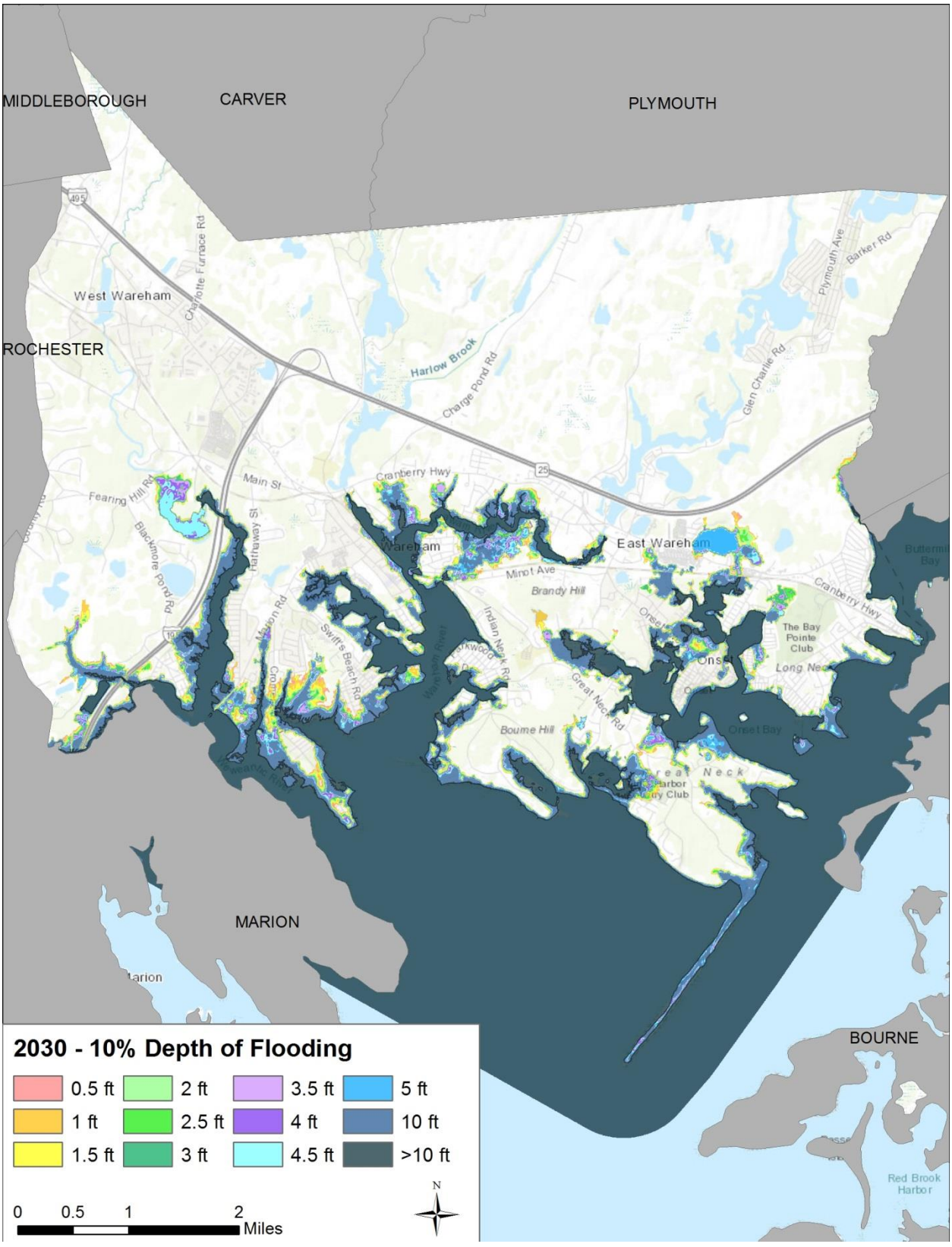
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Red Brook Harbor
Cranberry Hwy
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Boume Hill
Harlow Brook
Charge Pond Rd
Fearing Hill Rd
Blackmore Pond Rd
Hathaway St
Swift's Beach Rd
Indian Neck Rd
Great Neck Rd
Glen Charlie Rd
Barker Rd
Plymouth Ave
Charlotte Furnace Rd
The Bay Pointe Club
2030 - 10% Depth of Flooding
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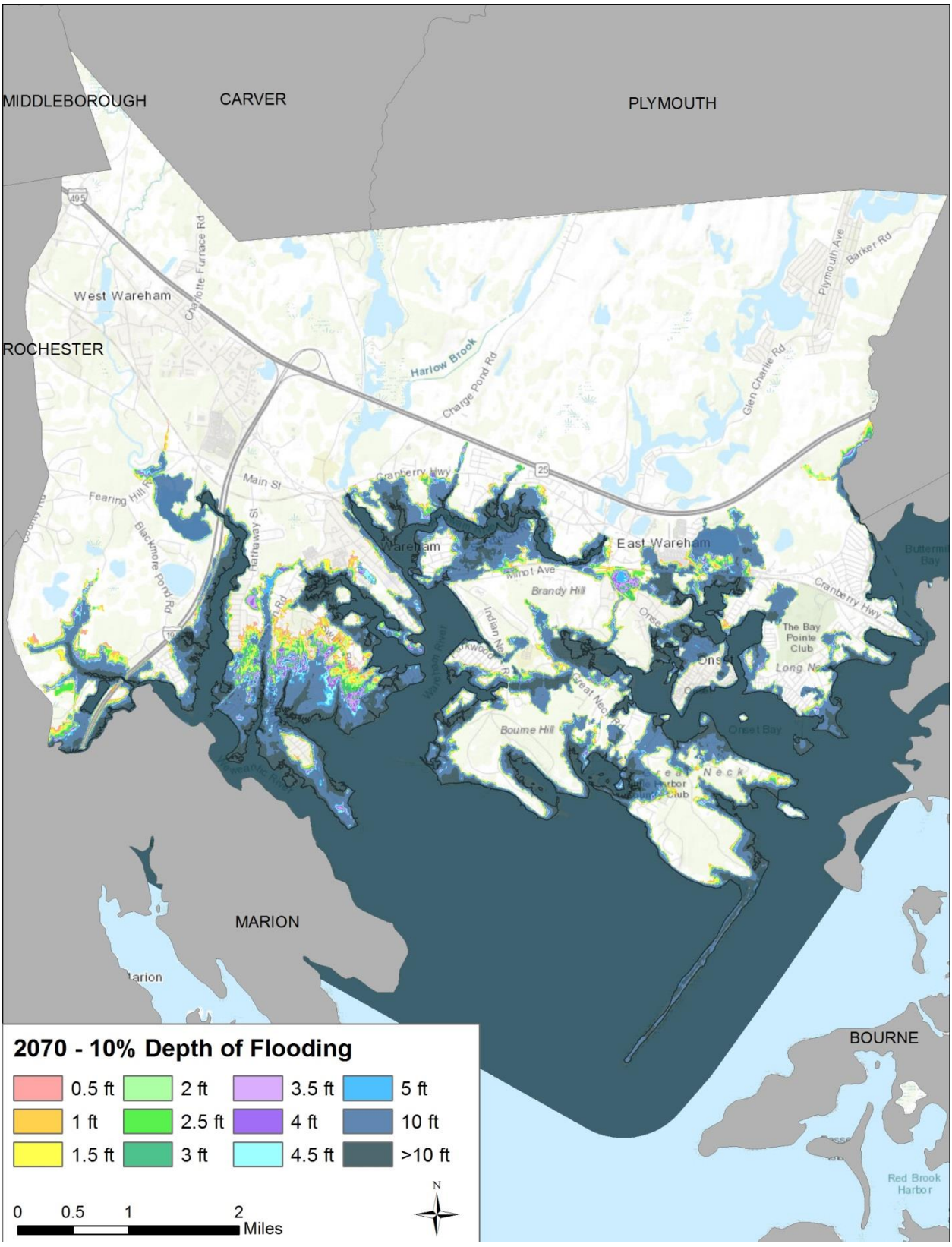
MIDDLEBOROUGH
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Charlotte Furnace Rd
Harlow Brook
Charge Pond Rd
Glen Charlie Rd
Plymouth Ave
Barker Rd
Cranberry Hwy
Main St
Fearing Hill Rd
Blackmore Pond Rd
Hathaway St
Wareham
East Wareham
Wilmot Ave
Brandy Hill
Indian Neck Rd
Onset
The Bay Pointe Club
Long Neck
Great Neck Rd
Boume Hill
Onset Bay
Sandwich Rd
MARION
BOURNE
Red Brook Harbor
2070 - 10% Depth of Flooding
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APPENDIX B. ASSET CONSEQUENCE SCORES, CRITICAL ELEVATIONS & RISK SCORES

Table B-1a: Consequence and Risk Scores for All Land-Based Assets and Major Roads.

Rank	ID#	Asset Name	Asset Type	Asset Detail	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impact on Public Safety & Emergency Services	Impact on Important Economic Activities	Impact on Public Health & Environment	Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
1	1150	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	2 Low	5 Very high	1 None	63	52.7	3338	70.1	4440	76.2	4826	3966
2	89	Arnold Pump Station	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	4 High	57	30	1700	100	5667	100	5667	3683
3	169	Besse Park Parking Lot	Parking Lot	Parking Lot	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	100	3667	100	3667	100	3667	3667
4	172	Swifts Beach Parking Lot (west)	Parking Lot	Parking Lot	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	100	3667	100	3667	100	3667	3667
5	173	Swifts Beach Parking Lot (east)	Parking Lot	Parking Lot	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	100	3667	100	3667	100	3667	3667
6	395	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	33.1	2427	56.5	4143	75.3	5522	3561
7	1366	SANDWICH ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	4 High	1 None	53	57.5	3067	70.9	3781	83.7	4464	3561
8	7	Train Station Parking Lot Restrooms	Building/Structure	Admin	2 Locality	3 7 - 14 days	3 $100k - $1m	1 None	3 Moderate	2 Low	47	50	2333	100	4667	100	4667	3500
9	27	Tremont Nail - Freight Building	Building/Structure	Historical	1 Property	2 1 - 7 days	3 $100k - $1m	1 None	2 Low	1 None	33	100	3333	100	3333	100	3333	3333
10	1149	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	2 Low	4 High	1 None	60	38.4	2304	62.9	3774	75.2	4512	3187
11	1144	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	2 $10k - $100k	2 Low	4 High	1 None	57	34.9	1978	59.6	3377	74.9	4244	2851
12	168	12th Street Boat Ramp Parking Lot	Parking Lot	Parking Lot	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	50	1833	100	3667	100	3667	2750
13	170	Little Harbor Beach Parking Lot	Parking Lot	Parking Lot	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	50	1833	100	3667	100	3667	2750
14	171	Shell Point Parking Lot	Parking Lot	Parking Lot	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	50	1833	100	3667	100	3667	2750
15	182	Swifts Beach Basketball Court	Recreation	Basketball Court	1 Property	2 1 - 7 days	1 <$10k	1 None	2 Low	1 None	27	100	2667	100	2667	100	2667	2667
16	51	Harbormaster Building & Restrooms	Building/Structure	Marine	5 Whole Town	3 7 - 14 days	3 $100k - $1m	4 High	3 Moderate	3 Moderate	70	20	1400	25	1750	100	7000	2625
17	114	Onset Heights Pump Station	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	4 High	57	20	1133	50	2833	100	5667	2550
18	120	Riverside Pump Station	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	4 High	57	20	1133	50	2833	100	5667	2550
19	163	Onset Pier	Marine	Piers/Docks	3 Neighborhood	2 1 - 7 days	3 $100k - $1m	3 Moderate	4 High	2 Low	57	20	1133	50	2833	100	5667	2550
20	1365	SANDWICH ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	29.9	1694	49.7	2816	74.4	4216	2535
21	924	MAIN STREET	Road		5 Whole Town	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	60	26.5	1590	46.7	2802	74.4	4464	2528
22	390	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	18.6	1364	35.6	2611	72.2	5295	2524
23	1048	NARROWS ROAD	Road		3 Neighborhood	3 7 - 14 days	4 $1m - $10m	2 Low	5 Very high	1 None	60	30	1800	37.7	2262	74.5	4470	2473
24	1161	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	2 $10k - $100k	2 Low	5 Very high	1 None	60	22.7	1362	46.5	2790	72.9	4374	2393
25	90	Avenue A Street Pump Station	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	4 High	57	25	1417	30	1700	100	5667	2352
26	97	East Boulevard Ejector	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	5 Very high	60	20	1200	30	1800	100	6000	2340
27	31	Tremont Nail - Shed	Building/Structure	Historical	1 Property	2 1 - 7 days	1 <$10k	1 None	1 None	1 None	23	100	2333	100	2333	100	2333	2333
28	175	Hynes Baseball Field	Recreation	Baseball Field	1 Property	2 1 - 7 days	2 $10k - $100k	1 None	2 Low	1 None	30	50	1500	100	3000	100	3000	2250
29	923	MAIN STREET	Road		5 Whole Town	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	60	20.8	1248	39	2340	73.1	4386	2203
30	400	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	13.4	983	29.9	2193	69.9	5126	2174
31	1368	SANDWICH ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	19.5	1105	40	2267	76.2	4318	2096
32	1154	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	2 Low	4 High	1 None	60	18.3	1098	37.8	2268	72.2	4332	2096
33	1364	SANDWICH ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	21.4	1213	38.8	2199	72.7	4120	2090
34	28	Tremont Nail - Nail Factory	Building/Structure	Historical	1 Property	3 7 - 14 days	3 $100k - $1m	1 None	3 Moderate	1 None	40	2	80	100	4000	100	4000	2040
35	180	Hynes Basketball Court (east)	Recreation	Basketball Court	1 Property	2 1 - 7 days	1 <$10k	1 None	2 Low	1 None	27	50	1333	100	2667	100	2667	2000
36	181	Hynes Basketball Court (west)	Recreation	Basketball Court	1 Property	2 1 - 7 days	1 <$10k	1 None	2 Low	1 None	27	50	1333	100	2667	100	2667	2000
37	29	Tremont Nail - Packaging Building	Building/Structure	Historical	1 Property	3 7 - 14 days	3 $100k - $1m	1 None	3 Moderate	1 None	40	25	1000	50	2000	100	4000	1900
38	1386	SANDWICH ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	16.7	946	32.1	1819	70.6	4001	1819
39	55	Little Harbor Restrooms	Building/Structure	Recreation	1 Property	3 7 - 14 days	2 $10k - $100k	1 None	3 Moderate	2 Low	40	20	800	50	2000	100	4000	1800
40	105	Leonard Pump Station	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	4 High	57	10	567	20	1133	100	5667	1757
41	398	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	8.7	638	21	1540	65.2	4781	1737
42	1119	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	2 $10k - $100k	2 Low	4 High	1 None	57	12.7	720	28.9	1638	69	3910	1633
43	92	Briarwood Beach Pump Station	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	4 High	57	5	283	20	1133	100	5667	1615
44	103	Indian Neck Pump Station	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	4 High	57	5	283	20	1133	100	5667	1615
45	1142	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	2 $10k - $100k	2 Low	4 High	1 None	57	18.7	1060	19.9	1128	54.5	3088	1486
46	186	Hynes Field Playground	Recreation	Playground	1 Property	2 1 - 7 days	2 $10k - $100k	1 None	2 Low	1 None	30	25	750	50	1500	100	3000	1425
47	910	MAIN AVENUE	Road		3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	37	24.9	913	39.3	1441	72.6	2662	1421
48	1128	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	2 $10k - $100k	2 Low	2 Low	1 None	50	12.1	605	27.6	1380	67.4	3370	1391
49	1159	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	2 Low	5 Very high	1 None	63	9.4	595	15.8	1001	58.8	3724	1343
50	53	Onset Pier Rental Hut	Building/Structure	Marine	1 Property	3 7 - 14 days	2 $10k - $100k	1 None	4 High	1 None	40	10	400	25	1000	100	4000	1300
51	960	MARION ROAD	Road		4 Multiple Neighborh	3 7 - 14 days	3 $100k - $1m	4 High	5 Very high	1 None	67	9.5	633	13.4	893	47.1	3140	1213
52	911	MAIN AVENUE	Road		3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	37	18.1	664	28.8	1056	68.6	2515	1152
53	1127	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	2 Low	4 High	1 None	60	6	360	15.5	930	54.7	3282	1115
54	1358	SANDWICH ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	6	340	13.2	748	58.5	3315	1057
55	430	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	3.4	249	8.9	653	49.7	3645	1049
56	1120	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	2 $10k - $100k	2 Low	4 High	1 None	57	5.3	300	13.9	788	57.5	3258	1038
57	1271	RED BROOK ROAD	Road		3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	37	15.5	568	22.2	814	66.8	2449	1018
58	503	EAST BOULEVARD	Road		3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	37	11.5	422	26.8	983	67	2457	997
59	14	Emergency Medical Services	Building/Structure	Emergency	5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	2 Low	5 Very high	77	2	153	5	383	50	3833	958
60	505	EAST BOULEVARD	Road		3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	37	11.3	414	25.5	935	62.4	2288	945
61	502	EAST BOULEVARD	Road		3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	37	9.3	341	22.3	818	63.4	2325	881
62	91	Bay Street Ejector	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	4 High	57	5	283	10	567	50	2833	878
63	506	EAST BOULEVARD	Road		3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	37	7.5	275	18.8	689	62.4	2288	802
64	88	Apple Street Pump Station	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	4 High	57	2	113	10	567	50	2833	793

Table B-1a: Consequence and Risk Scores for All Land-Based Assets and Major Roads.

Rank	ID#	Asset Name	Asset Type	Asset Detail	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impact on Public Safety & Emergency Services	Impact on Important Economic Activities	Impact on Public Health & Environment	Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
65	399	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	2	147	5.4	396	40.4	2963	785
66	1369	SANDWICH ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	3 Moderate	1 None	50	13.1	655	14	700	22.6	1130	764
67	507	EAST BOULEVARD	Road		3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	37	8.3	304	18.7	686	46.6	1709	700
68	391	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	1.8	132	3.3	242	36.1	2647	668
69	1160	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	2 $10k - $100k	2 Low	5 Very high	1 None	60	2.3	138	7	420	38.9	2334	662
70	389	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	6.2	455	8.6	631	11.7	858	588
71	974	MARION ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	4.2	238	6.5	368	30.7	1740	577
72	914	MAIN AVENUE	Road		3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	37	8.4	308	10.6	389	34.4	1261	523
73	94	Cromesett Pump Station	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	4 High	57	2	113	5	283	30	1700	482
74	952	MARION ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	1.8	102	4.9	278	29.7	1683	471
75	801	INTERSTATE 195	Road		5 Whole Town	2 1 - 7 days	1 <$10k	5 Very high	2 Low	1 None	53	6.9	368	8.2	437	12.1	645	444
76	975	MARION ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	3.5	198	5.1	289	22.3	1264	439
77	805	INTERSTATE 195	Road		5 Whole Town	2 1 - 7 days	1 <$10k	4 High	2 Low	1 None	50	2.5	125	7.6	380	25.2	1260	429
78	1357	SANDWICH ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	1.1	62	2.7	153	31	1757	428
79	429	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	2 $10k - $100k	5 Very high	5 Very high	1 None	70	0.7	49	1.9	133	24.6	1722	409
80	797	INTERSTATE 195	Road		5 Whole Town	2 1 - 7 days	1 <$10k	5 Very high	2 Low	1 None	53	4.5	240	7.6	405	15.6	832	408
81	973	MARION ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	1.6	91	3.6	204	25.3	1434	393
82	1136	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	2 $10k - $100k	2 Low	3 Moderate	1 None	53	0.9	48	2.7	144	30.2	1611	389
83	796	INTERSTATE 195	Road		5 Whole Town	2 1 - 7 days	1 <$10k	5 Very high	2 Low	1 None	53	3.4	181	6.6	352	17.7	944	385
84	20	Wareham Fire District Fire Department	Building/Structure	Emergency	5 Whole Town	3 7 - 14 days	4 $1m - $10m	5 Very high	2 Low	5 Very high	80	0.5	40	1	80	20	1600	364
85	1143	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	2 $10k - $100k	2 Low	5 Very high	1 None	60	4.2	252	5.4	324	11.4	684	360
86	110	Narrows Pump Station	Building/Structure	Sewer	4 Multiple Neighborh	2 1 - 7 days	4 $1m - $10m	5 Very high	5 Very high	5 Very high	83	0.2	17	0.5	42	20	1667	354
87	1582	UNION AVENUE	Road		3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	37	1.8	66	5.2	191	34.6	1269	344
88	380	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	1.2	88	3.3	242	14.7	1078	332
89	799	INTERSTATE 195	Road		5 Whole Town	2 1 - 7 days	1 <$10k	5 Very high	2 Low	1 None	53	4.3	229	5.4	288	12.1	645	330
90	804	INTERSTATE 195	Road		5 Whole Town	2 1 - 7 days	1 <$10k	4 High	2 Low	1 None	50	2.5	125	5.6	280	18.1	905	328
91	798	INTERSTATE 195	Road		5 Whole Town	2 1 - 7 days	1 <$10k	5 Very high	2 Low	1 None	53	3.9	208	6.7	357	10.5	560	323
92	21	Wareham Fire District Headquarters/Admin (Main St)	Building/Structure	Emergency	5 Whole Town	3 7 - 14 days	4 $1m - $10m	5 Very high	2 Low	3 Moderate	73	0.2	15	0.5	37	20	1467	312
93	1147	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	2 $10k - $100k	2 Low	2 Low	1 None	50	0.7	35	2.1	105	26.1	1305	310
94	359	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	1	73	2.8	205	13	953	289
95	428	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	2 $10k - $100k	5 Very high	5 Very high	1 None	70	0.4	28	1.1	77	17.9	1253	288
96	538	ELM STREET	Road		3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	47	4.5	210	6.9	322	9	420	286
97	976	MARION ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	1.1	62	2.7	153	18.3	1037	284
98	898	MAIN AVENUE	Road		3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	37	1.1	40	3	110	31.4	1151	283
99	119	Pinehurst Pump Station	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	5 Very high	60	0.5	30	1	60	20	1200	273
100	1022	MINOT AVENUE	Road		5 Whole Town	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	53	0.4	21	1.4	75	22.2	1184	270
101	1381	SANDWICH ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0.3	17	1.1	62	20.9	1184	264
102	116	Parkwood Pump Station	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	4 High	57	0.5	28	1	57	20	1133	258
103	124	South Boulevard Ejector	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	4 High	57	0.5	28	1	57	20	1133	258
104	977	MARION ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0.5	28	1.5	85	19.2	1088	257
105	962	MARION ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0.5	28	1.5	85	19.1	1082	256
106	1137	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	2 Low	3 Moderate	1 None	57	0.4	23	1.2	68	18.6	1054	243
107	111	North Boulevard Pump Station	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	4 High	57	0.2	11	0.5	28	20	1133	241
108	174	Tempest Knob Public Parking Lot	Parking Lot	Parking Lot	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	1	37	2	73	25	917	224
109	427	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	2 $10k - $100k	5 Very high	5 Very high	1 None	70	0.3	21	0.7	49	14	980	221
110	897	MAIN AVENUE	Road		3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	37	1.2	44	3.1	114	22.3	818	220
111	1126	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	2 Low	5 Very high	1 None	63	2.6	165	3.7	234	5.1	323	217
112	961	MARION ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0.4	23	1.2	68	16.3	924	216
113	417	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0.9	66	2	147	9.2	675	212
114	954	MARION ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0.4	23	1	57	15.9	901	209
115	566	FEARING HILL ROAD	Road		5 Whole Town	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	53	0.7	37	1.8	96	14.2	757	199
116	1121	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	2 $10k - $100k	2 Low	3 Moderate	1 None	53	0.4	21	1.2	64	14.8	789	188
117	84	Supply Shed (Behind McDuffy Annex)	Building/Structure	School	2 Locality	2 1 - 7 days	2 $10k - $100k	1 None	1 None	1 None	30	1	30	2	60	25	750	183
118	922	MAIN STREET	Road		5 Whole Town	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	60	0.3	18	0.7	42	13	780	178
119	426	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0.2	15	0.5	37	10.6	777	174
120	32	Tremont Nail - Steel Building	Building/Structure	Historical	1 Property	3 7 - 14 days	3 $100k - $1m	1 None	3 Moderate	1 None	40	0.2	8	0.5	20	20	800	170
121	13	East Wareham Firestation (Minot Ave)	Building/Structure	Emergency	5 Whole Town	3 7 - 14 days	4 $1m - $10m	5 Very high	2 Low	5 Very high	80	0.1	8	0.2	16	10	800	169
122	1168	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	2 Low	5 Very high	1 None	63	0.2	13	0.6	38	11.8	747	167
123	361	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0.3	22	0.8	59	9.3	682	165
124	953	MARION ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0.3	17	0.7	40	12.6	714	163
125	102	Hynes Field Pump Station	Building/Structure	Sewer	4 Multiple Neighborh	2 1 - 7 days	4 $1m - $10m	4 High	4 High	4 High	73	0.1	7	0.5	37	10	733	161
126	1021	MINOT AVENUE	Road		5 Whole Town	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	47	0.2	9	0.8	37	15.5	723	161
127	85	Wareham High School	Building/Structure	School	5 Whole Town	3 7 - 14 days	4 $1m - $10m	2 Low	3 Moderate	1 None	60	0.5	30	1	60	10	600	153
128	1151	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	2 Low	5 Very high	1 None	63	0.1	6	0.4	25	10.7	678	146

Table B-1a: Consequence and Risk Scores for All Land-Based Assets and Major Roads.

Rank	ID#	Asset Name	Asset Type	Asset Detail	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impact on Public Safety & Emergency Services	Impact on Important Economic Activities	Impact on Public Health & Environment	Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
129	1134	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	53	0.2	11	0.6	32	12.3	656	146
130	126	Thirteenth Street Pump Station	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	4 High	57	0.5	28	1	57	10	567	145
131	62	South Baseball Field Shed	Building/Structure	Recreation	1 Property	2 1 - 7 days	1 <$10k	1 None	1 None	1 None	23	1	23	2	47	25	583	142
132	1163	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	2 $10k - $100k	2 Low	5 Very high	1 None	60	0.1	6	0.4	24	10.9	654	141
133	1167	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	2 $10k - $100k	2 Low	5 Very high	1 None	60	0.1	6	0.4	24	10.9	654	141
134	1170	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	2 $10k - $100k	2 Low	5 Very high	1 None	60	0.1	6	0.4	24	10.9	654	141
135	539	ELM STREET	Road		3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	47	0.2	9	0.6	28	13.7	639	141
136	178	Wareham Schools South Baseball Field	Recreation	Baseball Field	1 Property	2 1 - 7 days	2 $10k - $100k	1 None	2 Low	1 None	30	0.5	15	1	30	20	600	137
137	115	Onset Pier Pump Station	Building/Structure	Sewer	4 Multiple Neighborh	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	5 Very high	63	0.1	6	0.2	13	10	633	134
138	955	MARION ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0.2	11	0.5	28	10.1	572	129
139	98	French Pump Station	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	4 High	57	0.1	6	0.5	28	10	567	125
140	100	Hathaway Pump Station	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	4 High	57	0.1	6	0.5	28	10	567	125
141	118	Pine Tree Estates Pump Station	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	4 High	57	0.1	6	0.5	28	10	567	125
142	121	Ruggles Pump Station	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	4 High	57	0.1	6	0.5	28	10	567	125
143	123	Smith Avenue Pump Station	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	4 High	57	0.1	6	0.5	28	10	567	125
144	125	South Water Pump Station	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	4 High	57	0.1	6	0.5	28	10	567	125
145	475	DEPOT STREET	Road		5 Whole Town	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	53	0.1	5	0.4	21	10.8	576	124
146	187	Wareham Schools Soccer Field	Recreation	Soccer Field	1 Property	2 1 - 7 days	1 <$10k	1 None	2 Low	1 None	27	0.5	13	1	27	20	533	121
147	96	Dick's Pond Pump Station	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	4 High	57	0.1	6	0.2	11	10	567	120
148	122	Salt Works Road Pump Station	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	4 High	57	0.1	6	0.2	11	10	567	120
149	373	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0.1	7	0.2	15	6.6	484	105
150	1356	SANDWICH ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0.1	6	0.3	17	8.3	470	102
151	416	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0.2	15	0.5	37	5.7	418	102
152	70	Spillane Field - Fields & Grounds Trailer/Office	Building/Structure	Recreation	2 Locality	2 1 - 7 days	3 $100k - $1m	2 Low	2 Low	2 Low	43	0.2	9	0.5	22	10	433	98
153	71	Spillane Field - Light Shed	Building/Structure	Recreation	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	0.2	9	0.5	22	10	433	98
154	72	Spillane Field - Shed (Bobcat/Blowers/Pumps)	Building/Structure	Recreation	2 Locality	2 1 - 7 days	3 $100k - $1m	3 Moderate	2 Low	1 None	43	0.2	9	0.5	22	10	433	98
155	1118	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	2 Low	5 Very high	1 None	63	0.1	6	0.4	25	6.8	431	97
156	69	Spillane Field - Fields & Grounds Big Shed	Building/Structure	Recreation	2 Locality	2 1 - 7 days	2 $10k - $100k	2 Low	2 Low	2 Low	40	0.2	8	0.5	20	10	400	90
157	30	Tremont Nail - Pickling Building	Building/Structure	Historical	1 Property	3 7 - 14 days	3 $100k - $1m	1 None	3 Moderate	1 None	40	0.1	4	0.2	8	10	400	84
158	477	DEPOT STREET	Road		5 Whole Town	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	53	0.1	5	0.2	11	7.3	389	84
159	1135	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	53	0.1	5	0.3	16	7.1	379	83
160	372	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0.1	7	0.1	7	5.2	381	82
161	1148	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	2 $10k - $100k	2 Low	2 Low	1 None	50	0.1	5	0.3	15	7.4	370	81
162	379	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	4 High	1 None	70	0.1	7	0.1	7	5.3	371	80
163	959	MARION ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0.1	6	0.3	17	6.3	357	79
164	73	Spillane Field - Shed (Templates/Sprinklers)	Building/Structure	Recreation	2 Locality	2 1 - 7 days	2 $10k - $100k	1 None	2 Low	1 None	33	0.2	7	0.5	17	10	333	75
165	74	Spillane Field - Snack Bar	Building/Structure	Recreation	1 Property	3 7 - 14 days	2 $10k - $100k	1 None	2 Low	1 None	33	0.2	7	0.5	17	10	333	75
166	87	Wareham Middle School	Building/Structure	School	5 Whole Town	3 7 - 14 days	4 $1m - $10m	4 High	3 Moderate	1 None	67	0.1	7	0.2	13	5	333	74
167	76	Spillane Field - Storage Containers (Push Mowers)	Building/Structure	Recreation	2 Locality	2 1 - 7 days	2 $10k - $100k	1 None	2 Low	1 None	33	0.1	3	0.5	17	10	333	73
168	360	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0.1	7	0.3	22	4.2	308	72
169	1016	MINOT AVENUE	Road		5 Whole Town	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	53	0.2	11	0.5	27	5.4	288	71
170	77	Spillane Field - Storage for Gator Machine	Building/Structure	Recreation	2 Locality	2 1 - 7 days	2 $10k - $100k	1 None	2 Low	1 None	33	0.1	3	0.2	7	10	333	70
171	191	Wareham Schools Track	Recreation	Track	1 Property	2 1 - 7 days	2 $10k - $100k	1 None	2 Low	1 None	30	0.2	6	0.5	15	10	300	68
172	78	Spillane Field - Storage Shed	Building/Structure	Recreation	2 Locality	2 1 - 7 days	1 <$10k	1 None	2 Low	1 None	30	0.2	6	0.5	15	10	300	68
173	177	Spillane Baseball Field	Recreation	Baseball Field	1 Property	2 1 - 7 days	2 $10k - $100k	1 None	2 Low	1 None	30	0.2	6	0.5	15	10	300	68
174	183	Wareham HS Football Field	Recreation	Football Field	1 Property	2 1 - 7 days	2 $10k - $100k	1 None	2 Low	1 None	30	0.2	6	0.5	15	10	300	68
175	18	Police Department Onset Substation	Building/Structure	Emergency	4 Multiple Neighborh	3 7 - 14 days	3 $100k - $1m	4 High	2 Low	3 Moderate	63	0	0	0.2	13	5	317	67
176	1129	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	2 Low	3 Moderate	1 None	57	0.1	6	0.2	11	5.3	300	66
177	176	Palmer Baseball Field	Recreation	Baseball Field	1 Property	2 1 - 7 days	2 $10k - $100k	1 None	2 Low	1 None	30	0.1	3	0.5	15	10	300	66
178	1379	SANDWICH ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0.1	6	0.2	11	5.2	295	65
179	81	McDuffy Annex (School Supplies/Chairs/Tables)	Building/Structure	School	2 Locality	2 1 - 7 days	2 $10k - $100k	1 None	1 None	1 None	30	0.1	3	0.2	6	10	300	63
180	101	Hill Street Pump Station	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	4 High	57	0.1	6	0.2	11	5	283	63
181	365	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	2 $10k - $100k	5 Very high	3 Moderate	1 None	63	0	0	0.1	6	4.8	304	63
182	104	Kennedy Lane Pump Station	Building/Structure	Sewer	4 Multiple Neighborh	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	4 High	60	0	0	0.1	6	5	300	62
183	127	Woodbury Street Ejector	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	4 High	57	0	0	0.2	11	5	283	60
184	149	Sand Pond Road - Well 3	Building/Structure	Water	5 Whole Town	2 1 - 7 days	3 $100k - $1m	2 Low	3 Moderate	3 Moderate	60	0	0	0	0	5	300	60
185	1047	NARROWS ROAD	Road		3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	43	0.1	4	0.3	13	6.2	269	60
186	99	Greene Street Ejector	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	4 High	57	0	0	0	0	5	283	57
187	106	Linwood Avenue Pump Station	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	4 High	57	0	0	0	0	5	283	57
188	969	MARION ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0.1	6	0.1	6	4.4	249	54
189	435	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0	0	0.1	7	3.5	257	54
190	564	FEARING HILL ROAD	Road		5 Whole Town	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	53	0	0	0.3	16	4.5	240	53
191	795	INTERSTATE 195	Road		5 Whole Town	2 1 - 7 days	1 <$10k	5 Very high	2 Low	1 None	53	0.1	5	0.4	21	4.1	219	53
192	63	Spillane Field - Bleachers (south)	Building/Structure	Recreation	1 Property	2 1 - 7 days	1 <$10k	1 None	1 None	1 None	23	0.2	5	0.5	12	10	233	53

Table B-1a: Consequence and Risk Scores for All Land-Based Assets and Major Roads.

Rank	ID#	Asset Name	Asset Type	Asset Detail	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impact on Public Safety & Emergency Services	Impact on Important Economic Activities	Impact on Public Health & Environment	Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
193	67	Spillane Field - Dugout (south)	Building/Structure	Recreation	1 Property	2 1 - 7 days	1 <$10k	1 None	1 None	1 None	23	0.2	5	0.5	12	10	233	53
194	905	MAIN AVENUE	Road		3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	37	0.1	4	0.2	7	6.3	231	50
195	61	Palmer Baseball Field - Dugout (west)	Building/Structure	Recreation	1 Property	2 1 - 7 days	1 <$10k	1 None	1 None	1 None	23	0.1	2	0.2	5	10	233	49
196	68	Spillane Field - Dugout (west)	Building/Structure	Recreation	1 Property	2 1 - 7 days	1 <$10k	1 None	1 None	1 None	23	0.1	2	0.2	5	10	233	49
197	412	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0	0	0.1	7	3.2	235	49
198	366	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0.1	7	0.2	15	2.8	205	49
199	968	MARION ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0	0	0.1	6	3.8	215	45
200	22	Captain John Kendrick Maritime Museum	Building/Structure	Historical	1 Property	3 7 - 14 days	3 $100k - $1m	1 None	3 Moderate	1 None	40	0	0	0.2	8	5	200	42
201	800	INTERSTATE 195	Road		5 Whole Town	2 1 - 7 days	1 <$10k	5 Very high	2 Low	1 None	53	0	0	0.2	11	3.4	181	39
202	57	Onset Band Stand	Building/Structure	Recreation	1 Property	2 1 - 7 days	3 $100k - $1m	1 None	3 Moderate	1 None	37	0	0	0	0	5	183	37
203	920	MAIN STREET	Road		5 Whole Town	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	53	0	0	0.1	5	3.1	165	35
204	406	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	2 $10k - $100k	5 Very high	5 Very high	1 None	70	0	0	0	0	2.4	168	34
205	261	CHAPEL STREET	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0	0	0.1	6	2.8	159	33
206	43	Red Wood Park (Church Ave) - Building E	Building/Structure	Housing Authorit	1 Property	2 1 - 7 days	3 $100k - $1m	1 None	1 None	2 Low	33	0	0	0	0	5	167	33
207	44	Red Wood Park (Church Ave) - Building F	Building/Structure	Housing Authorit	1 Property	2 1 - 7 days	3 $100k - $1m	1 None	1 None	2 Low	33	0	0	0	0	5	167	33
208	190	Wareham Schools Tennis Courts	Recreation	Tennis Courts	1 Property	2 1 - 7 days	2 $10k - $100k	1 None	2 Low	1 None	30	0.1	3	0.2	6	5	150	33
209	381	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0	0	0.1	7	1.9	139	30
210	913	MAIN AVENUE	Road		3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	37	0	0	0.1	4	3.9	143	30
211	86	Wareham High School - Shed	Building/Structure	School	1 Property	2 1 - 7 days	2 $10k - $100k	1 None	1 None	1 None	27	0.1	3	0.2	5	5	133	30
212	12	Parker Mills Pond Dam (ownership unknown)	Building/Structure	Dam	3 Neighborhood	5 >30 days	4 $1m - $10m	4 High	2 Low	4 High	73	0	0	0	0	2	147	29
213	95	Depot Street Pump Station	Building/Structure	Sewer	4 Multiple Neighborh	2 1 - 7 days	4 $1m - $10m	4 High	4 High	4 High	73	0	0	0	0	2	147	29
214	471	DEPOT STREET	Road		5 Whole Town	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	53	0	0	0	0	2.7	144	29
215	374	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0	0	0	0	1.9	139	28
216	79	East Wareham Elementary School (vacant)	Building/Structure	School	1 Property	1 < 1 day	3 $100k - $1m	1 None	1 None	1 None	27	0	0	0.1	3	5	133	27
217	1361	SANDWICH ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0	0	0	0	2.4	136	27
218	64	Spillane Field - Bleachers (west)	Building/Structure	Recreation	1 Property	2 1 - 7 days	1 <$10k	1 None	1 None	1 None	23	0.1	2	0.2	5	5	117	26
219	972	MARION ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0	0	0	0	2.2	125	25
220	60	Palmer Baseball Field - Dugout (east)	Building/Structure	Recreation	1 Property	2 1 - 7 days	1 <$10k	1 None	1 None	1 None	23	0	0	0.1	2	5	117	24
221	407	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0	0	0	0	1.6	117	23
222	107	Mattapoisett Pump Station	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	4 High	57	0	0	0	0	2	113	23
223	410	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	2 $10k - $100k	5 Very high	5 Very high	1 None	70	0	0	0	0	1.6	112	22
224	356	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0	0	0	0	1.4	103	21
225	802	INTERSTATE 195	Road		5 Whole Town	2 1 - 7 days	1 <$10k	4 High	2 Low	1 None	50	0	0	0.1	5	1.7	85	19
226	540	ELM STREET	Road		3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	47	0	0	0	0	1.9	89	18
227	652	GLEN CHARLIE ROAD	Road		5 Whole Town	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	53	0	0	0	0	1.6	85	17
228	971	MARION ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0	0	0	0	1.5	85	17
229	1157	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	2 Low	5 Very high	1 None	63	0	0	0	0	1.3	82	16
230	649	GLEN CHARLIE ROAD	Road		5 Whole Town	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	53	0	0	0	0	1.5	80	16
231	651	GLEN CHARLIE ROAD	Road		5 Whole Town	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	53	0	0	0	0	1.5	80	16
232	653	GLEN CHARLIE ROAD	Road		5 Whole Town	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	53	0	0	0	0	1.5	80	16
233	1378	SANDWICH ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0	0	0	0	1.3	74	15
234	1111	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	2 $10k - $100k	2 Low	3 Moderate	1 None	53	0	0	0	0	1.3	69	14
235	37	Agawam Village (Sandwich Rd) - Building 5	Building/Structure	Housing Authorit	1 Property	2 1 - 7 days	3 $100k - $1m	1 None	1 None	2 Low	33	0	0	0	0	2	67	13
236	39	Red Wood Park (Church Ave) - Building A	Building/Structure	Housing Authorit	1 Property	2 1 - 7 days	3 $100k - $1m	1 None	1 None	2 Low	33	0	0	0	0	2	67	13
237	40	Red Wood Park (Church Ave) - Building B	Building/Structure	Housing Authorit	1 Property	2 1 - 7 days	3 $100k - $1m	1 None	1 None	2 Low	33	0	0	0	0	2	67	13
238	48	Red Wood Park (Church Ave) - Maintenance Shed	Building/Structure	Housing Authorit	2 Locality	3 7 - 14 days	2 $10k - $100k	1 None	1 None	1 None	33	0	0	0	0	2	67	13
239	93	Cohasset Narrows Pump Station	Building/Structure	Sewer	4 Multiple Neighborh	2 1 - 7 days	4 $1m - $10m	4 High	2 Low	4 High	67	0	0	0	0	1	67	13
240	1138	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	2 $10k - $100k	2 Low	2 Low	1 None	50	0	0	0	0	1.2	60	12
241	112	Oak Street Pump Station	Building/Structure	Sewer	3 Neighborhood	2 1 - 7 days	4 $1m - $10m	2 Low	2 Low	4 High	57	0	0	0	0	1	57	11
242	1139	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	2 Low	3 Moderate	1 None	57	0	0	0	0	1	57	11
243	1330	ROUTE 25	Road		5 Whole Town	2 1 - 7 days	1 <$10k	4 High	2 Low	1 None	50	0	0	0	0	1.1	55	11
244	1325	ROUTE 25	Road		5 Whole Town	2 1 - 7 days	1 <$10k	5 Very high	4 High	1 None	60	0	0	0	0	0.8	48	10
245	1112	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	2 Low	4 High	1 None	60	0	0	0	0	0.8	48	10
246	1018	MINOT AVENUE	Road		5 Whole Town	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	43	0	0	0	0	1.1	48	10
247	56	Old Boys and Girls Club (Weight Room/Plow Storage)	Building/Structure	Recreation	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	2 Low	47	0	0	0	0	1	47	9
248	148	Sand Pond Road - Well 1 (not active)	Building/Structure	Water	1 Property	1 < 1 day	2 $10k - $100k	1 None	1 None	1 None	23	0	0	0	0	2	47	9
249	1333	ROUTE 25	Road		5 Whole Town	2 1 - 7 days	1 <$10k	4 High	4 High	1 None	57	0	0	0	0	0.8	45	9
250	1156	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	2 Low	5 Very high	1 None	63	0	0	0	0	0.7	44	9
251	401	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0	0	0	0	0.6	44	9
252	408	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0	0	0	0	0.6	44	9
253	49	Red Wood Park (Church Ave) - Pump House	Building/Structure	Housing Authorit	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	1 None	3 Moderate	43	0	0	0	0	1	43	9
254	1110	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	2 $10k - $100k	2 Low	3 Moderate	1 None	53	0	0	0	0	0.8	43	9
255	409	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	2 $10k - $100k	5 Very high	5 Very high	1 None	70	0	0	0	0	0.6	42	8
256	411	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	2 $10k - $100k	5 Very high	5 Very high	1 None	70	0	0	0	0	0.6	42	8

Table B-1a: Consequence and Risk Scores for All Land-Based Assets and Major Roads.

Rank	ID#	Asset Name	Asset Type	Asset Detail	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impact on Public Safety & Emergency Services	Impact on Important Economic Activities	Impact on Public Health & Environment	Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
257	375	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	2 $10k - $100k	5 Very high	5 Very high	1 None	70	0	0	0	0	0.6	42	8
258	963	MARION ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0	0	0	0	0.7	40	8
259	964	MARION ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0	0	0	0	0.7	40	8
260	970	MARION ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0	0	0	0	0.7	40	8
261	1019	MINOT AVENUE	Road		5 Whole Town	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	43	0	0	0	0	0.9	39	8
262	1256	RAMP-GLEN CHARLIE RD TO RT 25 EB	Road		2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	0	0	0	0	0.9	39	8
263	907	MAIN AVENUE	Road		3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	47	0	0	0	0	0.8	37	7
264	378	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0	0	0	0	0.5	37	7
265	393	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0	0	0	0	0.5	37	7
266	405	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0	0	0	0	0.5	37	7
267	425	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0	0	0	0	0.5	37	7
268	432	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0	0	0	0	0.5	37	7
269	433	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0	0	0	0	0.5	37	7
270	352	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	2 $10k - $100k	5 Very high	5 Very high	1 None	70	0	0	0	0	0.5	35	7
271	368	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	2 $10k - $100k	5 Very high	5 Very high	1 None	70	0	0	0	0	0.5	35	7
272	1321	ROUTE 25	Road		5 Whole Town	2 1 - 7 days	1 <$10k	4 High	4 High	1 None	57	0	0	0	0	0.6	34	7
273	958	MARION ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0	0	0	0	0.6	34	7
274	8	Tremont Nail - Pickling Building Generator	Building/Structure	Admin	1 Property	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	33	0	0	0	0	1	33	7
275	35	Agawam Village (Sandwich Rd) - Building 3	Building/Structure	Housing Authorit	1 Property	2 1 - 7 days	3 $100k - $1m	1 None	1 None	2 Low	33	0	0	0	0	1	33	7
276	36	Agawam Village (Sandwich Rd) - Building 4	Building/Structure	Housing Authorit	1 Property	2 1 - 7 days	3 $100k - $1m	1 None	1 None	2 Low	33	0	0	0	0	1	33	7
277	42	Red Wood Park (Church Ave) - Building D	Building/Structure	Housing Authorit	1 Property	2 1 - 7 days	3 $100k - $1m	1 None	1 None	2 Low	33	0	0	0	0	1	33	7
278	45	Red Wood Park (Church Ave) - Building G	Building/Structure	Housing Authorit	1 Property	2 1 - 7 days	3 $100k - $1m	1 None	1 None	2 Low	33	0	0	0	0	1	33	7
279	46	Red Wood Park (Church Ave) - Building H	Building/Structure	Housing Authorit	1 Property	2 1 - 7 days	3 $100k - $1m	1 None	1 None	2 Low	33	0	0	0	0	1	33	7
280	75	Spillane Field - Storage Containers	Building/Structure	Recreation	2 Locality	2 1 - 7 days	2 $10k - $100k	1 None	2 Low	1 None	33	0	0	0	0	1	33	7
281	906	MAIN AVENUE	Road		3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	47	0	0	0	0	0.7	33	7
282	474	DEPOT STREET	Road		5 Whole Town	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	53	0	0	0	0	0.6	32	6
283	476	DEPOT STREET	Road		5 Whole Town	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	53	0	0	0	0	0.6	32	6
284	1023	MINOT AVENUE	Road		5 Whole Town	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	53	0	0	0	0	0.6	32	6
285	353	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0	0	0	0	0.4	29	6
286	1384	SANDWICH ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0	0	0	0	0.5	28	6
287	956	MARION ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0	0	0	0	0.5	28	6
288	1587	UNION AVENUE	Road		3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	47	0	0	0	0	0.6	28	6
289	472	DEPOT STREET	Road		5 Whole Town	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	47	0	0	0	0	0.6	28	6
290	473	DEPOT STREET	Road		5 Whole Town	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	47	0	0	0	0	0.6	28	6
291	648	GLEN CHARLIE ROAD	Road		5 Whole Town	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	47	0	0	0	0	0.6	28	6
292	47	Red Wood Park (Church Ave) - Community Bldg	Building/Structure	Housing Authorit	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	2 Low	47	0	0	0	0	0.5	23	5
293	909	MAIN AVENUE	Road		3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	47	0	0	0	0	0.5	23	5
294	470	DEPOT STREET	Road		5 Whole Town	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	47	0	0	0	0	0.5	23	5
295	1320	ROUTE 25	Road		5 Whole Town	2 1 - 7 days	1 <$10k	4 High	4 High	1 None	57	0	0	0	0	0.4	23	5
296	908	MAIN AVENUE	Road		3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	43	0	0	0	0	0.5	22	4
297	1109	ONSET AVENUE	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	53	0	0	0	0	0.4	21	4
298	1583	UNION AVENUE	Road		3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	37	0	0	0	0	0.5	18	4
299	1380	SANDWICH ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0	0	0	0	0.3	17	3
300	34	Agawam Village (Sandwich Rd) - Building 2	Building/Structure	Housing Authorit	1 Property	2 1 - 7 days	3 $100k - $1m	1 None	1 None	2 Low	33	0	0	0	0	0.5	17	3
301	41	Red Wood Park (Church Ave) - Building C	Building/Structure	Housing Authorit	1 Property	2 1 - 7 days	3 $100k - $1m	1 None	1 None	2 Low	33	0	0	0	0	0.5	17	3
302	1382	SANDWICH ROAD	Road		4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	4 High	1 None	53	0	0	0	0	0.3	16	3
303	350	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0	0	0	0	0.2	15	3
304	355	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0	0	0	0	0.2	15	3
305	150	Sand Pond Road - Well 4	Building/Structure	Water	5 Whole Town	2 1 - 7 days	3 $100k - $1m	2 Low	3 Moderate	3 Moderate	60	0	0	0	0	0.2	12	2
306	904	MAIN AVENUE	Road		3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	40	0	0	0	0	0.3	12	2
307	1331	ROUTE 25	Road		5 Whole Town	2 1 - 7 days	1 <$10k	4 High	2 Low	1 None	50	0	0	0	0	0.2	10	2
308	59	Onset Park Restrooms	Building/Structure	Recreation	2 Locality	3 7 - 14 days	3 $100k - $1m	1 None	3 Moderate	2 Low	47	0	0	0	0	0.2	9	2
309	1588	UNION AVENUE	Road		3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	43	0	0	0	0	0.2	9	2
310	19	Proposed Fire District Building - 8 Sand Pond Rd	Building/Structure	Emergency	5 Whole Town	3 7 - 14 days	4 $1m - $10m	5 Very high	2 Low	5 Very high	80	0	0	0	0	0.1	8	2
311	397	CRANBERRY HIGHWAY	Road		5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0	0	0	0	0.1	7	1
312	1257	RAMP-GLEN CHARLIE RD TO RT 25 EB	Road		2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	0	0	0	0	0.2	7	1
313	38	Agawam Village (Sandwich Rd) - Com. Bldg/Office	Building/Structure	Housing Authorit	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	2 Low	47	0	0	0	0	0.1	5	1
314	1258	RAMP-GLEN CHARLIE RD TO RT 25 EB	Road		2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0	0	0	0	0.1	3	1

Table B-1b: Consequence and Risk Scores for All At Risk Road Assets.

Rank	ID#	Asset Name	Asset Type		Area of Service Loss		Duration of Service Loss		Cost of Damage		Impact on Public Safety & Emergency Services		Impact on Important Economic Activities		Impact on Public Health & Environment	Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
1	693	GREEN STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	5	Very high	1	None	53	70.9	3781	78	4160	88.4	4715	4082
2	886	LYDIAS ISLAND ROAD	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	89.5	3878	91.5	3965	100	4333	3995
3	1150	ONSET AVENUE	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	2	Low	5	Very high	1	None	63	52.7	3338	70.1	4440	76.2	4826	3966
4	297	CIRCLE DRIVE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	5	Very high	1	None	53	65.5	3493	74.1	3952	87.1	4645	3861
5	1464	SOUTH WATER STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	5	Very high	1	None	53	64.8	3456	72.7	3877	90.4	4821	3855
6	1368	SANDWICH ROAD	Road	4	Multiple Neighborl	2	1 - 7 days	1	<$10k	4	High	5	Very high	1	None	57	66.5	3768	66.9	3791	73.3	4154	3852
7	1031	MONUMENT AVENUE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	81.1	3514	84.1	3644	99.1	4294	3709
8	1176	OVER JORDAN ROAD	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	80	3467	82.4	3571	100	4333	3671
9	395	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	5	Very high	5	Very high	1	None	73	33.1	2427	56.5	4143	75.3	5522	3561
10	1366	SANDWICH ROAD	Road	4	Multiple Neighborl	2	1 - 7 days	1	<$10k	4	High	4	High	1	None	53	57.5	3067	70.9	3781	83.7	4464	3561
11	219	CAMP STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	94.5	3465	95.4	3498	100	3667	3515
12	1343	SALT CREEK ROAD	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	75.9	3289	76	3293	100	4333	3499
13	1516	SWIFTS BEACH ROAD	Road	2	Locality	3	7 - 14 days	4	$1m - $10m	2	Low	5	Very high	1	None	57	51.1	2896	67.4	3819	75.3	4267	3447
14	1090	OCEANSIDE DRIVE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	4	High	1	None	50	62.6	3130	73.2	3660	76.9	3845	3432
15	1093	OLD COLONY AVENUE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	72	3120	75.9	3289	100	4333	3413
16	1213	PINEHURST DRIVE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	5	Very high	1	None	53	52.8	2816	67.2	3584	85.2	4544	3392
17	304	CLEVELAND AVENUE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	72.9	3159	75.3	3263	94.9	4112	3381
18	1305	ROBY STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	70.8	3068	75.1	3254	99.7	4320	3374
19	1446	SIAS POINT ROAD EXTENSION	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	70.9	3072	74.8	3241	98.3	4260	3361
20	296	CIRCLE DRIVE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	3	Moderate	1	None	47	65.3	3047	73.8	3444	85.7	3999	3357
21	1072	NORTH WATER STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	4	High	1	None	50	56.6	2830	72.7	3635	84.3	4215	3348
22	1438	SHORE AVENUE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	69.9	3029	75	3250	97.5	4225	3335
23	45	ALDEN ROAD	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	69.4	3007	74.9	3246	97.6	4229	3323
24	779	INDEPENDENCE LANE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	5	Very high	1	None	53	48.9	2608	70.7	3771	82.3	4389	3313
25	1652	WILSON STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	4	High	1	None	50	56.5	2825	65.5	3275	89.6	4480	3291
26	894	MADISON STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	69	2990	75.8	3285	90.1	3904	3261
27	106	BARNES STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	4	High	1	None	50	56.5	2825	70.8	3540	75.5	3775	3230
28	1198	PILGRIM AVENUE	Road	2	Locality	3	7 - 14 days	4	$1m - $10m	2	Low	2	Low	1	None	47	62.1	2898	73.1	3411	79.1	3691	3211
29	1401	SEA MEADOW LANE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	5	Very high	1	None	53	49.4	2635	67.9	3621	75.3	4016	3207
30	220	CAMP STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	67	2903	74.7	3237	88.9	3852	3193
31	1180	PARKWOOD DRIVE	Road	2	Locality	3	7 - 14 days	4	$1m - $10m	2	Low	3	Moderate	1	None	50	52.3	2615	67.5	3375	87.2	4360	3192
32	1149	ONSET AVENUE	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	2	Low	4	High	1	None	60	38.4	2304	62.9	3774	75.2	4512	3187
33	1338	RUGGLES STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	66.5	2882	74.1	3211	88.2	3822	3169
34	295	CIRCLE DRIVE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	3	Moderate	1	None	47	61.1	2851	72.2	3369	75.7	3533	3143
35	1399	SEA GULL LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	70.8	2832	76	3040	99.8	3992	3126
36	554	FAIRVIEW LANE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	63.2	2739	73.4	3181	89.9	3896	3103
37	136	BEACH STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	66.6	2886	74.4	3224	77.6	3363	3083
38	850	LAZY HARBOR ROAD	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	62	2687	72.3	3133	90.5	3922	3068
39	140	BELMONT STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	61.8	2678	72.9	3159	88.7	3844	3055
40	1040	MUNROE PARKWAY	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	62.1	2691	70.1	3038	91.2	3952	3047
41	450	CROMESETT ROAD	Road	2	Locality	3	7 - 14 days	4	$1m - $10m	2	Low	5	Very high	1	None	57	42.1	2386	59.1	3349	74.8	4239	3045
42	1315	ROOSEVELT STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	63.7	2760	73.8	3198	81.1	3514	3042
43	1437	SHORE AVENUE	Road	2	Locality	3	7 - 14 days	2	$10k - $100k	2	Low	2	Low	1	None	40	69	2760	74.9	2996	94.8	3792	3037
44	852	LEONARD STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	63.1	2734	72.7	3150	80.9	3506	3013
45	1066	NORTH BOULEVARD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	76	2787	79.9	2930	100	3667	3006
46	1457	SMITH AVENUE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	63.9	2769	73.3	3176	75.5	3272	2992

Table B-1b: Consequence and Risk Scores for All At Risk Road Assets.

Rank	ID#	Asset Name	Asset Type	Area of Service Loss		Duration of Service Loss		Cost of Damage		Impact on Public Safety & Emergency Services		Impact on Important Economic Activities		Impact on Public Health & Environment		Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
47	1445	SIAS POINT ROAD	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	62.2	2695	73.3	3176	79.2	3432	2987
48	135	BEACH STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	61.9	2682	72.8	3155	79.9	3462	2980
49	1008	MERCHANTS WAY	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	63.1	2734	73.7	3194	75.5	3272	2980
50	1225	PLEASANT STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	5	Very high	1	None	53	43.6	2325	63.3	3376	75.3	4016	2979
51	172	BRIARWOOD DRIVE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	61.2	2652	72.4	3137	81.6	3536	2974
52	574	FILLMORE STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	61	2643	72.4	3137	82.1	3558	2974
53	1427	SHELL LANE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	58.3	2526	68.8	2981	92.6	4013	2960
54	709	HARBOR AVENUE	Road	2	Locality	3	7 - 14 days	2	$10k - $100k	2	Low	2	Low	1	None	40	60.3	2412	83.4	3336	92.9	3716	2950
55	108	BASS COVE LANE	Road	2	Locality	3	7 - 14 days	4	$1m - $10m	2	Low	2	Low	1	None	47	52.4	2445	67.2	3136	81.3	3794	2922
56	294	CIRCLE DRIVE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	4	High	1	None	50	46.9	2345	65.7	3285	75.4	3770	2912
57	1656	WINDY STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	60	2600	72.4	3137	75.5	3272	2896
58	152	BLACKMORE POND ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	83.9	2797	86.8	2893	94.2	3140	2894
59	887	LYDIAS ISLAND ROAD	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	59.5	2578	66.9	2899	84.8	3675	2894
60	1444	SIAS POINT ROAD	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	59.3	2570	72.2	3129	76.7	3324	2888
61	1196	PIGS POINT ROAD	Road	1	Property	3	7 - 14 days	2	$10k - $100k	2	Low	2	Low	1	None	37	72.4	2655	78.6	2882	94.2	3454	2883
62	1246	QUAIL LANE	Road	2	Locality	3	7 - 14 days	2	$10k - $100k	2	Low	2	Low	1	None	40	65.7	2628	71.3	2852	87.6	3504	2870
63	1144	ONSET AVENUE	Road	5	Whole Town	3	7 - 14 days	2	$10k - $100k	2	Low	4	High	1	None	57	34.9	1978	59.6	3377	74.9	4244	2851
64	1041	MUNROE PARKWAY	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	55.9	2422	68.4	2964	85.2	3692	2839
65	1042	MURPHY STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	57.5	2492	71.4	3094	76.5	3315	2837
66	1603	WANKINQUOAH AVENUE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	57.4	2487	71.3	3090	75.5	3272	2825
67	1520	T STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	4	High	1	None	50	44.1	2205	63.8	3190	75.3	3765	2812
68	171	BRADFORD AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	80.1	2670	84.7	2823	93.5	3117	2805
69	1448	SIAS POINT ROAD EXTENSION	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	54.8	2375	69.1	2994	82.9	3592	2804
70	848	LARCH STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	54.5	2362	69.9	3029	82.3	3566	2803
71	1524	TAFT STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	3	Moderate	1	None	47	47.3	2207	64	2987	85.3	3981	2796
72	1045	MYRTLE STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	5	Very high	1	None	53	39.2	2091	59.1	3152	75	4000	2791
73	323	COOLIDGE ROAD	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	3	Moderate	1	None	47	50.1	2338	65.7	3066	74.2	3463	2781
74	713	HARDING AVENUE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	5	Very high	1	None	53	45.5	2427	48.8	2603	73.3	3909	2776
75	196	BURGESS POINT ROAD	Road	2	Locality	3	7 - 14 days	4	$1m - $10m	2	Low	2	Low	1	None	47	48.6	2268	59.2	2763	87	4060	2775
76	1506	SUNSET ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	75.3	2510	84.2	2807	100	3333	2764
77	859	LITTLE HARBOR ROAD	Road	2	Locality	3	7 - 14 days	4	$1m - $10m	2	Low	5	Very high	1	None	57	38.7	2193	53	3003	66.7	3780	2753
78	811	JEFFERSON SHORES ROAD	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	4	High	1	None	50	42.3	2115	62.5	3125	75.1	3755	2746
79	1678	WORRALL AVENUE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	53.7	2327	68.1	2951	79.3	3436	2736
80	1089	OCEANSIDE DRIVE	Road	2	Locality	3	7 - 14 days	2	$10k - $100k	2	Low	2	Low	1	None	40	62.3	2492	73.1	2924	76.4	3056	2734
81	584	FLORENCE STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	50.9	2206	67.1	2908	87.6	3796	2734
82	197	BURGESS POINT ROAD	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	55.1	2388	59.6	2583	86.1	3731	2715
83	667	GRAHAM STREET	Road	2	Locality	3	7 - 14 days	2	$10k - $100k	2	Low	2	Low	1	None	40	62.1	2484	72.4	2896	75	3000	2711
84	256	CENTRAL PARK AVENUE	Road	2	Locality	3	7 - 14 days	2	$10k - $100k	2	Low	2	Low	1	None	40	61.3	2452	72.5	2900	76.8	3072	2710
85	1298	ROBINWOOD ROAD	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	52.7	2284	69.2	2999	76.4	3311	2704
86	1237	POND STREET	Road	2	Locality	3	7 - 14 days	2	$10k - $100k	2	Low	2	Low	1	None	40	60.9	2436	72.7	2908	75.5	3020	2694
87	580	FISHERMANS COVE ROAD	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	53.3	2310	67.6	2929	74.3	3220	2678
88	1458	SMITH AVENUE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	51.6	2236	68	2947	77.4	3354	2673
89	819	JOBS ISLAND ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	75.1	2503	75.4	2513	100	3333	2672
90	607	FREDERICK L GOMEZ WAY	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	75	2500	75.4	2513	100	3333	2671
91	1043	MURPHY STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	3	Moderate	1	None	47	45.4	2119	64.6	3015	75.4	3519	2667
92	1644	WILD ROSE AVENUE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	54	2340	59.3	2570	81.7	3540	2649

Table B-1b: Consequence and Risk Scores for All At Risk Road Assets.

Rank	ID#	Asset Name	Asset Type	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impact on Public Safety & Emergency Services	Impact on Important Economic Activities	Impact on Public Health & Environment	Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
93	95	BAKERS ISLAND ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	73.6	2453	75.2	2507	100	3333	2645
94	313	CODMAN POINT ROAD	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	53	2297	57.8	2505	85.6	3709	2642
95	1447	SIAS POINT ROAD EXTENSION	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	2 Low	1 None	40	56.1	2244	69.5	2780	84.1	3364	2629
96	81	ASH STREET	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	50.5	2188	66.7	2890	75.5	3272	2616
97	1513	SWIFTS BEACH ROAD	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	2 Low	1 None	40	55.6	2224	68.7	2748	83.2	3328	2602
98	1602	WANKINQUOAH AVENUE	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	2 Low	1 None	40	56.1	2244	70.6	2824	75.5	3020	2573
99	1291	RIPLAH ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	69.3	2310	75.1	2503	100	3333	2573
100	320	COMMONWEALTH AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	69.1	2303	75.1	2503	100	3333	2569
101	917	MAIN STREET	Road	5 Whole Town	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	53	33.6	1792	54.5	2907	74.6	3979	2564
102	156	BLUEJAY TERRACE	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	3 Moderate	1 None	43	50.2	2175	59.2	2565	81.1	3514	2560
103	1314	ROOSEVELT STREET	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	2 Low	1 None	40	53.6	2144	64.7	2588	88.6	3544	2557
104	561	FATHOM LANE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	48.3	2093	65.6	2843	74.9	3246	2548
105	523	EDGEWATER WAY	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	49.2	2132	64.2	2782	73.4	3181	2537
106	98	BARLOW AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	69	2300	74.8	2493	95.6	3187	2535
107	1365	SANDWICH ROAD	Road	4 Multiple Neighborl	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	29.9	1694	49.7	2816	74.4	4216	2535
108	542	ELMWOOD STREET	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	4 High	1 None	50	41.6	2080	48.7	2435	76	3800	2530
109	990	MAYFLOWER AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	47	2037	65.8	2851	75.6	3276	2529
110	924	MAIN STREET	Road	5 Whole Town	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	60	26.5	1590	46.7	2802	74.4	4464	2528
111	390	CRANBERRY HIGHWAY	Road	5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	18.6	1364	35.6	2611	72.2	5295	2524
112	1642	WIDOWS COVE LANE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	50.3	2180	54.8	2375	82.6	3579	2518
113	1679	WORRALL AVENUE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	46.7	2024	64	2773	75.3	3263	2496
114	841	KNOWLES AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	41.8	1811	60	2600	91.2	3952	2476
115	987	MATTAPOISETT ROAD	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	45.4	1967	60.5	2622	81	3510	2472
116	1207	PINEHURST DRIVE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	5 Very high	1 None	53	34.4	1835	45	2400	77.5	4133	2464
117	812	JEFFERSON SHORES ROAD	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	3 Moderate	1 None	47	39.2	1829	60	2800	75.1	3505	2456
118	75	ARNOLD STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	57.8	2119	64.8	2376	92.9	3406	2454
119	530	EISENHOWER AVENUE	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	2 Low	1 None	40	49.7	1988	65.2	2608	84.2	3368	2450
120	127	BAYSIDE AVENUE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	45	1950	58.9	2552	81.3	3523	2445
121	1518	SYCAMORE STREET	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	5 Very high	1 None	53	30.3	1616	52.5	2800	74.7	3984	2445
122	1316	ROSE POINT AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	63.3	2110	81.7	2723	85.6	2853	2443
123	131	BAYVIEW STREET	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	45	1950	56.3	2440	84.8	3675	2442
124	1199	PILGRIM AVENUE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	42.9	1859	63.1	2734	75.3	3263	2402
125	37	AGAWAM BEACH ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	61	2033	75.2	2507	94.4	3147	2398
126	1161	ONSET AVENUE	Road	5 Whole Town	3 7 - 14 days	2 $10k - $100k	2 Low	5 Very high	1 None	60	22.7	1362	46.5	2790	72.9	4374	2393
127	454	CURLEW WAY	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	45.1	1954	54.9	2379	80.6	3493	2389
128	577	FIRST AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	49.8	1992	66	2640	74.8	2992	2386
129	1092	OLD CARR LANDING ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	42.7	1850	62.2	2695	75	3250	2384
130	699	GROVE STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	39.8	1725	63.1	2734	80.7	3497	2382
131	1615	WASHINGTON DRIVE	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	2 Low	1 None	40	48.4	1936	66.7	2668	76.4	3056	2380
132	1680	WORRALL AVENUE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	42.3	1833	62.4	2704	75.2	3259	2379
133	1525	TARPAULIN WAY	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	40	1733	60.2	2609	82	3553	2360
134	946	MAPLE STREET	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	4 High	1 None	47	48	2240	48.6	2268	59.8	2791	2359
135	1048	NARROWS ROAD	Road	3 Neighborhood	3 7 - 14 days	4 $1m - $10m	2 Low	5 Very high	1 None	60	19.8	1188	31.4	1884	99.6	5976	2354
136	1235	POND STREET	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	2 Low	1 None	40	46.3	1852	63	2520	82.4	3296	2341
137	443	CROMESETT POINT	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	40.9	1772	60.8	2635	76.3	3306	2338
138	170	BRADFORD AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	61.1	2037	71	2367	90.5	3017	2332

Table B-1b: Consequence and Risk Scores for All At Risk Road Assets.

Rank	ID#	Asset Name	Asset Type	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impact on Public Safety & Emergency Services	Impact on Important Economic Activities	Impact on Public Health & Environment	Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
139	1658	WINSHIP AVENUE	Road	2 Locality	3 7 - 14 days	4 $1m - $10m	2 Low	2 Low	1 None	47	35	1633	57.7	2693	75.2	3509	2326
140	498	EAST BOULEVARD	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	5 Very high	1 None	53	26.7	1424	50.7	2704	74.4	3968	2317
141	1197	PIGS POINT ROAD	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	5 Very high	1 None	50	33.9	1695	45.3	2265	76.8	3840	2295
142	48	ALGELO AVENUE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	3 Moderate	1 None	47	34.8	1624	55.2	2576	74.7	3486	2282
143	1319	ROSS AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	59.7	1990	68.6	2287	89.5	2983	2278
144	72	ARLINGTON ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	60.4	2013	71.3	2377	82.8	2760	2272
145	314	CODMAN POINT ROAD	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	46.2	2002	48.7	2110	71.3	3090	2252
146	714	HARRISON AVENUE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	37.8	1638	60.2	2609	74.8	3241	2250
147	662	GORDON STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	58.2	1940	64.8	2160	93	3100	2238
148	1000	MCKINLEY STREET	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	39.4	1707	58.1	2518	72.2	3129	2235
149	67	APPLE STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	50.4	1848	59.5	2182	88.6	3249	2228
150	923	MAIN STREET	Road	5 Whole Town	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	60	20.8	1248	39	2340	73.1	4386	2203
151	855	LINCOLN HIGHWAY	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	37.5	1625	56.9	2466	74.6	3233	2199
152	16	15TH STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	55.3	1843	68.5	2283	88.7	2957	2198
153	1668	WOODBURY STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	59.1	1970	67.9	2263	79.3	2643	2193
154	125	BAYSIDE AVENUE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	3 Moderate	1 None	47	32.1	1498	53.3	2487	74.4	3472	2190
155	1073	NORTHPORT DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	56.8	1893	73.2	2440	76.6	2553	2189
156	1227	PLOVER ROAD	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	2 Low	1 None	40	41.9	1676	60.3	2412	78.3	3132	2188
157	47	ALGELO AVENUE	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	3 Moderate	1 None	43	42.9	1859	45.7	1980	76.3	3306	2185
158	444	CROMESETT POINT	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	36.6	1586	57.4	2487	74.4	3224	2184
159	546	EVERGREEN STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	48.1	1764	67	2457	76.1	2790	2177
160	849	LARCH STREET	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	36.9	1599	57.1	2474	73.1	3168	2175
161	400	CRANBERRY HIGHWAY	Road	5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	13.4	983	29.9	2193	69.9	5126	2174
162	335	COVE STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	57.1	1903	71.9	2397	75.5	2517	2174
163	173	BRIARWOOD DRIVE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	5 Very high	1 None	53	24.5	1307	45.8	2443	73.5	3920	2170
164	1528	TEAKWOOD AVENUE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	4 High	1 None	50	28.4	1420	48.7	2435	72.8	3640	2169
165	1616	WASHINGTON DRIVE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	35.7	1547	56	2427	74.7	3237	2149
166	243	CARTER AVENUE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	5 Very high	1 None	53	24.1	1285	45.2	2411	73.2	3904	2147
167	1001	MCKINLEY STREET	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	35.4	1534	56.2	2435	74.1	3211	2140
168	34	ADAMS STREET	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	3 Moderate	1 None	47	31.8	1484	47.9	2235	77.8	3631	2139
169	1060	NOBSKA WAY	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	35.8	1551	53.9	2336	74.2	3215	2119
170	1605	WAREHAM AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	38	1520	62.6	2504	75.2	3008	2113
171	864	LOCUST STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	39	1560	60.5	2420	75	3000	2106
172	548	FAIRBANKS STREET	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	2 Low	1 None	40	39.5	1580	59.6	2384	74.7	2988	2103
173	772	HOLLY AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	34.2	1482	55	2383	74.6	3233	2103
174	254	CENTRAL AVENUE EXTENSION	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	53.9	1797	69.9	2330	75.7	2523	2102
175	1608	WARR AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	34	1473	54.9	2379	74.6	3233	2097
176	1154	ONSET AVENUE	Road	5 Whole Town	3 7 - 14 days	3 $100k - $1m	2 Low	4 High	1 None	60	18.3	1098	37.8	2268	72.2	4332	2096
177	1402	SEA STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	44.4	1628	61	2237	82.5	3025	2090
178	1364	SANDWICH ROAD	Road	4 Multiple Neighborl	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	21.4	1213	38.8	2199	72.7	4120	2090
179	865	LOCUST STREET EXTENSION	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	4 High	1 None	50	25	1250	47.2	2360	73.9	3695	2072
180	1239	PROGRESS AVENUE	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	2 Low	1 None	40	39.5	1580	56.3	2252	74.3	2972	2060
181	998	MAYFLOWER RIDGE DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	49.2	1640	67.4	2247	82	2733	2041
182	329	COTTAGE STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	53.7	1790	65.4	2180	73.1	2437	2036
183	1236	POND STREET	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	37	1603	48	2080	70.3	3046	2035
184	1501	STORER STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	35.3	1412	60.4	2416	75.1	3004	2032

Table B-1b: Consequence and Risk Scores for All At Risk Road Assets.

Rank	ID#	Asset Name	Asset Type		Area of Service Loss		Duration of Service Loss		Cost of Damage		Impact on Public Safety & Emergency Services		Impact on Important Economic Activities		Impact on Public Health & Environment	Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
185	1627	WEST BOULEVARD	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	32.5	1408	50	2167	77.7	3367	2028
186	442	CROMESETT POINT	Road	2	Locality	3	7 - 14 days	2	$10k - $100k	2	Low	2	Low	1	None	40	37.1	1484	57.5	2300	73.7	2948	2022
187	992	MAYFLOWER RIDGE DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	48.6	1620	67.1	2237	79.4	2647	2010
188	993	MAYFLOWER RIDGE DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	48.9	1630	64.7	2157	82.1	2737	2009
189	1294	RIVER TERRACE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	3	Moderate	1	None	47	31.1	1451	40	1867	77.1	3598	2005
190	1407	SECOND AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	42.8	1569	58	2127	77.8	2853	1993
191	87	AVENUE A	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	31.6	1369	50.7	2197	74.9	3246	1993
192	223	CANEDY STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	51.8	1727	64.7	2157	72.2	2407	1992
193	508	EAST CENTRAL AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	48.7	1623	67	2233	75.4	2513	1984
194	62	ANDREWS POINT	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	48.1	1603	67.1	2237	75.8	2527	1978
195	1639	WHITTEMORE AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	48.5	1617	66.7	2223	75.4	2513	1978
196	1489	STANDISH PATH	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	36	1560	46.5	2015	68.3	2960	1976
197	1541	THIRD AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	47.8	1593	64.6	2153	79.2	2640	1971
198	708	HAMMOND STREET	Road	2	Locality	3	7 - 14 days	2	$10k - $100k	2	Low	4	High	1	None	47	27.8	1297	46.1	2151	72.4	3379	1970
199	1234	POINT ROAD	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	30.7	1330	49.9	2162	73.9	3202	1954
200	1059	NOBSKA WAY	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	30.1	1304	49.4	2141	73.9	3202	1935
201	12	13TH STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	33.1	1324	56.1	2244	74.9	2996	1934
202	746	HEMLOCK STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	29.5	1278	50.9	2206	72.6	3146	1930
203	1070	NORTH BOULEVARD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	46.5	1550	65.1	2170	75.3	2510	1928
204	334	COVE STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	50.2	1673	54.1	1803	80.7	2690	1916
205	757	HIGHLAND BAY DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	33.2	1328	54.3	2172	74.6	2984	1912
206	825	JUNIPER STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	30.1	1304	45	1950	77.2	3345	1906
207	1548	THRUSH AVENUE	Road	2	Locality	3	7 - 14 days	2	$10k - $100k	2	Low	2	Low	1	None	40	37.6	1504	48.6	1944	69.7	2788	1893
208	318	COLONIAL LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	35.7	1309	60.5	2218	75	2750	1870
209	70	ARLINGTON ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	45.3	1510	61.5	2050	73.2	2440	1858
210	1651	WILLOW STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	30.4	1317	43.8	1898	72.2	3129	1854
211	604	FRANKLIN STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	46.5	1550	61.4	2047	69.2	2307	1850
212	82	ATLANTIC AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	54.9	1830	55.1	1837	57.2	1907	1847
213	1295	RIVERSIDE DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	41.6	1387	62.2	2073	76	2533	1822
214	1671	WOODLAND CIRCLE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	4	High	1	None	50	23.4	1170	38	1900	66.6	3330	1821
215	1386	SANDWICH ROAD	Road	4	Multiple Neighborh	2	1 - 7 days	1	<$10k	4	High	5	Very high	1	None	57	16.7	946	32.1	1819	70.6	4001	1819
216	1507	SURF AVENUE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	26.6	1153	46.7	2024	73.1	3168	1817
217	455	CURLEW WAY	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	28.2	1222	45.7	1980	69.5	3012	1807
218	866	LONG BEACH ROAD	Road	2	Locality	3	7 - 14 days	4	$1m - $10m	2	Low	2	Low	1	None	47	23.2	1083	41.6	1941	73.2	3416	1807
219	1687	ZARAHEMLA ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	39.8	1327	59.3	1977	80.7	2690	1794
220	1392	SARIAH LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	40.1	1337	60.8	2027	77.7	2590	1794
221	500	EAST BOULEVARD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	40.3	1343	61.9	2063	75.2	2507	1792
222	603	FRANKLIN STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	40.8	1360	60.5	2017	75.8	2527	1790
223	592	FOURTH AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	49.4	1647	50	1667	69.5	2317	1787
224	128	BAYSIDE AVENUE	Road	2	Locality	3	7 - 14 days	2	$10k - $100k	2	Low	2	Low	1	None	40	34.1	1364	44.1	1764	71.2	2848	1781
225	1617	WATER STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	5	Very high	1	None	53	17.6	939	34.1	1819	71.7	3824	1780
226	1546	THOMAS AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	43.6	1453	55	1833	74.6	2487	1774
227	93	BACK STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	32.6	1195	56.5	2072	74.3	2724	1764
228	5	11TH STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	5	Very high	1	None	53	16.6	885	35.1	1872	71.2	3797	1764
229	989	MAYFLOWER AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	37.6	1379	53.1	1947	64.1	2350	1743
230	398	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	5	Very high	5	Very high	1	None	73	8.7	638	21	1540	65.2	4781	1737

Table B-1b: Consequence and Risk Scores for All At Risk Road Assets.

Rank	ID#	Asset Name	Asset Type	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impact on Public Safety & Emergency Services	Impact on Important Economic Activities	Impact on Public Health & Environment	Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
231	1565	TOPEKA AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	31.1	1140	56.2	2061	74.5	2732	1735
232	1592	VALLEY ROAD	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	26.2	1135	45.5	1972	66	2860	1731
233	995	MAYFLOWER RIDGE DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	38.4	1280	59.5	1983	73.7	2457	1726
234	829	KINGWOOD STREET	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	24.1	1044	44.7	1937	71.4	3094	1722
235	1604	WAREHAM AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	37.6	1253	58.9	1963	74.9	2497	1715
236	1510	SWAN LANE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	30.8	1335	41.6	1803	56.5	2448	1698
237	83	ATLANTIC AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	36.1	1203	58.9	1963	74.7	2490	1689
238	1534	TENTH STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	21.5	932	44.8	1941	72.5	3142	1677
239	447	CROMESETT ROAD	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	22.2	962	42.9	1859	73.4	3181	1675
240	1299	ROBINWOOD ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	37.2	1240	55.3	1843	74.4	2480	1669
241	628	GLADSTONE AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	42.8	1427	50.7	1690	66.9	2230	1666
242	1491	STATION STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	35.5	1183	56.7	1890	75	2500	1659
243	711	HARBORVIEW LANE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	22.9	992	41.5	1798	71.6	3103	1656
244	664	GRACE LANE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	21.7	940	42	1820	73.3	3176	1651
245	439	CRESCENT PLACE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	34.4	1147	56.6	1887	75	2500	1639
246	1119	ONSET AVENUE	Road	5 Whole Town	3 7 - 14 days	2 $10k - $100k	2 Low	4 High	1 None	57	12.7	720	28.9	1638	69	3910	1633
247	493	EAGLE WAY	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	5 Very high	1 None	53	15	800	30.9	1648	69	3680	1630
248	15	15TH STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	42.3	1410	45.8	1527	70	2333	1630
249	927	MAPLE AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	22.6	979	42.2	1829	67.7	2934	1625
250	245	CEDAR AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	33.8	1127	56.1	1870	75	2500	1624
251	1313	ROLLINS WAY	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	37.9	1263	45.1	1503	80.9	2697	1622
252	1610	WARREN POINT ROAD	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	32.1	1391	33	1430	56.9	2466	1618
253	252	CENTER STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	21.3	923	39.7	1720	73.2	3172	1612
254	529	EISENHOWER AVENUE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	20.9	906	41.5	1798	71.4	3094	1611
255	1345	SALTMARSH LANE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	40.2	1340	51.1	1703	64.1	2137	1608
256	11	13TH AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	37.3	1368	43.6	1599	60.3	2211	1606
257	522	EDGEWATER EXTENSION	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	24.4	1057	38.4	1664	65.5	2838	1596
258	255	CENTRAL PARK AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	32.2	1073	53.6	1787	76.4	2547	1582
259	1609	WARREN POINT ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	32.9	1097	53.4	1780	74.5	2483	1579
260	55	ALMEIDA STREET	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	40.4	1751	49.9	2162	6.3	273	1579
261	830	KINGWOOD STREET	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	20.1	871	40.6	1759	70.8	3068	1577
262	1404	SEABREEZE DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	37.4	1247	51.6	1720	65.3	2177	1575
263	576	FIRST AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	23.2	928	43.8	1752	73	2920	1574
264	221	CAMPBELL STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	20.1	871	39.8	1725	71.2	3085	1570
265	487	DONALD STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	32.3	1077	52.5	1750	75.6	2520	1567
266	71	ARLINGTON ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	33.4	1113	49.5	1650	74.1	2470	1546
267	302	CLEARWATER DRIVE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	5 Very high	1 None	53	21.8	1163	24.9	1328	53	2827	1545
268	1400	SEA LAVENDER WAY	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	36.6	1220	44.1	1470	73.3	2443	1540
269	146	BIRCH STREET	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	3 Moderate	1 None	47	18.5	863	33.8	1577	65.4	3052	1515
270	1451	SIPPICAN ROAD	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	2 Low	1 None	40	22.5	900	41.6	1664	70	2800	1509
271	122	BAYBERRY ROAD	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	21.2	919	33.9	1469	69.9	3029	1506
272	824	JUDSON STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	34.2	1140	47.1	1570	68.6	2287	1498
273	299	CIRCUIT AVENUE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	19.8	858	35.1	1521	70.7	3064	1498
274	515	EDGEWATER DRIVE	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	2 Low	1 None	40	26.2	1048	42.1	1684	58.5	2340	1497
275	1173	OSBORNE AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	31.9	1063	46.1	1537	74.2	2473	1487
276	978	MARITIME DRIVE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	18.8	815	35.4	1534	71.4	3094	1486

Table B-1b: Consequence and Risk Scores for All At Risk Road Assets.

Rank	ID#	Asset Name	Asset Type		Area of Service Loss		Duration of Service Loss		Cost of Damage		Impact on Public Safety & Emergency Services		Impact on Important Economic Activities		Impact on Public Health & Environment	Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
277	1142	ONSET AVENUE	Road	5	Whole Town	3	7 - 14 days	2	$10k - $100k	2	Low	4	High	1	None	57	18.7	1060	19.9	1128	54.5	3088	1486
278	161	BOURNE TERRACE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	28.7	1052	37.2	1364	71.8	2633	1462
279	1505	SUNSET AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	31.1	1037	48	1600	69.1	2303	1459
280	1036	MOSHER LANE	Road	2	Locality	3	7 - 14 days	2	$10k - $100k	2	Low	2	Low	1	None	40	21.8	872	37.3	1492	71.6	2864	1456
281	253	CENTRAL AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	28.8	960	46.5	1550	74.9	2497	1444
282	467	DEAN STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	18.6	806	33.2	1439	69.8	3025	1440
283	1633	WESTERN AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	26.8	983	45.3	1661	61.3	2248	1439
284	1175	OVER JORDAN ROAD	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	15.9	689	35.3	1530	71.7	3107	1425
285	910	MAIN AVENUE	Road	3	Neighborhood	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	37	24.9	913	39.3	1441	72.6	2662	1421
286	1677	WORRALL AVENUE	Road	2	Locality	3	7 - 14 days	2	$10k - $100k	2	Low	2	Low	1	None	40	19.7	788	37.6	1504	71.4	2856	1416
287	1484	SQUAWS PATH	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	40.5	1350	40.9	1363	48.9	1630	1410
288	996	MAYFLOWER RIDGE DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	27.7	923	45.1	1503	74	2467	1406
289	562	FATHOM LANE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	17.5	758	33.7	1460	67.9	2942	1406
290	1663	WINTER STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	31.1	1037	37.8	1260	75.1	2503	1397
291	857	LINWOOD AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	24.1	803	45.2	1507	81.1	2703	1394
292	1128	ONSET AVENUE	Road	5	Whole Town	3	7 - 14 days	2	$10k - $100k	2	Low	2	Low	1	None	50	12.1	605	27.6	1380	67.4	3370	1391
293	478	DIAMOND AVENUE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	16.3	706	34.4	1491	68	2947	1390
294	1187	PEQUOD LANE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	4	High	1	None	50	12.4	620	28	1400	65.8	3290	1388
295	575	FIR STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	3	Moderate	1	None	47	15.5	723	29.7	1386	65.2	3043	1386
296	1533	TENTH STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	15.1	654	35	1517	68.9	2986	1379
297	1054	NIMROD WAY	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	16.9	732	31.8	1378	67.8	2938	1367
298	1664	WINTER STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	26.9	897	41.1	1370	75.6	2520	1363
299	1532	TENTH STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	14.9	646	34.5	1495	68.2	2955	1362
300	319	COLUMBIA STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	4	High	1	None	50	11.6	580	25.7	1285	67.5	3375	1351
301	1159	ONSET AVENUE	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	2	Low	5	Very high	1	None	63	9.4	595	15.8	1001	58.8	3724	1343
302	1685	WYCHUNAS AVENUE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	17.4	754	27.2	1179	70.4	3051	1341
303	1288	REYNOLDS AVENUE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	3	Moderate	1	None	47	13.7	639	27.9	1302	67.3	3141	1338
304	683	GREAT NECK ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	25.2	924	38	1393	60.9	2233	1327
305	466	DAVIS LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	26.9	897	45.2	1507	63.9	2130	1326
306	303	CLEVELAND AVENUE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	4	High	1	None	50	13	650	26.8	1340	59.9	2995	1326
307	1591	UPLAND ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	17.7	708	35.9	1436	67.4	2696	1324
308	1342	SAGAMORE STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	15.8	685	31.1	1348	65	2817	1310
309	31	ACORN STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	25.4	847	43.5	1450	67.6	2253	1309
310	1577	TURNER AVENUE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	14.5	628	29.8	1291	69.5	3012	1304
311	74	ARNOLD STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	19.2	704	37.9	1390	71.9	2636	1296
312	149	BISBEE STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	20.5	752	38	1393	67.7	2482	1290
313	1411	SECOND STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	27	900	34.8	1160	72.9	2430	1284
314	593	FOURTH AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	35	1167	35.2	1173	50.7	1690	1273
315	1559	TINKERS LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	31.7	1057	35.8	1193	57.4	1913	1269
316	499	EAST BOULEVARD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	21	700	41.3	1377	71.6	2387	1240
317	246	CEDAR AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	21.3	710	39.7	1323	71.5	2383	1229
318	501	EAST BOULEVARD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	20.8	693	40.1	1337	71.9	2397	1227
319	276	CHIPPEWA DRIVE	Road	2	Locality	3	7 - 14 days	2	$10k - $100k	2	Low	2	Low	1	None	40	16.5	660	28.1	1124	69.3	2772	1222
320	1062	NOBSKA WAY	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	12.5	542	27.1	1174	68.6	2973	1218
321	960	MARION ROAD	Road	4	Multiple Neighborl	3	7 - 14 days	3	$100k - $1m	4	High	5	Very high	1	None	67	9.5	633	13.4	893	47.1	3140	1213
322	157	BLUEJAY TERRACE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	32.6	1195	32.6	1195	34.8	1276	1211

Table B-1b: Consequence and Risk Scores for All At Risk Road Assets.

Rank	ID#	Asset Name	Asset Type		Area of Service Loss		Duration of Service Loss		Cost of Damage		Impact on Public Safety & Emergency Services		Impact on Important Economic Activities		Impact on Public Health & Environment	Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
323	32	ACORN STREET EAST	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	13.8	552	30.9	1236	70.3	2812	1209
324	234	CAPE AVENUE	Road	2	Locality	3	7 - 14 days	2	$10k - $100k	2	Low	2	Low	1	None	40	20.5	820	33.8	1352	49.2	1968	1209
325	1393	SARIAH LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	22	733	39.1	1303	67.7	2257	1209
326	133	BAYVIEW STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	14	560	29.8	1192	69.4	2776	1193
327	1504	SUNSET AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	24.8	827	32.1	1070	68.3	2277	1190
328	630	GLEN AVENUE	Road	2	Locality	3	7 - 14 days	2	$10k - $100k	2	Low	2	Low	1	None	40	14.1	564	29.5	1180	69	2760	1188
329	838	KINS COURT	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	13.1	524	30	1200	70.1	2804	1183
330	489	DOVEKIE WAY	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	21.9	730	37.2	1240	66.6	2220	1181
331	488	DOTS LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	12.9	516	29.6	1184	69.9	2796	1172
332	1348	SALTMEADOW ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	12.5	542	25.1	1088	65.9	2856	1168
333	926	MALLARD ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	16.8	560	38.8	1293	72.6	2420	1152
334	911	MAIN AVENUE	Road	3	Neighborhood	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	37	18.1	664	28.8	1056	68.6	2515	1152
335	126	BAYSIDE AVENUE	Road	2	Locality	3	7 - 14 days	2	$10k - $100k	2	Low	2	Low	1	None	40	13.7	548	28.3	1132	66.1	2644	1142
336	289	CHURBUCK LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	14.5	628	21.2	919	63.7	2760	1142
337	1067	NORTH BOULEVARD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	17.7	590	36.5	1217	71.8	2393	1139
338	670	GRANDVIEW AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	18.5	617	37.2	1240	68.5	2283	1137
339	1547	THRUSH AVENUE	Road	2	Locality	3	7 - 14 days	2	$10k - $100k	2	Low	2	Low	1	None	40	14.5	580	29.4	1176	61.4	2456	1134
340	180	BROAD STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	14.2	521	31.5	1155	70.6	2589	1125
341	1127	ONSET AVENUE	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	2	Low	4	High	1	None	60	6	360	15.5	930	54.7	3282	1115
342	43	AGAWAM VILLAGE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	9	390	24.4	1057	68.8	2981	1108
343	591	FOURTH AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	30.2	1007	30.4	1013	44.4	1480	1103
344	654	GLENDA AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	17.6	763	24.9	1079	45.8	1985	1102
345	1216	PINEWOOD ROAD	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	3	Moderate	1	None	47	8.8	411	21.5	1003	63.6	2968	1100
346	780	INDIAN NECK ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	8.9	386	24.1	1044	68.5	2968	1100
347	181	BROAD STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	16.8	560	34.4	1147	71.3	2377	1099
348	840	KNOWLES AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	14	560	27	1080	60.5	2420	1088
349	1241	PROSPECT STREET	Road	2	Locality	3	7 - 14 days	2	$10k - $100k	2	Low	2	Low	1	None	40	15.1	604	22	880	63.4	2536	1073
350	832	KINS COURT	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	12.7	466	29.3	1074	69.8	2559	1067
351	3	11TH STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	15.5	517	33.3	1110	70.7	2357	1063
352	834	KINS COURT	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	12.5	458	29	1063	69.7	2556	1059
353	837	KINS COURT	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	12.5	458	29	1063	69.7	2556	1059
354	839	KINS COURT	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	12.5	458	29	1063	69.7	2556	1059
355	781	INDIAN NECK ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	9.6	384	25.8	1032	69.7	2788	1059
356	1358	SANDWICH ROAD	Road	4	Multiple Neighborh	2	1 - 7 days	1	<$10k	4	High	5	Very high	1	None	57	6	340	13.2	748	58.5	3315	1057
357	836	KINS COURT	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	11.5	460	26.4	1056	63.3	2532	1053
358	863	LOCUST STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	9	390	21.9	949	65.8	2851	1050
359	13	14TH AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	21.3	852	22.5	900	44.2	1768	1050
360	430	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	5	Very high	5	Very high	1	None	73	3.4	249	8.9	653	49.7	3645	1049
361	833	KINS COURT	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	12.3	451	28.5	1045	69	2530	1045
362	58	AMOS WAY	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	12.2	447	28.4	1041	69.4	2545	1045
363	1120	ONSET AVENUE	Road	5	Whole Town	3	7 - 14 days	2	$10k - $100k	2	Low	4	High	1	None	57	5.3	300	13.9	788	57.5	3258	1038
364	698	GROVE STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	8.8	381	21.4	927	65.3	2830	1035
365	182	BROADMARSH AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	15.9	530	30.9	1030	68.6	2287	1031
366	1599	WABAN AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	14.5	483	31.8	1060	70.3	2343	1028
367	1271	RED BROOK ROAD	Road	3	Neighborhood	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	37	15.5	568	22.2	814	66.8	2449	1018
368	1069	NORTH BOULEVARD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	16.1	537	31.5	1050	65.1	2170	1017

Table B-1b: Consequence and Risk Scores for All At Risk Road Assets.

Rank	ID#	Asset Name	Asset Type	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impact on Public Safety & Emergency Services	Impact on Important Economic Activities	Impact on Public Health & Environment	Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
369	787	INDIAN NECK ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	25.3	843	26.9	897	49	1633	1017
370	991	MAYFLOWER AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	8.8	352	24	960	68.8	2752	1014
371	1611	WARREN POINT ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	26.6	887	27	900	44.2	1473	1008
372	1673	WOODLAND CIRCLE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	4 High	1 None	50	7.4	370	16.5	825	57.3	2865	1005
373	503	EAST BOULEVARD	Road	3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	37	11.5	422	26.8	983	67	2457	997
374	1068	NORTH BOULEVARD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	13.3	443	29.1	970	69.2	2307	974
375	7	12TH STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	9.4	376	21.7	868	65.5	2620	972
376	1405	SEAHORSE LANE	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	2 Low	1 None	40	10.9	436	22.1	884	60.9	2436	970
377	1243	PROSPECT STREET	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	2 Low	1 None	40	12.1	484	19.3	772	61.6	2464	966
378	1475	SPINDRIFT LANE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	4 High	1 None	50	6.3	315	15.6	780	57.2	2860	964
379	1209	PINEHURST DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	11.5	422	23.7	869	66.1	2424	956
380	236	CARLETON STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	8.8	352	21.4	856	65.3	2612	955
381	712	HARBORVIEW LANE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	12.4	537	21.7	940	46.5	2015	954
382	685	GREAT NECK ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	13.4	447	26.8	893	69.1	2303	952
383	505	EAST BOULEVARD	Road	3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	37	11.3	414	25.5	935	62.4	2288	945
384	1211	PINEHURST DRIVE	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	2 Low	1 None	40	10.9	436	20.7	828	59.7	2388	944
385	678	GREAT NECK ROAD	Road	2 Locality	3 7 - 14 days	4 $1m - $10m	2 Low	2 Low	1 None	47	6.6	308	16	747	60.5	2823	943
386	1463	SOUTH BOULEVARD	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	5 Very high	1 None	53	13.4	715	20.3	1083	24.3	1296	941
387	1065	NORTH 11TH STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	8.3	332	22.3	892	62.9	2516	937
388	531	ELDRIDGE COURT	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	3 Moderate	1 None	43	8.7	377	19.3	836	56.5	2448	929
389	710	HARBORVIEW LANE	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	2 Low	1 None	40	13.2	528	23.1	924	48	1920	925
390	666	GRAHAM STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	15.8	579	23.8	873	50.2	1841	920
391	1495	STEPHENS AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	21	700	23.3	777	50.2	1673	918
392	1648	WILLIAMS STREET	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	2 Low	1 None	40	8.4	336	19.8	792	63.9	2556	917
393	980	MARKS COVE ROAD	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	7.5	325	18.4	797	59.4	2574	917
394	1511	SWAN LANE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	7.8	338	17.4	754	59.6	2583	912
395	545	EVERGREEN STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	9.3	341	22.4	821	66.3	2431	903
396	1228	PLOVER ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	15.7	523	26.5	883	56.3	1877	902
397	36	ADMIRALS WAY	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	3 Moderate	1 None	47	11.3	527	14.6	681	45.4	2119	892
398	312	CLOVER AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	13.4	447	24.9	830	61.6	2053	883
399	684	GREAT NECK ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	18.2	607	21.7	723	54.3	1810	882
400	502	EAST BOULEVARD	Road	3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	37	9.3	341	22.3	818	63.4	2325	881
401	9	12TH STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	10.7	357	25.3	843	67.3	2243	880
402	1682	WREN TERRACE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	9.8	327	25.9	863	68.6	2287	880
403	1353	SANDPIPER TERRACE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	9.7	323	25.7	857	68.6	2287	876
404	835	KINS COURT	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	9	360	21.1	844	55.2	2208	875
405	629	GLEN AVENUE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	6.8	295	15.5	672	59.1	2561	861
406	1628	WEST BOULEVARD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	8.4	308	20.9	766	64.5	2365	857
407	1476	SPINDRIFT LANE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	4 High	1 None	50	5.2	260	13.3	665	52.5	2625	854
408	42	AGAWAM ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	11.9	397	25.1	837	60.5	2017	853
409	563	FATHOM LANE	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	2 Low	1 None	40	7.5	300	18.2	728	59.3	2372	843
410	191	BUMP AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	8.3	304	19.4	711	63.1	2314	828
411	994	MAYFLOWER RIDGE DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	13.8	552	15.8	632	45.2	1808	827
412	1208	PINEHURST DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	7.5	325	16.2	702	51.6	2236	820
413	248	CEDAR ISLAND ROAD	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	9.8	425	18.2	789	42.5	1842	817
414	1403	SEABREEZE DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	15.3	510	24	800	46.9	1563	808

Table B-1b: Consequence and Risk Scores for All At Risk Road Assets.

Rank	ID#	Asset Name	Asset Type		Area of Service Loss		Duration of Service Loss		Cost of Damage		Impact on Public Safety & Emergency Services		Impact on Important Economic Activities		Impact on Public Health & Environment	Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
415	1462	SOUTH BOULEVARD	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	14.5	628	21.2	919	25	1083	806
416	579	FIRST STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	9.8	327	22.4	747	62.6	2087	805
417	506	EAST BOULEVARD	Road	3	Neighborhood	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	37	7.5	275	18.8	689	62.4	2288	802
418	790	INDIAN NECK ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	11.9	397	24.6	820	51.4	1713	787
419	949	MARINE AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	8.9	297	21.1	703	64.1	2137	787
420	458	DAISY AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	8.4	308	19.7	722	56.5	2072	785
421	399	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	5	Very high	5	Very high	1	None	73	2	147	5.4	396	40.4	2963	785
422	1454	SIXTH STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	8.7	290	21.3	710	64	2133	785
423	1238	PRESERVATION LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	8.8	293	20.9	697	62.7	2090	774
424	483	DOGWOOD LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	6.7	246	17.2	631	62.2	2281	768
425	1369	SANDWICH ROAD	Road	4	Multiple Neighborh	2	1 - 7 days	1	<$10k	4	High	3	Moderate	1	None	50	13.1	655	14	700	22.6	1130	764
426	1606	WARR AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	15.1	604	20.2	808	27.2	1088	762
427	599	FRANCONIA AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	8.2	301	16.1	590	58.9	2160	759
428	1061	NOBSKA WAY	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	5.9	256	14.1	611	50.8	2201	751
429	1646	WILDWOOD AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	12.7	423	21.3	710	47	1567	738
430	69	ARLINGTON ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	7.4	247	18.4	613	63.2	2107	729
431	338	COWGILL LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	8.1	270	18.6	620	60.6	2020	725
432	1522	TAFFRAIL PATH	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	5.1	221	12.8	555	51.4	2227	722
433	979	MARITIME DRIVE	Road	2	Locality	3	7 - 14 days	4	$1m - $10m	2	Low	2	Low	1	None	47	4.1	191	10.7	499	50.6	2361	718
434	858	LINWOOD AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	3.6	156	11.6	503	55.3	2396	708
435	808	IVY STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	6.8	295	14.4	624	42.9	1859	706
436	507	EAST BOULEVARD	Road	3	Neighborhood	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	37	8.3	304	18.7	686	46.6	1709	700
437	1263	RAMP-RT 195 NB TO REST AREA	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	15	500	23.1	770	32.6	1087	698
438	452	CROOKED RIVER ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	10.7	357	22.2	740	43.9	1463	693
439	1529	TENTH AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	17.5	583	22	733	27.1	903	692
440	1498	STOCKTON SHORT CUT STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	5	Very high	1	None	53	4	213	10	533	38.9	2075	682
441	753	HIGHLAND AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	7.3	243	16.9	563	57.4	1913	673
442	30	ACORN STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	6.8	227	16.6	553	58.9	1963	672
443	391	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	5	Very high	5	Very high	1	None	73	1.8	132	3.3	242	36.1	2647	668
444	1160	ONSET AVENUE	Road	5	Whole Town	3	7 - 14 days	2	$10k - $100k	2	Low	5	Very high	1	None	60	2.3	138	7	420	38.9	2334	662
445	147	BIRCHWOOD DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	6.7	223	16.5	550	57.1	1903	657
446	1352	SANDPIPER TERRACE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	6.7	223	17.5	583	55.2	1840	655
447	1046	NANUMETT STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	5.7	209	14.6	535	52.7	1932	652
448	1482	SQUAWS PATH	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	6.6	220	16.1	537	55.9	1863	644
449	1210	PINEHURST DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	8.1	270	15.5	517	52.9	1763	643
450	1406	SEAN CIRCLE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	3.6	156	9.4	407	50.6	2193	639
451	951	MARINE AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	6	200	14.9	497	58.4	1947	638
452	1350	SANDALWOOD LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	6	200	15.2	507	56.6	1887	629
453	175	BROAD AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	14.5	483	20.4	680	27.2	907	627
454	1543	THIRD STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	6.4	213	15.6	520	54.5	1817	626
455	549	FAIRFIELD DRIVE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	3	Moderate	1	None	47	3.2	149	8.6	401	45.4	2119	619
456	339	CRAB COVE TERRACE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	16.5	550	18	600	23.5	783	612
457	513	EAST EDGEWATER EXTENSION	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	4.6	199	10.9	472	42.5	1842	610
458	1523	TAFFRAIL PATH	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	3.4	147	8.8	381	46.7	2024	593
459	1645	WILD ROSE AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	5.7	190	14.5	483	52.8	1760	592
460	1247	QUAIL LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	5.9	197	14.1	470	52.7	1757	591

Table B-1b: Consequence and Risk Scores for All At Risk Road Assets.

Rank	ID#	Asset Name	Asset Type	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impact on Public Safety & Emergency Services	Impact on Important Economic Activities	Impact on Public Health & Environment	Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
461	389	CRANBERRY HIGHWAY	Road	5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	6.2	455	8.6	631	11.7	858	588
462	1064	NORRIS STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	4.7	188	9.3	372	46.9	1876	581
463	158	BLUEJAY TERRACE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	7	257	13.7	502	40.9	1500	579
464	974	MARION ROAD	Road	4 Multiple Neighborl	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	4.2	238	6.5	368	30.7	1740	577
465	274	CHESTNUT STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	4.2	168	9.7	388	46	1840	568
466	1483	SQUAWS PATH	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	4.4	161	10.8	396	50	1833	566
467	59	AMOS WAY	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	3.3	132	9	360	48.3	1932	560
468	1630	WEST BOULEVARD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	3	130	9.1	394	42.9	1859	555
469	183	BROADMARSH AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	5.3	177	11.1	370	51.8	1727	545
470	464	DATEWOOD STREET	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	5 Very high	1 None	53	2.3	123	5.5	293	36.4	1941	538
471	105	BARNACLE ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	6	240	12.1	484	33.5	1340	533
472	1214	PINEHURST DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	5.7	190	11.2	373	47.4	1580	523
473	914	MAIN AVENUE	Road	3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	37	8.4	308	10.6	389	34.4	1261	523
474	822	JOHNSON STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	4.2	140	11.7	390	48.8	1627	512
475	520	EDGEWATER DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	9.1	303	10.8	360	37.4	1247	509
476	1634	WESTON AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	7.4	247	13.7	457	37.2	1240	508
477	1007	MEMORY LANE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	4.9	163	11.8	393	45.7	1523	504
478	484	DOGWOOD LANE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	7.4	247	11.6	387	37.6	1253	490
479	749	HIDDEN COVE LANE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	6.7	246	8.5	312	37.3	1368	490
480	1262	RAMP-REST AREA TO RT 195 NB	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	7.6	253	12.8	427	35.1	1170	489
481	189	BRYANT STREET	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	5 Very high	1 None	50	2	100	3.7	185	38.3	1915	488
482	788	INDIAN NECK ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	5.2	173	11.7	390	42.2	1407	485
483	1450	SIPPICAN ROAD	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	4.8	208	9.6	416	29.1	1261	481
484	569	FERN AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	2.3	92	6.7	268	44.2	1768	480
485	544	EVERETT AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	2.5	100	6.6	264	43.8	1752	480
486	1674	WOODSIDE AVENUE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	5 Very high	1 None	53	1.7	91	2.7	144	36.5	1947	478
487	597	FOURTH STREET	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	2 Low	1 None	40	9.2	368	13.5	540	16.3	652	476
488	616	GALAVOTTI AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	2.1	91	5.6	243	41.2	1785	475
489	510	EAST CENTRAL AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	3	110	7.9	290	45.2	1657	473
490	86	AVENUE A	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	2.9	97	9	300	50.2	1673	473
491	952	MARION ROAD	Road	4 Multiple Neighborl	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	1.8	102	4.9	278	29.7	1683	471
492	1052	NICHOLAS STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	5.5	183	11.4	380	39.7	1323	470
493	163	BOURNE TERRACE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	4.6	169	9.7	356	37.7	1382	468
494	1293	RIVER TERRACE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	4.1	137	9.3	310	45.4	1513	464
495	1629	WEST BOULEVARD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	2.7	108	8	320	38.8	1552	460
496	61	ANCHORAGE DRIVE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	2.7	117	7.2	312	34.6	1499	452
497	1479	SPRINGHILL ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	1.9	82	5.4	234	39.2	1699	451
498	801	INTERSTATE 195	Road	5 Whole Town	2 1 - 7 days	1 <$10k	5 Very high	2 Low	1 None	53	6.9	368	8.2	437	12.1	645	444
499	298	CIRCUIT AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	3.8	127	7.6	253	45.2	1507	441
500	524	EDGEWATER WAY	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	2 Low	1 None	40	4.3	172	9.4	376	30.2	1208	440
501	610	FRENCH AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	4.8	160	11.1	370	37.3	1243	440
502	975	MARION ROAD	Road	4 Multiple Neighborl	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	3.5	198	5.1	289	22.3	1264	439
503	1212	PINEHURST DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	4.9	163	9.5	317	39.1	1303	437
504	1571	TRINITY LANE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	1.8	78	4.8	208	38.4	1664	434
505	1595	VIKING DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	6.4	213	12.8	427	29.8	993	433
506	10	12TH STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	3	100	7.8	260	45.1	1503	429

Table B-1b: Consequence and Risk Scores for All At Risk Road Assets.

Rank	ID#	Asset Name	Asset Type	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impact on Public Safety & Emergency Services	Impact on Important Economic Activities	Impact on Public Health & Environment	Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
507	816	JEFFERSON SHORES ROAD	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	3 Moderate	1 None	43	8	347	8.3	360	17	737	429
508	805	INTERSTATE 195	Road	5 Whole Town	2 1 - 7 days	1 <$10k	4 High	2 Low	1 None	50	2.5	125	7.6	380	25.2	1260	429
509	1357	SANDWICH ROAD	Road	4 Multiple Neighborl	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	1.1	62	2.7	153	31	1757	428
510	1290	RIPLAH ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	5.3	177	10.6	353	34.5	1150	424
511	1515	SWIFTS BEACH ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	2.2	95	4.7	204	36.3	1573	423
512	1672	WOODLAND CIRCLE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	3.2	117	7.6	279	38	1393	421
513	330	COTTONWOOD AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	3.6	120	7.4	247	42.1	1403	415
514	521	EDGEWATER EXTENSION	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	2 Low	1 None	40	4	160	8.8	352	28.4	1136	413
515	519	EDGEWATER DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	4.6	153	10.4	347	34.8	1160	413
516	273	CHERRY STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	1.1	48	3.8	165	39	1690	411
517	429	CRANBERRY HIGHWAY	Road	5 Whole Town	3 7 - 14 days	2 $10k - $100k	5 Very high	5 Very high	1 None	70	0.7	49	1.9	133	24.6	1722	409
518	797	INTERSTATE 195	Road	5 Whole Town	2 1 - 7 days	1 <$10k	5 Very high	2 Low	1 None	53	4.5	240	7.6	405	15.6	832	408
519	765	HIGHLAND SHORES DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	2.1	84	5.4	216	37	1480	403
520	550	FAIRFIELD DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	2.8	93	7.6	253	41.6	1387	400
521	973	MARION ROAD	Road	4 Multiple Neighborl	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	1.6	91	3.6	204	25.3	1434	393
522	997	MAYFLOWER RIDGE DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	2	73	4.4	161	41.9	1536	392
523	871	LONGMEADOW DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	2.6	113	5.5	238	30.2	1309	390
524	1136	ONSET AVENUE	Road	5 Whole Town	3 7 - 14 days	2 $10k - $100k	2 Low	3 Moderate	1 None	53	0.9	48	2.7	144	30.2	1611	389
525	551	FAIRFIELD DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	2.3	84	6.4	235	37.5	1375	388
526	176	BROAD AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	7.8	260	12.8	427	19.1	637	385
527	796	INTERSTATE 195	Road	5 Whole Town	2 1 - 7 days	1 <$10k	5 Very high	2 Low	1 None	53	3.4	181	6.6	352	17.7	944	385
528	250	CEDAR STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	1.7	74	4.2	182	33.8	1465	384
529	1542	THIRD AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	2.4	80	6.4	213	41.4	1380	380
530	769	HILL STREET	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	3 Moderate	1 None	47	1.7	79	2.8	131	32.1	1498	378
531	585	FOREST STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	4.4	147	8.5	283	32.9	1097	378
532	1050	NELSON STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	3.5	117	8.2	273	35.6	1187	378
533	162	BOURNE TERRACE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	2.2	95	4.8	208	30.1	1304	371
534	129	BAYVIEW LANE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	1.7	74	4.3	186	32	1387	370
535	1666	WOODBRIDGE AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	2.6	87	6.4	213	39.4	1313	370
536	532	ELDRIDGE COURT	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	2.1	70	5.7	190	41.4	1380	368
537	1500	STONE AVENUE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	1.1	48	3.5	152	34.3	1486	367
538	1598	WABAN AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	2.6	95	7	257	32.9	1206	366
539	814	JEFFERSON SHORES ROAD	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	5 Very high	1 None	50	1.3	65	2.1	105	30.1	1505	365
540	1249	R D STILLMAN MEMORIAL DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	1.4	56	3.9	156	35.9	1436	362
541	1351	SANDPIPER TERRACE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	2.1	70	6.4	213	39.4	1313	362
542	807	ISSAK STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	1.5	60	4.6	184	34.5	1380	361
543	1143	ONSET AVENUE	Road	5 Whole Town	3 7 - 14 days	2 $10k - $100k	2 Low	5 Very high	1 None	60	4.2	252	5.4	324	11.4	684	360
544	1662	WINSLOW LANE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	1.5	60	4.2	168	34.8	1392	359
545	594	FOURTH AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	2.1	70	5.8	193	39.8	1327	358
546	8	12TH STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	2.1	70	5.9	197	39.1	1303	355
547	740	HEATHER HILL ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	1.9	63	4.4	147	41.8	1393	354
548	868	LONG NECK ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	2.2	81	5.6	205	33.9	1243	351
549	1	11TH AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	2.3	77	5.8	193	37.8	1260	348
550	586	FOREST STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	3.8	127	7.4	247	31.6	1053	348
551	300	CIRCUIT AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	3.9	130	6.9	230	32.1	1070	348
552	672	GRANSTON WAY	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	3 Moderate	1 None	47	0.9	42	2.9	135	30.4	1419	345

Table B-1b: Consequence and Risk Scores for All At Risk Road Assets.

Rank	ID#	Asset Name	Asset Type	Area of Service Loss		Duration of Service Loss		Cost of Damage		Impact on Public Safety & Emergency Services		Impact on Important Economic Activities		Impact on Public Health & Environment		Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
553	625	GILBERT WAY	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	1.4	56	4.2	168	33.3	1332	345
554	1582	UNION AVENUE	Road	3	Neighborhood	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	37	1.8	66	5.2	191	34.6	1269	344
555	1051	NEPHI ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	2.7	90	6.3	210	35.1	1170	342
556	216	CAMARDO DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	1.9	63	5.3	177	38.3	1277	340
557	615	GALAVOTTI AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	1.2	52	3.2	139	31.4	1361	340
558	380	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	5	Very high	5	Very high	1	None	73	1.2	88	3.3	242	14.7	1078	332
559	799	INTERSTATE 195	Road	5	Whole Town	2	1 - 7 days	1	<$10k	5	Very high	2	Low	1	None	53	4.3	229	5.4	288	12.1	645	330
560	804	INTERSTATE 195	Road	5	Whole Town	2	1 - 7 days	1	<$10k	4	High	2	Low	1	None	50	2.5	125	5.6	280	18.1	905	328
561	1337	RT 195 NB REST AREA	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	2.7	90	4.9	163	34.7	1157	325
562	760	HIGHLAND SHORES DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	1.8	60	5	167	36.6	1220	324
563	798	INTERSTATE 195	Road	5	Whole Town	2	1 - 7 days	1	<$10k	5	Very high	2	Low	1	None	53	3.9	208	6.7	357	10.5	560	323
564	167	BOURNES POINT ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	5.6	187	8.9	297	20.9	697	322
565	1417	SEVENTH STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	1.5	55	4.9	180	32.5	1192	320
566	1178	PARKER DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	1.8	60	4.9	163	35.9	1197	318
567	1058	NINTH STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	1.3	52	4.2	168	30.1	1204	317
568	1540	TERRY LANE WEST	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	1.5	55	4.3	158	32.8	1203	315
569	54	ALLEN AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	2.3	77	5.1	170	33.2	1107	311
570	1147	ONSET AVENUE	Road	5	Whole Town	3	7 - 14 days	2	$10k - $100k	2	Low	2	Low	1	None	50	0.7	35	2.1	105	26.1	1305	310
571	1659	WINSLOW LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	1.7	57	4.8	160	34.9	1163	309
572	237	CARLETON STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	1.2	44	3.4	125	33.2	1217	303
573	14	15TH AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	1.2	52	3.4	147	26.8	1161	302
574	1670	WOODBURY STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	1.4	47	4.2	140	35.4	1180	301
575	238	CARLETON STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	1.2	44	3.4	125	32.9	1206	301
576	893	MADISON AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	4.4	147	7.6	253	22.3	743	298
577	1174	OVER JORDAN ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	6.2	207	6.5	217	19.3	643	297
578	527	EIGHTH STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	1.3	48	4.2	154	30.7	1126	295
579	729	HATHAWAY STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	1.5	50	4.1	137	33.9	1130	292
580	27	23RD STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	1.8	60	4.8	160	32	1067	291
581	572	FIFTH AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	1.4	47	4.1	137	33.8	1127	290
582	730	HATHAWAY STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	1.4	47	4.1	137	33.7	1123	289
583	359	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	5	Very high	5	Very high	1	None	73	1	73	2.8	205	13	953	289
584	428	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	2	$10k - $100k	5	Very high	5	Very high	1	None	70	0.4	28	1.1	77	17.9	1253	288
585	1526	TARPAULIN WAY	Road	2	Locality	3	7 - 14 days	2	$10k - $100k	2	Low	2	Low	1	None	40	1.1	44	3	120	28.5	1140	286
586	538	ELM STREET	Road	3	Neighborhood	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	47	4.5	210	6.9	322	9	420	286
587	976	MARION ROAD	Road	4	Multiple Neighborh	2	1 - 7 days	1	<$10k	4	High	5	Very high	1	None	57	1.1	62	2.7	153	18.3	1037	284
588	898	MAIN AVENUE	Road	3	Neighborhood	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	37	1.1	40	3	110	31.4	1151	283
589	241	CAROL ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	0.8	32	2.6	104	29.4	1176	282
590	199	BURGESS POINT SHORES	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	1.8	60	5.2	173	29.9	997	281
591	1521	T STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	0.9	36	2.6	104	28.7	1148	279
592	809	JACKS MARSH LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	1.2	40	3.3	110	33.8	1127	278
593	6	12TH AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	1.7	57	4.4	147	30.8	1027	278
594	606	FRANKS WAY	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	1.3	43	3.5	117	33	1100	277
595	322	CONNEHASSET ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	1.6	53	4	133	31.3	1043	275
596	1022	MINOT AVENUE	Road	5	Whole Town	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	53	0.4	21	1.4	75	22.2	1184	270
597	945	MAPLE STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	0.9	36	2.9	116	27	1080	269
598	200	BURGESS POINT SHORES	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	1.6	53	4.5	150	29	967	265

Table B-1b: Consequence and Risk Scores for All At Risk Road Assets.

Rank	ID#	Asset Name	Asset Type	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impact on Public Safety & Emergency Services	Impact on Important Economic Activities	Impact on Public Health & Environment	Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
599	1381	SANDWICH ROAD	Road	4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0.3	17	1.1	62	20.9	1184	264
600	1612	WARREN POINT ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	2.7	90	6.4	213	22.5	750	259
601	456	CUSHMAN ROAD	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	5 Very high	1 None	53	0.6	32	1.6	85	20.3	1083	258
602	977	MARION ROAD	Road	4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0.5	28	1.5	85	19.2	1088	257
603	962	MARION ROAD	Road	4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0.5	28	1.5	85	19.1	1082	256
604	233	CAPE AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	1.2	40	3.1	103	30.5	1017	254
605	1661	WINSLOW LANE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	1.2	40	3.5	117	29.4	980	251
606	691	GREAT NECK ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	1	33	2.8	93	30.5	1017	248
607	1535	TERN STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.8	27	2.8	93	30.7	1023	246
608	1137	ONSET AVENUE	Road	5 Whole Town	3 7 - 14 days	3 $100k - $1m	2 Low	3 Moderate	1 None	57	0.4	23	1.2	68	18.6	1054	243
609	1004	MEADOWLARK DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	0.9	39	3	130	21	910	241
610	1536	TERRY LANE EAST	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	1	33	3	100	28.8	960	239
611	120	BAY STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	1	33	3.1	103	28.6	953	238
612	700	GROVELAND STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	5.8	193	8	267	9.2	307	238
613	340	CRAB COVE TERRACE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	2.7	90	4.2	140	22.5	750	237
614	747	HIAWATHA PATH	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	2.2	73	5.1	170	22.4	747	237
615	701	GROVELAND STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	1	33	3.1	103	28.3	943	236
616	469	DENNIS LANE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	1	33	2.9	97	28.5	950	236
617	1537	TERRY LANE EAST	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	1	33	2.9	97	28.5	950	236
618	761	HIGHLAND SHORES DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	1	40	2.7	108	22.6	904	233
619	1100	OLD ONSET ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	1	40	2.6	104	22.7	908	233
620	1538	TERRY LANE EAST	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	1	33	2.8	93	28.2	940	233
621	690	GREAT NECK ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.9	30	2.4	80	28.8	960	231
622	831	KINGWOOD STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	2.5	83	4.9	163	21	700	231
623	1509	SUZANNE CIRCLE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	1	33	2.7	90	27.6	920	228
624	704	GURNEY STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	2.4	96	4.4	176	15.4	616	224
625	427	CRANBERRY HIGHWAY	Road	5 Whole Town	3 7 - 14 days	2 $10k - $100k	5 Very high	5 Very high	1 None	70	0.3	21	0.7	49	14	980	221
626	535	ELIZABETH STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	1.3	43	3.3	110	24.8	827	220
627	897	MAIN AVENUE	Road	3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	37	1.2	44	3.1	114	22.3	818	220
628	462	DANGELO ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.9	30	2.6	87	26.6	887	218
629	1681	WREN TERRACE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.5	17	1.9	63	28.5	950	217
630	1126	ONSET AVENUE	Road	5 Whole Town	3 7 - 14 days	3 $100k - $1m	2 Low	5 Very high	1 None	63	2.6	165	3.7	234	5.1	323	217
631	961	MARION ROAD	Road	4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0.4	23	1.2	68	16.3	924	216
632	132	BAYVIEW STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.8	27	2.3	77	26.7	890	214
633	29	27TH STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	0.6	26	1.8	78	20.4	884	213
634	417	CRANBERRY HIGHWAY	Road	5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0.9	66	2	147	9.2	675	212
635	867	LONG NECK CEMETERY ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.7	23	2.2	73	26.5	883	210
636	954	MARION ROAD	Road	4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0.4	23	1	57	15.9	901	209
637	1297	ROBINHOOD ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	2.4	80	5.6	187	16.7	557	207
638	239	CARLETON STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	0.6	22	1.8	66	24	880	207
639	715	HATHAWAY STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	0.5	22	1.6	69	19.9	862	204
640	737	HATHAWAY STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	0.5	22	1.6	69	19.9	862	204
641	697	GREENWOOD AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	0.5	20	1.6	64	21.7	868	203
642	1593	VERNAL STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	0.6	22	1.8	66	23.4	858	202
643	784	INDIAN NECK ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	1.5	50	3.7	123	20.9	697	201
644	1002	MEADE STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	0.6	22	1.8	66	23	843	199

Table B-1b: Consequence and Risk Scores for All At Risk Road Assets.

Rank	ID#	Asset Name	Asset Type	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impact on Public Safety & Emergency Services	Impact on Important Economic Activities	Impact on Public Health & Environment	Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
645	60	ANCHORAGE DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	1.1	37	3.1	103	22.5	750	199
646	566	FEARING HILL ROAD	Road	5 Whole Town	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	53	0.7	37	1.8	96	14.2	757	199
647	764	HIGHLAND SHORES DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	4.6	153	5.9	197	9.2	307	197
648	1512	SWIFT AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.7	23	2	67	24.7	823	196
649	1296	ROBERTA DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	0.6	22	1.8	66	22.2	814	194
650	485	DOGWOOD LANE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.7	23	2.1	70	24	800	193
651	736	HATHAWAY STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	0.5	20	1.6	64	19.9	796	188
652	1121	ONSET AVENUE	Road	5 Whole Town	3 7 - 14 days	2 $10k - $100k	2 Low	3 Moderate	1 None	53	0.4	21	1.2	64	14.8	789	188
653	727	HATHAWAY STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	0.5	20	1.6	64	19.8	792	188
654	1248	QUASUET AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	0.5	18	1.6	59	21.7	796	186
655	1439	SHORE AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.7	23	1.7	57	23.3	777	184
656	201	BURR PARKWAY	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	0.7	30	1.5	65	17.1	741	183
657	186	BROWN STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	0.6	26	1.3	56	17.4	754	181
658	587	FOREST STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.5	17	1.7	57	23.2	773	180
659	1660	WINSLOW LANE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.7	23	2	67	22	733	178
660	18	16TH STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.8	27	2.3	77	21.2	707	178
661	922	MAIN STREET	Road	5 Whole Town	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	60	0.3	18	0.7	42	13	780	178
662	178	BROAD AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	2.2	73	3.6	120	15.6	520	177
663	94	BAKER ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.6	20	1.7	57	22.4	747	176
664	84	AUNT HANNAHS LANE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.9	30	2.3	77	20.6	687	175
665	426	CRANBERRY HIGHWAY	Road	5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0.2	15	0.5	37	10.6	777	174
666	1003	MEADE STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.6	20	1.6	53	22	733	173
667	595	FOURTH STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.6	20	1.7	57	21.8	727	172
668	1219	PIRES STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	0.2	9	0.8	35	17.7	767	168
669	665	GRAHAM STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.6	20	1.6	53	21.2	707	167
670	1168	ONSET AVENUE	Road	5 Whole Town	3 7 - 14 days	3 $100k - $1m	2 Low	5 Very high	1 None	63	0.2	13	0.6	38	11.8	747	167
671	198	BURGESS POINT SHORES	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.8	27	2.5	83	19.3	643	167
672	726	HATHAWAY STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	0.5	18	1.5	55	19.2	704	166
673	547	EVERY LANE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.5	17	1.5	50	21.3	710	165
674	361	CRANBERRY HIGHWAY	Road	5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0.3	22	0.8	59	9.3	682	165
675	953	MARION ROAD	Road	4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0.3	17	0.7	40	12.6	714	163
676	1452	SIXTH AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.6	20	1.7	57	20.4	680	163
677	1083	OAKDALE HEIGHTS LANE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.5	17	1.3	43	21.2	707	163
678	1669	WOODBURY STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.5	17	1.6	53	20.7	690	162
679	745	HELMINTH AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.5	17	1.4	47	21	700	162
680	1021	MINOT AVENUE	Road	5 Whole Town	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	47	0.2	9	0.8	37	15.5	723	161
681	1590	UPHAM STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.6	20	1.4	47	20.4	680	160
682	1488	STANDISH PATH	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	1.8	60	4.3	143	12.9	430	159
683	23	20TH STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.6	20	1.8	60	19.6	653	159
684	516	EDGEWATER DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.6	20	1.5	50	20	667	158
685	778	HOWARD STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.9	30	2.2	73	18	600	157
686	775	HOOVER AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.5	17	1.4	47	20.1	670	156
687	1638	WHITMAN STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.5	17	1.2	40	20	667	154
688	185	BROWN STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	0.7	26	1.6	59	16.8	616	154
689	288	CHRISTOPHER DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.5	17	1.5	50	19.4	647	153
690	738	HATHAWAY STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.5	17	1.5	50	19.4	647	153

Table B-1b: Consequence and Risk Scores for All At Risk Road Assets.

Rank	ID#	Asset Name	Asset Type	Area of Service Loss		Duration of Service Loss		Cost of Damage		Impact on Public Safety & Emergency Services		Impact on Important Economic Activities		Impact on Public Health & Environment		Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
691	1539	TERRY LANE EAST	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.5	17	1.5	50	19.4	647	153
692	1613	WASHBURN COURT	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0.3	11	1	37	18.5	678	152
693	309	CLIFF AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.4	13	1.3	43	19.2	640	148
694	73	ARNOLD ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.4	13	1.3	43	19.1	637	147
695	206	BUTLERS COVE ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.6	20	1.5	50	18.3	610	147
696	1151	ONSET AVENUE	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	2	Low	5	Very high	1	None	63	0.1	6	0.4	25	10.7	678	146
697	1134	ONSET AVENUE	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	53	0.2	11	0.6	32	12.3	656	146
698	1497	STOCKTON SHORT CUT STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0.3	13	1	43	14.6	633	146
699	249	CEDAR STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0.5	18	1.3	48	16.6	609	145
700	35	ADMIRALS WAY	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0.4	15	1.4	51	16.6	609	144
701	820	JOHN STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.4	13	1.2	40	18.4	613	141
702	1163	ONSET AVENUE	Road	5	Whole Town	3	7 - 14 days	2	$10k - $100k	2	Low	5	Very high	1	None	60	0.1	6	0.4	24	10.9	654	141
703	1167	ONSET AVENUE	Road	5	Whole Town	3	7 - 14 days	2	$10k - $100k	2	Low	5	Very high	1	None	60	0.1	6	0.4	24	10.9	654	141
704	1170	ONSET AVENUE	Road	5	Whole Town	3	7 - 14 days	2	$10k - $100k	2	Low	5	Very high	1	None	60	0.1	6	0.4	24	10.9	654	141
705	539	ELM STREET	Road	3	Neighborhood	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	47	0.2	9	0.6	28	13.7	639	141
706	823	JOSEPH STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	1.2	52	2.9	126	8.8	381	140
707	517	EDGEWATER DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.8	27	2.1	70	15.7	523	139
708	851	LEHI AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.5	17	1.2	40	17.6	587	138
709	1653	WINDSOR DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0.4	15	1.1	40	16.1	590	138
710	1015	MINK COVE LANE	Road	2	Locality	3	7 - 14 days	2	$10k - $100k	2	Low	2	Low	1	None	40	0.4	16	1.1	44	14.5	580	137
711	1654	WINDSOR DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0.4	15	1.1	40	16	587	137
712	1655	WINDSOR DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0.4	15	1.1	40	15.9	583	136
713	1440	SHORE AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.4	13	1.1	37	17.3	577	133
714	617	GARDONIA STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.4	13	1.1	37	17.2	573	132
715	1676	WOODVILLE WAY	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0.3	11	1.1	40	15.6	572	132
716	463	DANIEL ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.4	13	1.2	40	16.8	560	131
717	1499	STOCKTON SHORT CUT STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0.3	13	0.9	39	12.8	555	129
718	955	MARION ROAD	Road	4	Multiple Neighborl	2	1 - 7 days	1	<$10k	4	High	5	Very high	1	None	57	0.2	11	0.5	28	10.1	572	129
719	1085	OAKHILL ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0.5	18	2	73	13.2	484	128
720	1418	SHADY LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.3	10	1	33	16.7	557	126
721	1306	ROCK MARSH ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0.5	18	1.1	40	14.2	521	125
722	1201	PINE STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0.2	7	0.7	26	15.5	568	125
723	475	DEPOT STREET	Road	5	Whole Town	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	53	0.1	5	0.4	21	10.8	576	124
724	1410	SECOND STREET	Road	2	Locality	3	7 - 14 days	2	$10k - $100k	2	Low	2	Low	1	None	40	0.2	8	0.8	32	13.8	552	124
725	1032	MORONI AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.4	13	1.1	37	15.9	530	124
726	184	BROWN STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0.3	13	0.9	39	12.1	524	123
727	1398	SAWYER STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0.2	9	0.5	22	12.5	542	119
728	441	CROCKER AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.3	10	0.9	30	15.7	523	119
729	1635	WESTON AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.3	10	0.9	30	15.6	520	118
730	1527	TARPAULIN WAY	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.4	13	1	33	15.2	507	118
731	291	CHURCH AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0.3	13	0.6	26	11.7	507	116
732	1636	WHIPPOORWILL WAY	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	0.8	32	1.2	48	10.4	416	114
733	179	BROAD AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	2	67	3.2	107	6.9	230	111
734	1581	TYLER AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0.2	9	0.6	26	11.3	490	110
735	692	GREAT NECK ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0.1	4	0.5	22	11.7	507	110
736	19	17TH AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.5	17	1.3	43	13.3	443	110

Table B-1b: Consequence and Risk Scores for All At Risk Road Assets.

Rank	ID#	Asset Name	Asset Type		Area of Service Loss		Duration of Service Loss		Cost of Damage		Impact on Public Safety & Emergency Services		Impact on Important Economic Activities		Impact on Public Health & Environment	Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
737	1480	SPRINKLER LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.4	13	1.1	37	13.7	457	109
738	668	GRANDVIEW AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0.6	22	1.5	55	11.1	407	109
739	1649	WILLMER AVENUE	Road	2	Locality	3	7 - 14 days	2	$10k - $100k	2	Low	2	Low	1	None	40	0.3	12	0.8	32	11.6	464	108
740	860	LITTLETON DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.3	10	0.9	30	13.7	457	105
741	373	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	5	Very high	5	Very high	1	None	73	0.1	7	0.2	15	6.6	484	105
742	1601	WALTER STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.3	10	0.8	27	13.6	453	104
743	1643	WILD ROSE AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.3	10	0.8	27	13.4	447	102
744	1356	SANDWICH ROAD	Road	4	Multiple Neighborl	2	1 - 7 days	1	<$10k	4	High	5	Very high	1	None	57	0.1	6	0.3	17	8.3	470	102
745	416	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	5	Very high	5	Very high	1	None	73	0.2	15	0.5	37	5.7	418	102
746	573	FIFTH STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.3	10	1	33	13	433	102
747	663	GORDON STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.6	20	1.5	50	11.4	380	101
748	915	MAIN STREET	Road	5	Whole Town	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	43	0	0	0.7	30	10.6	459	101
749	676	GRAY STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0.6	26	1.6	69	7.7	334	101
750	1205	PINE TREE DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	1.3	43	13.1	437	100
751	763	HIGHLAND SHORES DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.3	10	0.9	30	12.9	430	100
752	1202	PINE STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.2	7	0.7	23	13.4	447	100
753	177	BROAD AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.5	17	1.2	40	11.8	393	99
754	1118	ONSET AVENUE	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	2	Low	5	Very high	1	None	63	0.1	6	0.4	25	6.8	431	97
755	1477	SPINDRIFT LANE	Road	2	Locality	3	7 - 14 days	2	$10k - $100k	2	Low	4	High	1	None	47	0.2	9	0.6	28	8.9	415	96
756	1683	WRIGHT LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.2	7	0.7	23	12.5	417	94
757	675	GRAY STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0.1	4	0.5	22	9.8	425	94
758	336	COVELLI AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.2	7	0.6	20	12.3	410	91
759	1300	ROBINWOOD ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.2	7	0.6	20	12.3	410	91
760	337	COVELLI AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.2	7	0.6	20	12.2	407	91
761	862	LITTLETON DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.2	7	0.7	23	11.8	393	89
762	707	HAMMOND STREET	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	4	High	1	None	50	0.2	10	0.5	25	7.6	380	88
763	789	INDIAN NECK ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.3	10	0.7	23	11.3	377	87
764	194	BURGEE LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.3	10	0.7	23	11.1	370	86
765	600	FRANK CUTLER DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.2	7	0.5	17	11.6	387	86
766	1460	SOLAS CIRCLE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.2	7	0.7	23	11.3	377	86
767	826	KENNEDY LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0.2	7	0.5	18	10.4	381	85
768	477	DEPOT STREET	Road	5	Whole Town	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	53	0.1	5	0.2	11	7.3	389	84
769	671	GRANDVIEW AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0.2	7	0.6	22	10	367	84
770	1135	ONSET AVENUE	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	53	0.1	5	0.3	16	7.1	379	83
771	583	FLINT STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.3	10	0.9	30	10.3	343	83
772	372	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	5	Very high	5	Very high	1	None	73	0.1	7	0.1	7	5.2	381	82
773	885	LUNA AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.2	7	0.5	17	11	367	82
774	1148	ONSET AVENUE	Road	5	Whole Town	3	7 - 14 days	2	$10k - $100k	2	Low	2	Low	1	None	50	0.1	5	0.3	15	7.4	370	81
775	1459	SOLAS CIRCLE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.2	7	0.6	20	10.6	353	80
776	379	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	5	Very high	4	High	1	None	70	0.1	7	0.1	7	5.3	371	80
777	959	MARION ROAD	Road	4	Multiple Neighborl	2	1 - 7 days	1	<$10k	4	High	5	Very high	1	None	57	0.1	6	0.3	17	6.3	357	79
778	195	BURGEE LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.2	7	0.5	17	10.4	347	78
779	673	GRANT STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.2	7	0.5	17	10.3	343	77
780	217	CAMARDO DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.2	7	0.5	17	10.1	337	76
781	981	MARSH AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.2	7	0.5	17	10	333	75
782	878	LONGWOOD AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0.1	4	0.5	22	7.6	329	75

Table B-1b: Consequence and Risk Scores for All At Risk Road Assets.

Rank	ID#	Asset Name	Asset Type		Area of Service Loss		Duration of Service Loss		Cost of Damage		Impact on Public Safety & Emergency Services		Impact on Important Economic Activities		Impact on Public Health & Environment	Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
783	154	BLUEBERRY ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0.2	7	0.5	18	8.9	326	74
784	134	BEACH PLUM LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0.2	7	0.5	18	8.8	323	74
785	1044	MYAS COURT	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.2	7	0.5	17	9.7	323	73
786	1302	ROBINWOOD ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0.1	4	0.4	15	9.1	334	73
787	449	CROMESETT ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0.1	4	0.4	17	7.5	325	72
788	451	CROMESETT ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0.1	4	0.4	17	7.5	325	72
789	17	16TH AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0.2	7	0.5	18	8.6	315	72
790	360	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	5	Very high	5	Very high	1	None	73	0.1	7	0.3	22	4.2	308	72
791	861	LITTLETON DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.2	7	0.5	17	9.5	317	72
792	1016	MINOT AVENUE	Road	5	Whole Town	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	53	0.2	11	0.5	27	5.4	288	71
793	342	CRANBERRY GROVE WAY	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.2	7	0.5	17	9.3	310	70
794	1285	REED ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0	0	0.6	26	7.2	312	70
795	79	ASA AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.2	7	0.4	13	9.4	313	70
796	1433	SHERMAN STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.1	3	0.4	13	9.6	320	70
797	877	LONGWOOD AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0.1	4	0.4	17	7.1	308	69
798	293	CHURCHILL AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0.1	4	0.4	15	8.5	312	69
799	511	EAST EDGEWATER DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.2	7	0.6	20	8.8	293	68
800	611	FRENCH AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.2	7	0.6	20	8.8	293	68
801	1496	STOCKTON SHORT CUT STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0.1	4	0.4	15	8.4	308	68
802	890	LYNNE ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0.1	4	0.4	15	8.2	301	66
803	1129	ONSET AVENUE	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	2	Low	3	Moderate	1	None	57	0.1	6	0.2	11	5.3	300	66
804	1006	MELWOOD DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.1	3	0.5	17	8.8	293	65
805	1379	SANDWICH ROAD	Road	4	Multiple Neighborl	2	1 - 7 days	1	<$10k	4	High	5	Very high	1	None	57	0.1	6	0.2	11	5.2	295	65
806	287	CHRISTOPHER DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.1	3	0.4	13	8.9	297	65
807	90	BACHANT WAY	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	0.1	4	0.3	12	7.4	296	65
808	843	LADD AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	1.1	40	1.8	66	3.3	121	64
809	448	CROMESETT ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0.1	4	0.3	13	6.7	290	64
810	365	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	2	$10k - $100k	5	Very high	3	Moderate	1	None	63	0	0	0.1	6	4.8	304	63
811	889	LYNNE ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	0.1	4	0.3	12	7.1	284	62
812	440	CROCKER AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.1	3	0.3	10	8.6	287	62
813	1640	WIDOWS COVE LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.1	3	0.4	13	8.4	280	62
814	1014	MILDRED TERRACE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.1	3	0.3	10	8.5	283	61
815	1047	NARROWS ROAD	Road	3	Neighborhood	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	43	0.1	4	0.3	13	6.2	269	60
816	459	DALE AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.1	3	0.3	10	8.2	273	59
817	768	HILL STREET	Road	2	Locality	3	7 - 14 days	2	$10k - $100k	2	Low	4	High	1	None	47	0.1	5	0.1	5	5.9	275	59
818	1395	SAVARY ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0.1	4	0.2	7	7.3	268	58
819	536	ELLIS AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.1	3	0.3	10	7.9	263	57
820	1289	RHODODENDRON DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.1	3	0.3	10	7.8	260	57
821	168	BOWLER ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0.1	4	0.3	13	5.7	247	55
822	215	CAMARDO DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.1	3	0.3	10	7.6	253	55
823	986	MATHER DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.1	3	0.3	10	7.6	253	55
824	602	FRANKIE AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.1	3	0.3	10	7.5	250	55
825	969	MARION ROAD	Road	4	Multiple Neighborl	2	1 - 7 days	1	<$10k	4	High	5	Very high	1	None	57	0.1	6	0.1	6	4.4	249	54
826	333	COURT STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.1	3	0.3	10	7.4	247	54
827	308	CLEVELAND WAY	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	3	Moderate	1	None	47	0	0	0.1	5	5.6	261	54
828	435	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	5	Very high	5	Very high	1	None	73	0	0	0.1	7	3.5	257	54

Table B-1b: Consequence and Risk Scores for All At Risk Road Assets.

Rank	ID#	Asset Name	Asset Type	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impact on Public Safety & Emergency Services	Impact on Important Economic Activities	Impact on Public Health & Environment	Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
829	525	EDWARD STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.1	3	0.3	10	7.3	243	53
830	92	BACHANT WAY	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	0.1	4	0.2	8	6.1	244	53
831	827	KENNEDY LANE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	0.1	4	0.2	8	6.1	244	53
832	1675	WOODSIDE AVENUE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	4 High	1 None	50	0.1	5	0.1	5	4.9	245	53
833	518	EDGEWATER DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.2	7	0.5	17	6.7	223	53
834	564	FEARING HILL ROAD	Road	5 Whole Town	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	53	0	0	0.3	16	4.5	240	53
835	795	INTERSTATE 195	Road	5 Whole Town	2 1 - 7 days	1 <$10k	5 Very high	2 Low	1 None	53	0.1	5	0.4	21	4.1	219	53
836	728	HATHAWAY STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.1	3	0.3	10	7.2	240	53
837	1391	SARAHS LANE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.1	3	0.3	10	7	233	51
838	905	MAIN AVENUE	Road	3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	37	0.1	4	0.2	7	6.3	231	50
839	247	CEDAR AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.1	3	0.3	10	6.8	227	50
840	96	BAPTISTE AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	0.1	4	0.3	13	5	217	49
841	412	CRANBERRY HIGHWAY	Road	5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0	0	0.1	7	3.2	235	49
842	366	CRANBERRY HIGHWAY	Road	5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0.1	7	0.2	15	2.8	205	49
843	89	BACHANT WAY	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	0.1	4	0.2	7	6.1	224	49
844	1005	MEDINA DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.1	3	0.2	7	6.7	223	48
845	1087	OCEAN AVENUE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	5 Very high	1 None	53	0.5	27	0.7	37	2.2	117	48
846	232	CANNONBERRY WAY	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.1	3	0.3	10	6.5	217	48
847	343	CRANBERRY GROVE WAY	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.1	3	0.3	10	6.5	217	48
848	1576	TUCKWOOD PLACE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.1	3	0.3	10	6.3	210	47
849	724	HATHAWAY STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.1	3	0.3	10	6.1	203	45
850	968	MARION ROAD	Road	4 Multiple Neighborl	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0	0	0.1	6	3.8	215	45
851	44	AGNES AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.1	3	0.3	10	6	200	45
852	311	CLIFFS ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.1	3	0.3	10	6	200	45
853	723	HATHAWAY STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.1	3	0.3	10	6	200	45
854	1055	NINTH AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.1	3	0.3	10	6	200	45
855	1292	RIPLEYS TRAILER PARK	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	0.1	4	0.2	9	4.6	199	45
856	1423	SHANLEY WAY	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	0.1	4	0.2	9	4.6	199	45
857	1078	OAK STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	0	0	0.1	4	5.4	216	44
858	1076	OAK STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.1	3	0.3	10	5.9	197	44
859	259	CHAPEL LANE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	0	0	0.2	7	5.7	209	44
860	20	17TH STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.1	3	0.2	7	6	200	44
861	224	CANNONBERRY WAY	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.1	3	0.2	7	6	200	44
862	268	CHARLES STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.1	3	0.2	7	5.9	197	43
863	445	CROMESETT ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	0.1	4	0.2	9	4.4	191	43
864	888	LYNNE ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	0.1	4	0.2	8	4.8	192	43
865	1607	WARR AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	0.1	4	0.2	8	4.8	192	43
866	792	INDIAN NECK ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	0	0	0.1	4	5	200	41
867	1096	OLD COLONY AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	0	0	0.1	4	4.6	199	41
868	1203	PINE TREE DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.3	10	0.5	17	4.6	153	41
869	225	CANNONBERRY WAY	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.1	3	0.2	7	5.5	183	40
870	612	FRENCH AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.1	3	0.2	7	5.5	183	40
871	1434	SHERMAN STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.1	3	0.2	7	5.5	183	40
872	306	CLEVELAND WAY	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	0	0	0.1	4	4.5	195	40
873	853	LEONARD STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.1	3	0.2	7	5.4	180	40
874	895	MAGNOLIA AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0.1	3	0.2	7	5.4	180	40

Table B-1b: Consequence and Risk Scores for All At Risk Road Assets.

Rank	ID#	Asset Name	Asset Type	Area of Service Loss		Duration of Service Loss		Cost of Damage		Impact on Public Safety & Emergency Services		Impact on Important Economic Activities		Impact on Public Health & Environment		Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
875	800	INTERSTATE 195	Road	5	Whole Town	2	1 - 7 days	1	<$10k	5	Very high	2	Low	1	None	53	0	0	0.2	11	3.4	181	39
876	91	BACHANT WAY	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0.1	4	0.2	7	4.8	176	39
877	275	CHIPPEWA DRIVE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	0	0	0.1	4	4.3	186	39
878	618	GARDONIA STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.1	3	0.2	7	5.1	170	38
879	1665	WISTERIA LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.1	3	0.2	7	5.1	170	38
880	526	EIGHTH AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.1	3	0.2	7	5	167	37
881	543	EUNICE AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.1	3	0.2	7	5	167	37
882	806	IRENE AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.1	3	0.2	7	5	167	37
883	101	BARLOW AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.1	3	0.2	7	4.9	163	36
884	725	HATHAWAY STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.1	3	0.2	7	4.9	163	36
885	1667	WOODBURY STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.1	3	0.2	7	4.9	163	36
886	228	CANNONBERRY WAY	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.1	3	0.2	7	4.8	160	36
887	1304	ROBINWOOD ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.1	3	0.2	7	4.7	157	35
888	920	MAIN STREET	Road	5	Whole Town	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	53	0	0	0.1	5	3.1	165	35
889	1341	SAGAMORE STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0.1	3	5	167	34
890	875	LONGWOOD AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.3	10	0.7	23	3.3	110	34
891	457	CYPRESS STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	0	0	0.1	4	4.1	164	34
892	2	11TH STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.1	3	0.2	7	4.5	150	34
893	512	EAST EDGEWATER DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.1	3	0.2	7	4.5	150	34
894	1080	OAK TERRACE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.1	3	0.2	7	4.5	150	34
895	406	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	2	$10k - $100k	5	Very high	5	Very high	1	None	70	0	0	0	0	2.4	168	34
896	261	CHAPEL STREET	Road	4	Multiple Neighborl	2	1 - 7 days	1	<$10k	4	High	5	Very high	1	None	57	0	0	0.1	6	2.8	159	33
897	1596	VIKING DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.1	3	0.1	3	4.6	153	33
898	555	FAIRWAY DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	0	0	0.1	4	4	160	33
899	119	BAY STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0.1	3	4.8	160	33
900	446	CROMESETT ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0	0	0.1	4	3.6	156	32
901	1075	OAK STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.1	3	0.2	7	4.1	137	31
902	1414	SEVENTH AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0.2	7	4.3	143	31
903	381	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	5	Very high	5	Very high	1	None	73	0	0	0.1	7	1.9	139	30
904	1487	SQUIRREL ISLAND ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	4.5	150	30
905	891	LYNNE ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	0	0	0.1	4	3.6	144	30
906	913	MAIN AVENUE	Road	3	Neighborhood	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	37	0	0	0.1	4	3.9	143	30
907	1449	SIPPICAN ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0.1	3	4.2	140	29
908	471	DEPOT STREET	Road	5	Whole Town	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	53	0	0	0	0	2.7	144	29
909	341	CRANBERRY GROVE WAY	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0.1	3	4.1	137	28
910	884	LUCY STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0.1	3	0.1	3	3.8	127	28
911	374	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	5	Very high	5	Very high	1	None	73	0	0	0	0	1.9	139	28
912	286	CHRISTOPHER DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0.1	3	4	133	28
913	1361	SANDWICH ROAD	Road	4	Multiple Neighborl	2	1 - 7 days	1	<$10k	4	High	5	Very high	1	None	57	0	0	0	0	2.4	136	27
914	285	CHRISTOPHER DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0.1	3	3.9	130	27
915	821	JOHNSON STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0.1	3	3.9	130	27
916	608	FREIGHT HOUSE ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0.1	3	3.7	123	26
917	722	HATHAWAY STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0.1	3	3.7	123	26
918	1240	PROSPECT AVENUE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	5	Very high	1	None	53	0	0	0.6	32	1.5	80	26
919	1619	WEDGEWOOD PLACE	Road	2	Locality	3	7 - 14 days	2	$10k - $100k	2	Low	4	High	1	None	47	0.1	5	0.1	5	2.3	107	25
920	721	HATHAWAY STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0.1	3	3.6	120	25

Table B-1b: Consequence and Risk Scores for All At Risk Road Assets.

Rank	ID#	Asset Name	Asset Type	Area of Service Loss		Duration of Service Loss		Cost of Damage		Impact on Public Safety & Emergency Services		Impact on Important Economic Activities		Impact on Public Health & Environment		Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
921	972	MARION ROAD	Road	4	Multiple Neighborh	2	1 - 7 days	1	<$10k	4	High	5	Very high	1	None	57	0	0	0	0	2.2	125	25
922	1204	PINE TREE DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0.1	3	3.4	113	24
923	948	MAPLE STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	0	0	0.1	4	2.8	112	24
924	407	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	5	Very high	5	Very high	1	None	73	0	0	0	0	1.6	117	23
925	1641	WIDOWS COVE LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0.1	3	3.3	110	23
926	436	CRANBERRY LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0	0	0.1	4	2.5	108	23
927	1626	WEQUASH WAY	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0	0	0.1	4	2.5	108	23
928	410	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	2	$10k - $100k	5	Very high	5	Very high	1	None	70	0	0	0	0	1.6	112	22
929	226	CANNONBERRY WAY	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0.1	3	3.2	107	22
930	481	DINO ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0.1	3	3.2	107	22
931	227	CANNONBERRY WAY	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0.1	3	3.1	103	22
932	64	ANGEL COVE WAY	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0	0	0.1	4	2.8	103	22
933	598	FRANCIS STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0	0	0.1	4	2.3	100	21
934	21	18TH STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0.1	3	3	100	21
935	231	CANNONBERRY WAY	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0.1	3	3	100	21
936	739	HAZEL STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0.1	3	3	100	21
937	356	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	5	Very high	5	Very high	1	None	73	0	0	0	0	1.4	103	21
938	292	CHURCH AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	0	0	0.1	4	2.4	96	20
939	1436	SHERWOOD ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0	0	0.1	4	2.6	95	20
940	1580	TYLER AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0	0	0	0	2.3	100	20
941	619	GATEHOUSE DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0	0	0	0	2.2	95	19
942	802	INTERSTATE 195	Road	5	Whole Town	2	1 - 7 days	1	<$10k	4	High	2	Low	1	None	50	0	0	0.1	5	1.7	85	19
943	762	HIGHLAND SHORES DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0.1	3	2.6	87	18
944	813	JEFFERSON SHORES ROAD	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	5	Very high	1	None	53	0	0	0	0	1.7	91	18
945	540	ELM STREET	Road	3	Neighborhood	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	47	0	0	0	0	1.9	89	18
946	229	CANNONBERRY WAY	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0.1	3	2.5	83	18
947	1621	WEDGEWOOD WAY	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	5	Very high	1	None	53	0	0	0.1	5	1.5	80	18
948	331	COUNTY ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0	0	0	0	2	87	17
949	881	LOOKOUT LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0	0	0.1	4	2.2	81	17
950	652	GLEN CHARLIE ROAD	Road	5	Whole Town	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	53	0	0	0	0	1.6	85	17
951	971	MARION ROAD	Road	4	Multiple Neighborh	2	1 - 7 days	1	<$10k	4	High	5	Very high	1	None	57	0	0	0	0	1.5	85	17
952	1095	OLD COLONY AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0	0	0	0	1.9	82	16
953	1157	ONSET AVENUE	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	2	Low	5	Very high	1	None	63	0	0	0	0	1.3	82	16
954	1349	SAND POND ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0	0	0	0	1.9	82	16
955	1556	TIHONET ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0	0	0	0	1.9	82	16
956	649	GLEN CHARLIE ROAD	Road	5	Whole Town	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	53	0	0	0	0	1.5	80	16
957	651	GLEN CHARLIE ROAD	Road	5	Whole Town	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	53	0	0	0	0	1.5	80	16
958	653	GLEN CHARLIE ROAD	Road	5	Whole Town	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	53	0	0	0	0	1.5	80	16
959	1597	WABAN AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	0	0	0.1	4	1.8	72	16
960	1011	MIDWAY ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0	0	0	0	2.1	77	15
961	1508	SUSAN ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	0	0	0	0	1.9	76	15
962	251	CENTENNIAL PLACE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0.1	3	2.1	70	15
963	1303	ROBINWOOD ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0.1	3	2.1	70	15
964	743	HECTOR STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0	0	0	0	1.7	74	15
965	1284	REED ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0	0	0	0	1.7	74	15
966	1287	REGINA STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0	0	0	0	1.7	74	15

Table B-1b: Consequence and Risk Scores for All At Risk Road Assets.

Rank	ID#	Asset Name	Asset Type	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impact on Public Safety & Emergency Services	Impact on Important Economic Activities	Impact on Public Health & Environment	Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
967	1378	SANDWICH ROAD	Road	4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	5 Very high	1 None	57	0	0	0	0	1.3	74	15
968	80	ASH STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0	0	0	0	2.1	70	14
969	1111	ONSET AVENUE	Road	5 Whole Town	3 7 - 14 days	2 $10k - $100k	2 Low	3 Moderate	1 None	53	0	0	0	0	1.3	69	14
970	731	HATHAWAY STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0	0	0.1	3	1.9	63	14
971	1074	OAK STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	0	0	0	0	1.7	68	14
972	235	CAPTAIN COLLIS DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	0	0	0.5	20	0.9	36	13
973	28	24TH STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0	0	0.1	3	1.8	60	13
974	744	HECTOR STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	0	0	0	0	1.5	65	13
975	1346	SALTMARSH LANE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0	0	0.1	3	1.8	60	13
976	1388	SANDY ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	0	0	0.1	4	1.3	56	13
977	1600	WABAN PLACE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	0	0	0	0	1.7	62	12
978	793	INDIAN NECK ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	0	0	0	0	1.5	60	12
979	854	LIBERTY AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0	0	0	0	1.8	60	12
980	1138	ONSET AVENUE	Road	5 Whole Town	3 7 - 14 days	2 $10k - $100k	2 Low	2 Low	1 None	50	0	0	0	0	1.2	60	12
981	1182	PEARL AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0	0	0	0	1.8	60	12
982	202	BUSH STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	0	0	0	0	1.6	59	12
983	717	HATHAWAY STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	0	0	0	0	1.6	59	12
984	1139	ONSET AVENUE	Road	5 Whole Town	3 7 - 14 days	3 $100k - $1m	2 Low	3 Moderate	1 None	57	0	0	0	0	1	57	11
985	118	BAY STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0	0	0	0	1.7	57	11
986	659	GLENWOOD CIRCLE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0	0	0	0	1.7	57	11
987	1514	SWIFTS BEACH ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	0	0	0	0	1.3	56	11
988	1330	ROUTE 25	Road	5 Whole Town	2 1 - 7 days	1 <$10k	4 High	2 Low	1 None	50	0	0	0	0	1.1	55	11
989	124	BAYBERRY ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	0	0	0	0	1.5	55	11
990	208	CABO VERDE WAY	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	0	0	0	0	1.2	52	10
991	1012	MIDWAY STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	0	0	0	0	1.3	52	10
992	1517	SWIFTS BEACH ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	0	0	0	0	1.2	52	10
993	1112	ONSET AVENUE	Road	5 Whole Town	3 7 - 14 days	3 $100k - $1m	2 Low	4 High	1 None	60	0	0	0	0	0.8	48	10
994	1325	ROUTE 25	Road	5 Whole Town	2 1 - 7 days	1 <$10k	5 Very high	4 High	1 None	60	0	0	0	0	0.8	48	10
995	1018	MINOT AVENUE	Road	5 Whole Town	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	43	0	0	0	0	1.1	48	10
996	718	HATHAWAY STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	0	0	0	0	1.3	48	10
997	719	HATHAWAY STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	0	0	0	0	1.3	48	10
998	1101	OLD TOWN ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	0	0	0	0	1.3	48	10
999	117	BAY STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0	0	0	0	1.4	47	9
1000	720	HATHAWAY STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0	0	0	0	1.4	47	9
1001	1333	ROUTE 25	Road	5 Whole Town	2 1 - 7 days	1 <$10k	4 High	4 High	1 None	57	0	0	0	0	0.8	45	9
1002	1156	ONSET AVENUE	Road	5 Whole Town	3 7 - 14 days	3 $100k - $1m	2 Low	5 Very high	1 None	63	0	0	0	0	0.7	44	9
1003	290	CHURBUCK LANE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	0	0	0	0	1.1	44	9
1004	142	BERTINO STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	0	0	0	0	1.2	44	9
1005	271	CHELSEAS WAY	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	0	0	0	0	1.2	44	9
1006	401	CRANBERRY HIGHWAY	Road	5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0	0	0	0	0.6	44	9
1007	408	CRANBERRY HIGHWAY	Road	5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0	0	0	0	0.6	44	9
1008	1637	WHISPERING PINES DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	0	0	0	0	1.2	44	9
1009	880	LONGWOOD AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0	0	0	0	1.3	43	9
1010	1421	SHAKEDOWN STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0	0	0	0	1.3	43	9
1011	1110	ONSET AVENUE	Road	5 Whole Town	3 7 - 14 days	2 $10k - $100k	2 Low	3 Moderate	1 None	53	0	0	0	0	0.8	43	9
1012	375	CRANBERRY HIGHWAY	Road	5 Whole Town	3 7 - 14 days	2 $10k - $100k	5 Very high	5 Very high	1 None	70	0	0	0	0	0.6	42	8

Table B-1b: Consequence and Risk Scores for All At Risk Road Assets.

Rank	ID#	Asset Name	Asset Type	Area of Service Loss		Duration of Service Loss		Cost of Damage		Impact on Public Safety & Emergency Services		Impact on Important Economic Activities		Impact on Public Health & Environment		Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
1013	409	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	2	$10k - $100k	5	Very high	5	Very high	1	None	70	0	0	0	0	0.6	42	8
1014	411	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	2	$10k - $100k	5	Very high	5	Very high	1	None	70	0	0	0	0	0.6	42	8
1015	1624	WENONAH ROAD	Road	2	Locality	3	7 - 14 days	2	$10k - $100k	2	Low	2	Low	1	None	40	0	0	0	0	1	40	8
1016	159	BOAT HOUSE DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	1.2	40	8
1017	165	BOURNES POINT ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	1.2	40	8
1018	166	BOURNES POINT ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	1.2	40	8
1019	716	HATHAWAY STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	1.2	40	8
1020	1102	OLD TOWN ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	1.2	40	8
1021	1578	TWINS BEACH LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	1.2	40	8
1022	963	MARION ROAD	Road	4	Multiple Neighborh	2	1 - 7 days	1	<$10k	4	High	5	Very high	1	None	57	0	0	0	0	0.7	40	8
1023	964	MARION ROAD	Road	4	Multiple Neighborh	2	1 - 7 days	1	<$10k	4	High	5	Very high	1	None	57	0	0	0	0	0.7	40	8
1024	970	MARION ROAD	Road	4	Multiple Neighborh	2	1 - 7 days	1	<$10k	4	High	5	Very high	1	None	57	0	0	0	0	0.7	40	8
1025	627	GITCHE GUMEE ROAD	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	0	0	0	0	0.9	39	8
1026	999	MAYNARD WAY	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0	0	0	0	0.9	39	8
1027	1019	MINOT AVENUE	Road	5	Whole Town	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	43	0	0	0	0	0.9	39	8
1028	1084	OAKDALE STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0	0	0	0	0.9	39	8
1029	1256	RAMP-GLEN CHARLIE RD TO RT 25 EB	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0	0	0	0	0.9	39	8
1030	1336	ROY STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0	0	0	0	0.9	39	8
1031	907	MAIN AVENUE	Road	3	Neighborhood	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	47	0	0	0	0	0.8	37	7
1032	68	ARBUTIS AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0	0	0	0	1	37	7
1033	378	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	5	Very high	5	Very high	1	None	73	0	0	0	0	0.5	37	7
1034	393	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	5	Very high	5	Very high	1	None	73	0	0	0	0	0.5	37	7
1035	405	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	5	Very high	5	Very high	1	None	73	0	0	0	0	0.5	37	7
1036	425	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	5	Very high	5	Very high	1	None	73	0	0	0	0	0.5	37	7
1037	432	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	5	Very high	5	Very high	1	None	73	0	0	0	0	0.5	37	7
1038	433	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	5	Very high	5	Very high	1	None	73	0	0	0	0	0.5	37	7
1039	1029	MONROE STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	1.1	37	7
1040	1623	WELLINGTON ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0	0	0	0	1	37	7
1041	352	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	2	$10k - $100k	5	Very high	5	Very high	1	None	70	0	0	0	0	0.5	35	7
1042	368	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	2	$10k - $100k	5	Very high	5	Very high	1	None	70	0	0	0	0	0.5	35	7
1043	486	DOHERTY STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0	0	0	0	0.8	35	7
1044	509	EAST CENTRAL AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0	0	0	0	0.8	35	7
1045	1625	WENONAH ROAD	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	0	0	0	0	0.8	35	7
1046	958	MARION ROAD	Road	4	Multiple Neighborh	2	1 - 7 days	1	<$10k	4	High	5	Very high	1	None	57	0	0	0	0	0.6	34	7
1047	1321	ROUTE 25	Road	5	Whole Town	2	1 - 7 days	1	<$10k	4	High	4	High	1	None	57	0	0	0	0	0.6	34	7
1048	660	GLENWOOD CIRCLE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	1	33	7
1049	1179	PARKWOOD DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	1	33	7
1050	1570	TRADE WINDS DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	1	33	7
1051	1552	TIHONET ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0	0	0	0	0.9	33	7
1052	906	MAIN AVENUE	Road	3	Neighborhood	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	47	0	0	0	0	0.7	33	7
1053	474	DEPOT STREET	Road	5	Whole Town	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	53	0	0	0	0	0.6	32	6
1054	476	DEPOT STREET	Road	5	Whole Town	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	53	0	0	0	0	0.6	32	6
1055	1023	MINOT AVENUE	Road	5	Whole Town	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	53	0	0	0	0	0.6	32	6
1056	1099	OLD ONSET ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	0	0	0	0	0.8	32	6
1057	495	EARL STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	0.9	30	6
1058	613	FRENCH AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	0.9	30	6

Table B-1b: Consequence and Risk Scores for All At Risk Road Assets.

Rank	ID#	Asset Name	Asset Type		Area of Service Loss		Duration of Service Loss		Cost of Damage		Impact on Public Safety & Emergency Services		Impact on Important Economic Activities		Impact on Public Health & Environment	Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
1059	1079	OAK TERRACE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	0.9	30	6
1060	1347	SALTMARSH LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	0.9	30	6
1061	1579	TWINS BEACH LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	0.9	30	6
1062	1684	WYCHUNAS AVENUE	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	4	High	1	None	50	0	0	0	0	0.6	30	6
1063	353	CRANBERRY HIGHWAY	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	5	Very high	5	Very high	1	None	73	0	0	0	0	0.4	29	6
1064	856	LINDEN STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0	0	0	0	0.8	29	6
1065	956	MARION ROAD	Road	4	Multiple Neighborh	2	1 - 7 days	1	<$10k	4	High	5	Very high	1	None	57	0	0	0	0	0.5	28	6
1066	1384	SANDWICH ROAD	Road	4	Multiple Neighborh	2	1 - 7 days	1	<$10k	4	High	5	Very high	1	None	57	0	0	0	0	0.5	28	6
1067	472	DEPOT STREET	Road	5	Whole Town	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	47	0	0	0	0	0.6	28	6
1068	473	DEPOT STREET	Road	5	Whole Town	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	47	0	0	0	0	0.6	28	6
1069	648	GLEN CHARLIE ROAD	Road	5	Whole Town	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	47	0	0	0	0	0.6	28	6
1070	1587	UNION AVENUE	Road	3	Neighborhood	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	47	0	0	0	0	0.6	28	6
1071	679	GREAT NECK ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	0.8	27	5
1072	874	LONGWOOD AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	0.8	27	5
1073	748	HIAWATHA ROAD	Road	2	Locality	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	43	0	0	0	0	0.6	26	5
1074	869	LONG NECK ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0	0	0	0	0.6	26	5
1075	883	LOWELL STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0	0	0	0	0.6	26	5
1076	1098	OLD GLEN CHARLIE ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0	0	0	0	0.6	26	5
1077	1218	PIRES STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0	0	0	0	0.6	26	5
1078	614	FRESH MEADOW DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0	0	0	0	0.7	26	5
1079	1077	OAK STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0	0	0	0	0.7	26	5
1080	121	BAYBERRY ROAD	Road	2	Locality	3	7 - 14 days	2	$10k - $100k	2	Low	2	Low	1	None	40	0	0	0	0	0.6	24	5
1081	470	DEPOT STREET	Road	5	Whole Town	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	47	0	0	0	0	0.5	23	5
1082	909	MAIN AVENUE	Road	3	Neighborhood	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	47	0	0	0	0	0.5	23	5
1083	22	19TH STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	0.7	23	5
1084	164	BOURNES HILL ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	0.7	23	5
1085	492	DUSTY LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	0.7	23	5
1086	1184	PENNY LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	0.7	23	5
1087	1412	SEED STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	0.7	23	5
1088	1424	SHAW STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	0.7	23	5
1089	1320	ROUTE 25	Road	5	Whole Town	2	1 - 7 days	1	<$10k	4	High	4	High	1	None	57	0	0	0	0	0.4	23	5
1090	260	CHAPEL LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0	0	0	0	0.6	22	4
1091	1456	SKILLINGS ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0	0	0	0	0.6	22	4
1092	57	AMES ISLAND ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0	0	0	0	0.5	22	4
1093	842	KRISTEN LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0	0	0	0	0.5	22	4
1094	908	MAIN AVENUE	Road	3	Neighborhood	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	43	0	0	0	0	0.5	22	4
1095	1109	ONSET AVENUE	Road	5	Whole Town	3	7 - 14 days	3	$100k - $1m	2	Low	2	Low	1	None	53	0	0	0	0	0.4	21	4
1096	4	11TH STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	0.6	20	4
1097	694	GREENGATE LANE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	0.6	20	4
1098	785	INDIAN NECK ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	0.6	20	4
1099	1492	STATION STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	0.6	20	4
1100	1566	TOWHEE ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	0.6	20	4
1101	1574	TUCKWOOD PLACE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	0.6	20	4
1102	1583	UNION AVENUE	Road	3	Neighborhood	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	37	0	0	0	0	0.5	18	4
1103	1614	WASHBURN COURT	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0	0	0	0	0.5	18	4
1104	1380	SANDWICH ROAD	Road	4	Multiple Neighborh	2	1 - 7 days	1	<$10k	4	High	5	Very high	1	None	57	0	0	0	0	0.3	17	3

Table B-1b: Consequence and Risk Scores for All At Risk Road Assets.

Rank	ID#	Asset Name	Asset Type	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impact on Public Safety & Emergency Services	Impact on Important Economic Activities	Impact on Public Health & Environment	Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
1105	677	GREAT NECK ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0	0	0	0	0.5	17	3
1106	680	GREAT NECK ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0	0	0	0	0.5	17	3
1107	754	HIGHLAND AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0	0	0	0	0.5	17	3
1108	810	JAMES DRIVE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0	0	0	0	0.5	17	3
1109	1049	NELSON STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0	0	0	0	0.5	17	3
1110	1575	TUCKWOOD PLACE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0	0	0	0	0.5	17	3
1111	130	BAYVIEW LANE	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	2 Low	1 None	40	0	0	0	0	0.4	16	3
1112	310	CLIFFORD STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	0	0	0	0	0.4	16	3
1113	817	JEFFRIES PATH	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	0	0	0	0	0.4	16	3
1114	1226	PLEASANTVIEW ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	0	0	0	0	0.4	16	3
1115	1382	SANDWICH ROAD	Road	4 Multiple Neighborh	2 1 - 7 days	1 <$10k	4 High	4 High	1 None	53	0	0	0	0	0.3	16	3
1116	1554	TIHONET ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	0	0	0	0	0.4	16	3
1117	350	CRANBERRY HIGHWAY	Road	5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0	0	0	0	0.2	15	3
1118	355	CRANBERRY HIGHWAY	Road	5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0	0	0	0	0.2	15	3
1119	1494	STEEP BANK ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	0	0	0	0	0.4	15	3
1120	321	COMMONWEALTH PARK	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0	0	0	0	0.4	13	3
1121	1215	PINEWOOD ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0	0	0	0	0.4	13	3
1122	218	CAMERON STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	0	0	0	0	0.3	13	3
1123	904	MAIN AVENUE	Road	3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	40	0	0	0	0	0.3	12	2
1124	1186	PENNY LANE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	0	0	0	0	0.3	11	2
1125	1389	SANDY ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	0	0	0	0	0.3	11	2
1126	1473	SPECTACLE POND TERRACE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	0	0	0	0	0.3	11	2
1127	1331	ROUTE 25	Road	5 Whole Town	2 1 - 7 days	1 <$10k	4 High	2 Low	1 None	50	0	0	0	0	0.2	10	2
1128	242	CARONS WAY	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0	0	0	0	0.3	10	2
1129	1028	MONROE STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0	0	0	0	0.3	10	2
1130	1474	SPECTACLE POND TERRACE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0	0	0	0	0.3	10	2
1131	1558	TIMS POINT ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0	0	0	0	0.3	10	2
1132	1618	WEBSTER STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0	0	0	0	0.3	10	2
1133	578	FIRST STREET	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	2 Low	1 None	43	0	0	0	0	0.2	9	2
1134	847	LANDING WAY	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	0	0	0	0	0.2	9	2
1135	1221	PLEASANT AVENUE	Road	2 Locality	3 7 - 14 days	2 $10k - $100k	2 Low	3 Moderate	1 None	43	0	0	0	0	0.2	9	2
1136	1588	UNION AVENUE	Road	3 Neighborhood	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	43	0	0	0	0	0.2	9	2
1137	1686	WYNDMOOR RUN	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	0	0	0	0	0.2	9	2
1138	553	FAIRMOUNT ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	4 High	1 None	40	0	0	0	0	0.2	8	2
1139	174	BRIDGE VIEW LANE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	0	0	0	0	0.2	7	1
1140	397	CRANBERRY HIGHWAY	Road	5 Whole Town	3 7 - 14 days	3 $100k - $1m	5 Very high	5 Very high	1 None	73	0	0	0	0	0.1	7	1
1141	879	LONGWOOD AVENUE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	0	0	0	0	0.2	7	1
1142	1181	PARTRIDGE PATH	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	0	0	0	0	0.2	7	1
1143	1257	RAMP-GLEN CHARLIE RD TO RT 25 EB	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	0	0	0	0	0.2	7	1
1144	1394	SAVARY ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	3 Moderate	1 None	37	0	0	0	0	0.2	7	1
1145	1185	PENNY LANE	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	2 Low	1 None	33	0	0	0	0	0.2	7	1
1146	1632	WEST CENTRAL AVENUE	Road	2 Locality	3 7 - 14 days	3 $100k - $1m	2 Low	5 Very high	1 None	53	0	0	0	0	0.1	5	1
1147	267	CHARGE POND ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	0	0	0	0	0.1	4	1
1148	317	COHASSET ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	0	0	0	0	0.1	4	1
1149	689	GREAT NECK ROAD	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	0	0	0	0	0.1	4	1
1150	706	HAMMOND STREET	Road	2 Locality	2 1 - 7 days	1 <$10k	2 Low	5 Very high	1 None	43	0	0	0	0	0.1	4	1

Table B-1b: Consequence and Risk Scores for All At Risk Road Assets.

Rank	ID#	Asset Name	Asset Type		Area of Service Loss		Duration of Service Loss		Cost of Damage		Impact on Public Safety & Emergency Services		Impact on Important Economic Activities		Impact on Public Health & Environment	Total Consequence Score	Present Prob (%)	Present Risk Score	2030 Prob (%)	2030 Risk Score	2070 Prob (%)	2070 Risk Score	Weighted Composite Risk Score
1151	741	HEATHER TRAIL	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0	0	0	0	0.1	4	1
1152	1242	PROSPECT STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	5	Very high	1	None	43	0	0	0	0	0.1	4	1
1153	735	HATHAWAY STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	0	0	0	0	0.1	4	1
1154	828	KIMBERLY COURT	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	0	0	0	0	0.1	4	1
1155	1094	OLD COLONY AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	4	High	1	None	40	0	0	0	0	0.1	4	1
1156	56	AMES ISLAND EXTENSION	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0	0	0	0	0.1	4	1
1157	193	BURFIELD DRIVE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0	0	0	0	0.1	4	1
1158	265	CHARGE POND ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0	0	0	0	0.1	4	1
1159	770	HILL STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0	0	0	0	0.1	4	1
1160	873	LONGWOOD AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0	0	0	0	0.1	4	1
1161	1013	MIDWAY STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0	0	0	0	0.1	4	1
1162	1416	SEVENTH STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0	0	0	0	0.1	4	1
1163	1490	STATE BOG ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	3	Moderate	1	None	37	0	0	0	0	0.1	4	1
1164	490	DOWD AVENUE	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	0.1	3	1
1165	582	FLINT STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	0.1	3	1
1166	624	GIBBS BALL PARK ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	0.1	3	1
1167	681	GREAT NECK ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	0.1	3	1
1168	682	GREAT NECK ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	0.1	3	1
1169	733	HATHAWAY STREET	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	0.1	3	1
1170	1258	RAMP-GLEN CHARLIE RD TO RT 25 EB	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	0.1	3	1
1171	1555	TIHONET ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	0.1	3	1
1172	1569	TOWHEE ROAD	Road	2	Locality	2	1 - 7 days	1	<$10k	2	Low	2	Low	1	None	33	0	0	0	0	0.1	3	1

APPENDIX C. ASSET SUMMARY SHEETS

Onset Avenue

(between Back St and Wareham Ave)

Critical Elevation: 4.3 ft NAVD88

Threshold Description:

Lowest point on road; the critical elevation was obtained through from the Massachusetts 2016 DEM.

Probability of Exceedance Summary Table

% Probability	Present		2030		2070	
	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.
0.1	14.8	10.5	16.6	12.3	23.0	18.7
0.2	13.7	9.4	15.5	11.2	21.6	17.3
0.5	12.9	8.6	14.6	10.3	20.4	16.1
1	11.7	7.4	13.4	9.1	18.7	14.4
2	10.8	6.5	12.5	8.2	17.5	13.2
5	9.9	5.6	11.5	7.2	16.2	11.9
10	8.7	4.4	10.2	5.9	14.4	10.1
20	7.7	3.4	9.2	4.9	13.1	8.8
25	6.6	2.3	8.2	3.9	11.6	7.3
30	6.3	2.0	7.8	3.5	11.1	6.8
50	6.0	1.7	7.4	3.1	10.6	6.3
100	dry	dry	6.3	2.0	9.1	4.8

Consequence of Exceedance

	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impacts to Public Safety	Impacts to Economic Activities	Impacts to Public Health & Environ.	Consequence Score
Scores	5	3	3	2	5	1	63

Risk of Exceedance

Time horizon	Probability of Exceedance	Consequence Score	Risk Score	Weight	Composite Risk Score	Composite Risk Rank
Present	52.7	63	3338	0.5	3966	1
2030	70.1	63	4440	0.3		
2070	76.2	63	4826	0.2		

Arnold Pump Station

Critical Elevation: 6.8 ft NAVD88

Threshold Description:

Elevation at which water enters the building; elevation data taken from GHD report.

Probability of Exceedance Summary Table

% Probability	Present		2030		2070	
	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.
0.1	15.96	9.2	17.72	10.9	24.91	18.1
0.2	14.89	8.1	16.6	9.8	23.37	16.6
0.5	14.01	7.2	15.67	8.9	22.1	15.3
1	12.8	6.0	14.4	7.6	20.36	13.6
2	11.87	5.1	13.42	6.6	19.02	12.2
5	10.92	4.1	12.43	5.6	17.65	10.9
10	9.64	2.8	11.09	4.3	15.82	9.0
20	8.64	1.8	10.03	3.2	14.37	7.6
25	7.55	0.8	8.89	2.1	12.81	6.0
30	7.17	0.4	8.49	1.7	12.27	5.5
50	dry	dry	8.14	1.3	11.79	5.0
100	dry	dry	6.94	0.1	10.14	3.3

Consequence of Exceedance

	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impacts to Public Safety	Impacts to Economic Activities	Impacts to Public Health & Environ.	Consequence Score
Scores	3	2	4	2	2	4	57

Risk of Exceedance

Time horizon	Probability of Exceedance	Consequence Score	Risk Score	Weight	Composite Risk Score	Composite Risk Rank
Present	30	57	1700	0.5	3683	2
2030	100	57	5667	0.3		
2070	100	57	5667	0.2		

Swifts Beach Parking Lot (west)

Critical Elevation: 3.8 ft NAVD88

Threshold Description:

Lowest point in parking lot; the critical elevation was obtained through from the Massachusetts 2016 DEM.

Probability of Exceedance Summary Table

% Probability	Present		2030		2070	
	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.
0.1	15.6	11.9	17.2	13.5	24.8	21.0
0.2	14.6	10.8	16.2	12.4	23.2	19.5
0.5	13.7	10.0	15.3	11.5	22.0	18.2
1	12.6	8.8	14.0	10.3	20.2	16.5
2	11.7	7.9	13.1	9.3	18.9	15.1
5	10.7	7.0	12.1	8.4	17.5	13.8
10	9.5	5.7	10.8	7.1	15.7	11.9
20	8.5	4.7	9.8	6.1	14.2	10.5
25	7.5	3.7	8.7	5.0	12.7	8.9
30	7.1	3.3	8.4	4.6	12.1	8.4
50	6.8	3.0	8.0	4.2	11.6	7.9
100	5.7	1.9	6.9	3.1	10.0	6.2

Consequence of Exceedance

	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impacts to Public Safety	Impacts to Economic Activities	Impacts to Public Health & Environ.	Consequence Score
Scores	2	2	1	2	3	1	37

Risk of Exceedance

Time horizon	Probability of Exceedance	Consequence Score	Risk Score	Weight	Composite Risk Score	Composite Risk Rank
Present	100	37	3667	0.5	3667	4
2030	100	37	3667	0.3		
2070	100	37	3667	0.2		

Cranberry Highway

(between Water St and Town Line)

Critical Elevation: 5.4 ft NAVD88

Threshold Description:

Lowest point on road; the critical elevation was obtained through from the Massachusetts 2016 DEM.

Probability of Exceedance Summary Table

% Probability	Present		2030		2070	
	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.
0.1	15.0	9.6	16.2	10.8	23.3	17.9
0.2	14.0	8.6	15.1	9.7	21.8	16.4
0.5	13.1	7.7	14.2	8.8	20.6	15.2
1	11.9	6.5	13.0	7.6	19.0	13.6
2	10.9	5.5	12.1	6.7	17.7	12.3
5	10.0	4.6	11.2	5.8	16.5	11.1
10	8.7	3.3	9.9	4.5	14.7	9.3
20	7.7	2.3	9.0	3.6	13.4	8.0
25	6.6	1.2	7.9	2.5	11.9	6.5
30	6.3	0.9	7.5	2.1	11.4	6.0
50	5.9	0.5	7.2	1.8	10.9	5.5
100	dry	dry	6.1	0.7	9.4	4.0

Consequence of Exceedance

	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impacts to Public Safety	Impacts to Economic Activities	Impacts to Public Health & Environ.	Consequence Score
Scores	5	3	3	5	5	1	73

Risk of Exceedance

Time horizon	Probability of Exceedance	Consequence Score	Risk Score	Weight	Composite Risk Score	Composite Risk Rank
Present	33.1	73	2427	0.5	3561	6
2030	56.5	73	4143	0.3		
2070	75.3	73	5522	0.2		

Sandwich Road

(between Narrows Rd and Mayflower Ave)

Critical Elevation: 5.1 ft NAVD88

Threshold Description:

Lowest point on road; the critical elevation was obtained through from the Massachusetts 2016 DEM.

Probability of Exceedance Summary Table

% Probability	Present		2030		2070	
	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.
0.1	15.5	10.4	16.6	11.5	24.4	19.3
0.2	14.5	9.4	15.6	10.5	22.9	17.8
0.5	13.6	8.5	14.7	9.6	21.7	16.6
1	12.4	7.3	13.6	8.5	20.0	14.9
2	11.5	6.4	12.7	7.6	18.7	13.6
5	10.6	5.5	11.7	6.6	17.3	12.2
10	9.4	4.3	10.5	5.4	15.5	10.4
20	8.4	3.3	9.5	4.4	14.1	9.0
25	7.3	2.2	8.5	3.4	12.6	7.5
30	6.9	1.8	8.1	3.0	12.1	7.0
50	6.4	1.3	7.8	2.7	11.6	6.5
100	5.3	0.2	6.6	1.5	10.0	4.9

Consequence of Exceedance

	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impacts to Public Safety	Impacts to Economic Activities	Impacts to Public Health & Environ.	Consequence Score
Scores	4	2	1	4	4	1	53

Risk of Exceedance

Time horizon	Probability of Exceedance	Consequence Score	Risk Score	Weight	Composite Risk Score	Composite Risk Rank
Present	57.5	53	3067	0.5	3561	7
2030	70.9	53	3781	0.3		
2070	83.7	53	4464	0.2		

Little Harbor Beach Parking Lot

Critical Elevation: 6.2 ft NAVD88

Threshold Description:

Lowest point in parking lot; the critical elevation was obtained through from the Massachusetts 2016 DEM.

Probability of Exceedance Summary Table

% Probability	Present		2030		2070	
	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.
0.1	15.4	9.2	16.9	10.7	24.2	18.0
0.2	14.4	8.2	15.8	9.6	22.7	16.5
0.5	13.5	7.3	14.9	8.7	21.4	15.2
1	12.3	6.1	13.7	7.5	19.7	13.5
2	11.4	5.2	12.8	6.6	18.4	12.2
5	10.5	4.3	11.9	5.7	17.1	10.9
10	9.2	3.0	10.6	4.4	15.3	9.1
20	8.3	2.1	9.6	3.4	13.9	7.7
25	7.2	1.0	8.5	2.3	12.4	6.2
30	6.8	0.6	8.1	1.9	11.8	5.6
50	6.5	0.3	7.8	1.6	11.4	5.2
100	5.4	dry	6.6	0.4	9.8	3.6

Consequence of Exceedance

	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impacts to Public Safety	Impacts to Economic Activities	Impacts to Public Health & Environ.	Consequence Score
Scores	2	2	1	2	3	1	37

Risk of Exceedance

Time horizon	Probability of Exceedance	Consequence Score	Risk Score	Weight	Composite Risk Score	Composite Risk Rank
Present	50	37	1833	0.5	2750	13
2030	100	37	3667	0.3		
2070	100	37	3667	0.2		

Shell Point Parking Lot

Critical Elevation: 6.0 ft NAVD88

Threshold Description:

Lowest point in parking lot; the critical elevation was obtained through from the Massachusetts 2016 DEM.

Probability of Exceedance Summary Table

% Probability	Present		2030		2070	
	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.
0.1	15.1	9.1	16.8	10.8	24.1	18.1
0.2	14.1	8.1	15.7	9.7	22.6	16.6
0.5	13.2	7.2	14.9	8.9	21.4	15.4
1	12.1	6.1	13.7	7.7	19.7	13.7
2	11.2	5.2	12.8	6.8	18.4	12.4
5	10.4	4.4	11.8	5.8	17.1	11.1
10	9.2	3.2	10.6	4.6	15.3	9.3
20	8.2	2.2	9.6	3.6	13.9	7.9
25	7.2	1.2	8.6	2.6	12.4	6.4
30	6.8	0.8	8.2	2.2	11.9	5.9
50	6.5	0.5	7.9	1.9	11.4	5.4
100	5.5	dry	6.7	0.7	9.9	3.9

Consequence of Exceedance

	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impacts to Public Safety	Impacts to Economic Activities	Impacts to Public Health & Environ.	Consequence Score
Scores	2	2	1	2	3	1	37

Risk of Exceedance

Time horizon	Probability of Exceedance	Consequence Score	Risk Score	Weight	Composite Risk Score	Composite Risk Rank
Present	50	37	1833	0.5	2750	14
2030	100	37	3667	0.3		
2070	100	37	3667	0.2		

Harbormaster Building & Restrooms

Critical Elevation: 8.2 ft NAVD88

Threshold Description:

Ground elevation outside building; the critical elevation was obtained through from the Massachusetts 2016 DEM.

Probability of Exceedance Summary Table

% Probability	Present		2030		2070	
	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.
0.1	15.07	6.9	16.95	8.8	24.33	16.1
0.2	14.07	5.9	15.88	7.7	22.82	14.6
0.5	13.25	5.1	15.01	6.8	21.59	13.4
1	12.12	3.9	13.8	5.6	19.89	11.7
2	11.24	3.0	12.87	4.7	18.58	10.4
5	10.36	2.2	11.93	3.7	17.24	9.0
10	9.16	1.0	10.65	2.5	15.45	7.3
20	8.22	0.0	9.65	1.5	14.04	5.8
25	dry	dry	8.57	0.4	12.52	4.3
30	dry	dry	dry	dry	11.98	3.8
50	dry	dry	dry	dry	11.52	3.3
100	dry	dry	dry	dry	9.91	1.7

Consequence of Exceedance

	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impacts to Public Safety	Impacts to Economic Activities	Impacts to Public Health & Environ.	Consequence Score
Scores	5	3	3	4	3	3	70

Risk of Exceedance

Time horizon	Probability of Exceedance	Consequence Score	Risk Score	Weight	Composite Risk Score	Composite Risk Rank
Present	20	70	1400	0.5	2625	16
2030	25	70	1750	0.3		
2070	100	70	7000	0.2		

Onset Heights Pump Station

Critical Elevation: 7.4 ft NAVD88

Threshold Description:

Elevation at which water enters the building; elevation data taken from GHD report.

Probability of Exceedance Summary Table

% Probability	Present		2030		2070	
	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.
0.1	15.3	7.9	17.0	9.6	24.5	17.1
0.2	14.3	6.9	15.9	8.5	23.0	15.6
0.5	13.5	6.1	15.0	7.6	21.8	14.4
1	12.1	4.7	13.8	6.4	20.0	12.6
2	11.3	3.9	12.9	5.5	18.7	11.3
5	10.4	3.0	12.0	4.6	17.4	10.0
10	9.2	1.8	10.7	3.3	15.5	8.1
20	8.2	0.8	9.7	2.3	14.1	6.7
25	7.2	dry	8.6	1.2	12.6	5.2
30	6.8	dry	8.2	0.8	12.0	4.6
50	6.5	dry	7.9	0.5	11.6	4.2
100	dry	dry	6.7	dry	9.9	2.5

Consequence of Exceedance

	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impacts to Public Safety	Impacts to Economic Activities	Impacts to Public Health & Environ.	Consequence Score
Scores	3	2	4	2	2	4	57

Risk of Exceedance

Time horizon	Probability of Exceedance	Consequence Score	Risk Score	Weight	Composite Risk Score	Composite Risk Rank
Present	20	57	1133	0.5	2550	17
2030	50	57	2833	0.3		
2070	100	57	5667	0.2		

Riverside Pump Station

Critical Elevation: 7.3 ft NAVD88

Threshold Description:

Elevation at which water enters the building; elevation data taken from GHD report.

Probability of Exceedance Summary Table

% Probability	Present		2030		2070	
	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.
0.1	15.3	8.0	17.0	9.7	24.6	17.3
0.2	14.3	7.0	15.9	8.6	23.0	15.7
0.5	13.4	6.1	15.0	7.7	21.8	14.5
1	12.3	5.0	13.8	6.5	20.1	12.8
2	11.4	4.1	12.9	5.6	18.7	11.4
5	10.5	3.2	12.0	4.7	17.4	10.1
10	9.3	2.0	10.7	3.4	15.6	8.3
20	8.3	1.0	9.7	2.4	14.1	6.8
25	7.3	dry	8.6	1.3	12.6	5.3
30	6.9	dry	8.2	0.9	12.0	4.7
50	6.6	dry	7.9	0.6	11.6	4.3
100	dry	dry	6.7	dry	9.9	2.6

Consequence of Exceedance

	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impacts to Public Safety	Impacts to Economic Activities	Impacts to Public Health & Environ.	Consequence Score
Scores	3	2	4	2	2	4	57

Risk of Exceedance

Time horizon	Probability of Exceedance	Consequence Score	Risk Score	Weight	Composite Risk Score	Composite Risk Rank
Present	20	57	1133	0.5	2550	18
2030	50	57	2833	0.3		
2070	100	57	5667	0.2		

Onset Pier

Critical Elevation: 7.7 ft NAVD88

Threshold Description:

Ground elevation outside building; the critical elevation was obtained through from the Massachusetts 2016 DEM.

Probability of Exceedance Summary Table

% Probability	Present		2030		2070	
	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.
0.1	15.0	7.3	16.9	9.2	24.3	16.6
0.2	14.0	6.3	15.9	8.1	22.8	15.1
0.5	13.2	5.5	15.0	7.3	21.6	13.8
1	12.1	4.4	13.8	6.1	19.9	12.1
2	11.2	3.5	12.9	5.1	18.6	10.8
5	10.3	2.6	11.9	4.2	17.2	9.5
10	9.2	1.4	10.7	2.9	15.4	7.7
20	8.2	0.5	9.7	1.9	14.0	6.3
25	dry	dry	8.6	0.8	12.5	4.8
30	dry	dry	8.2	0.5	12.0	4.2
50	dry	dry	7.9	0.1	11.5	3.8
100	dry	dry	6.7	dry	9.9	2.2

Consequence of Exceedance

	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impacts to Public Safety	Impacts to Economic Activities	Impacts to Public Health & Environ.	Consequence Score
Scores	3	2	3	3	4	2	57

Risk of Exceedance

Time horizon	Probability of Exceedance	Consequence Score	Risk Score	Weight	Composite Risk Score	Composite Risk Rank
Present	20	57	1133	0.5	2550	19
2030	25	57	2833	0.3		
2070	100	57	5667	0.2		

Main Street

(between Center St and Sandwich Rd)

Critical Elevation: 5.6 ft NAVD88

Threshold Description:

Lowest point on road; the critical elevation was obtained through from the Massachusetts 2016 DEM.

Probability of Exceedance Summary Table

% Probability	Present		2030		2070	
	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.
0.1	15.5	8.9	16.6	10.0	24.4	17.8
0.2	14.5	7.9	15.6	9.0	22.9	16.3
0.5	13.6	7.0	14.7	8.1	21.7	15.1
1	12.4	5.8	13.6	7.0	20.0	13.4
2	11.5	4.9	12.7	6.1	18.7	12.1
5	10.6	4.0	11.7	5.1	17.3	10.7
10	9.4	2.8	10.5	3.9	15.5	8.9
20	8.4	1.8	9.5	2.9	14.1	7.5
25	7.3	0.7	8.5	1.9	12.6	6.0
30	6.9	0.3	8.1	1.5	12.1	5.5
50	6.4	dry	7.8	1.2	11.6	5.0
100	5.3	dry	6.6	dry	10.0	3.4

Consequence of Exceedance

	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impacts to Public Safety	Impacts to Economic Activities	Impacts to Public Health & Environ.	Consequence Score
Scores	5	2	1	4	5	1	60

Risk of Exceedance

Time horizon	Probability of Exceedance	Consequence Score	Risk Score	Weight	Composite Risk Score	Composite Risk Rank
Present	26.5	60	1590	0.5	2528	21
2030	46.7	60	2802	0.3		
2070	74.4	60	4464	0.2		

Narrows Road

Critical Elevation: 6.9 ft NAVD88

Threshold Description:

Lowest point on road; the critical elevation was obtained through from the Massachusetts 2016 DEM.

Probability of Exceedance Summary Table

% Probability	Present		2030		2070	
	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.
0.1	15.6	8.7	16.7	9.8	24.5	17.6
0.2	14.5	7.6	15.7	8.8	23.0	16.1
0.5	13.7	6.8	14.8	7.9	21.7	14.8
1	12.5	5.6	13.6	6.7	20.0	13.1
2	11.6	4.7	12.7	5.8	18.7	11.8
5	10.7	3.8	11.8	4.9	17.4	10.5
10	9.4	2.5	10.6	3.7	15.6	8.7
20	8.4	1.5	9.6	2.7	14.1	7.2
25	7.4	0.5	8.5	1.6	12.6	5.7
30	7.0	0.1	8.1	1.2	12.1	5.2
50	6.7	dry	7.8	0.9	11.6	4.7
100	5.5	dry	6.7	dry	10.0	3.1

Consequence of Exceedance

	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impacts to Public Safety	Impacts to Economic Activities	Impacts to Public Health & Environ.	Consequence Score
Scores	3	3	4	2	5	1	60

Risk of Exceedance

Time horizon	Probability of Exceedance	Consequence Score	Risk Score	Weight	Composite Risk Score	Composite Risk Rank
Present	30	60	1800	0.5	2473	23
2030	37.7	60	2262	0.3		
2070	74.5	60	4470	0.2		

Avenue A Pump Station

Critical Elevation: 7.1 ft NAVD88

Threshold Description:

Elevation at which water enters the building; elevation data taken from GHD report.

Probability of Exceedance Summary Table

% Probability	Present		2030		2070	
	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.
0.1	15.5	8.4	16.6	9.5	24.4	17.3
0.2	14.4	7.3	15.5	8.4	22.9	15.8
0.5	13.5	6.4	14.7	7.6	21.6	14.5
1	12.4	5.3	13.5	6.4	19.9	12.8
2	11.5	4.4	12.6	5.5	18.6	11.5
5	10.5	3.4	11.7	4.6	17.3	10.2
10	9.3	2.2	10.4	3.3	15.5	8.4
20	8.3	1.2	9.5	2.4	14.0	6.9
25	7.3	0.2	8.4	1.3	12.5	5.4
30	6.9	dry	8.0	0.9	12.0	4.9
50	dry	dry	dry	dry	11.5	4.4
100	dry	dry	dry	dry	9.9	2.8

Consequence of Exceedance

	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impacts to Public Safety	Impacts to Economic Activities	Impacts to Public Health & Environ.	Consequence Score
Scores	3	2	4	2	2	4	57

Risk of Exceedance

Time horizon	Probability of Exceedance	Consequence Score	Risk Score	Weight	Composite Risk Score	Composite Risk Rank
Present	25	57	1417	0.5	2352	25
2030	30	57	1700	0.3		
2070	100	57	5667	0.2		

East Boulevard Ejector

Critical Elevation: 8.1 ft NAVD88

Threshold Description:

Elevation at which water enters the building; elevation data taken from GHD report.

Probability of Exceedance Summary Table

% Probability	Present		2030		2070	
	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.	Flood Elevation	Depth Above Critical Elev.
0.1	15.1	7.0	16.9	8.8	24.3	16.2
0.2	14.1	6.0	15.8	7.7	22.8	14.7
0.5	13.3	5.2	14.9	6.8	21.6	13.5
1	12.1	4.0	13.7	5.6	19.9	11.8
2	11.3	3.2	12.8	4.7	18.5	10.4
5	10.4	2.3	11.9	3.8	17.2	9.1
10	9.2	1.1	10.6	2.5	15.4	7.3
20	8.2	0.1	9.6	1.5	14.0	5.9
25	7.2	dry	8.5	0.4	12.5	4.4
30	6.8	dry	8.1	0.0	11.9	3.8
50	6.5	dry	7.8	dry	11.4	3.3
100	dry	dry	6.7	dry	9.8	1.7

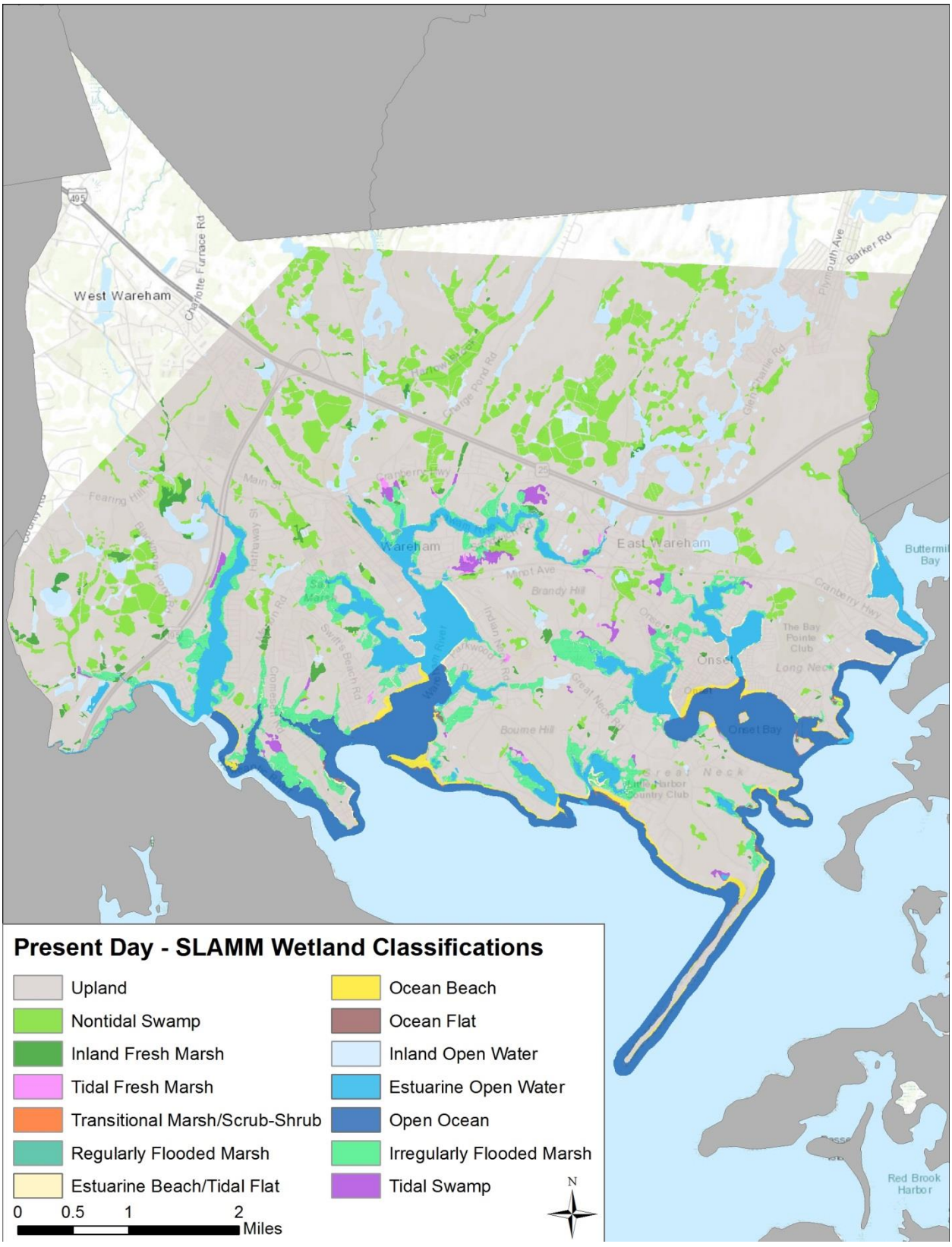
Consequence of Exceedance

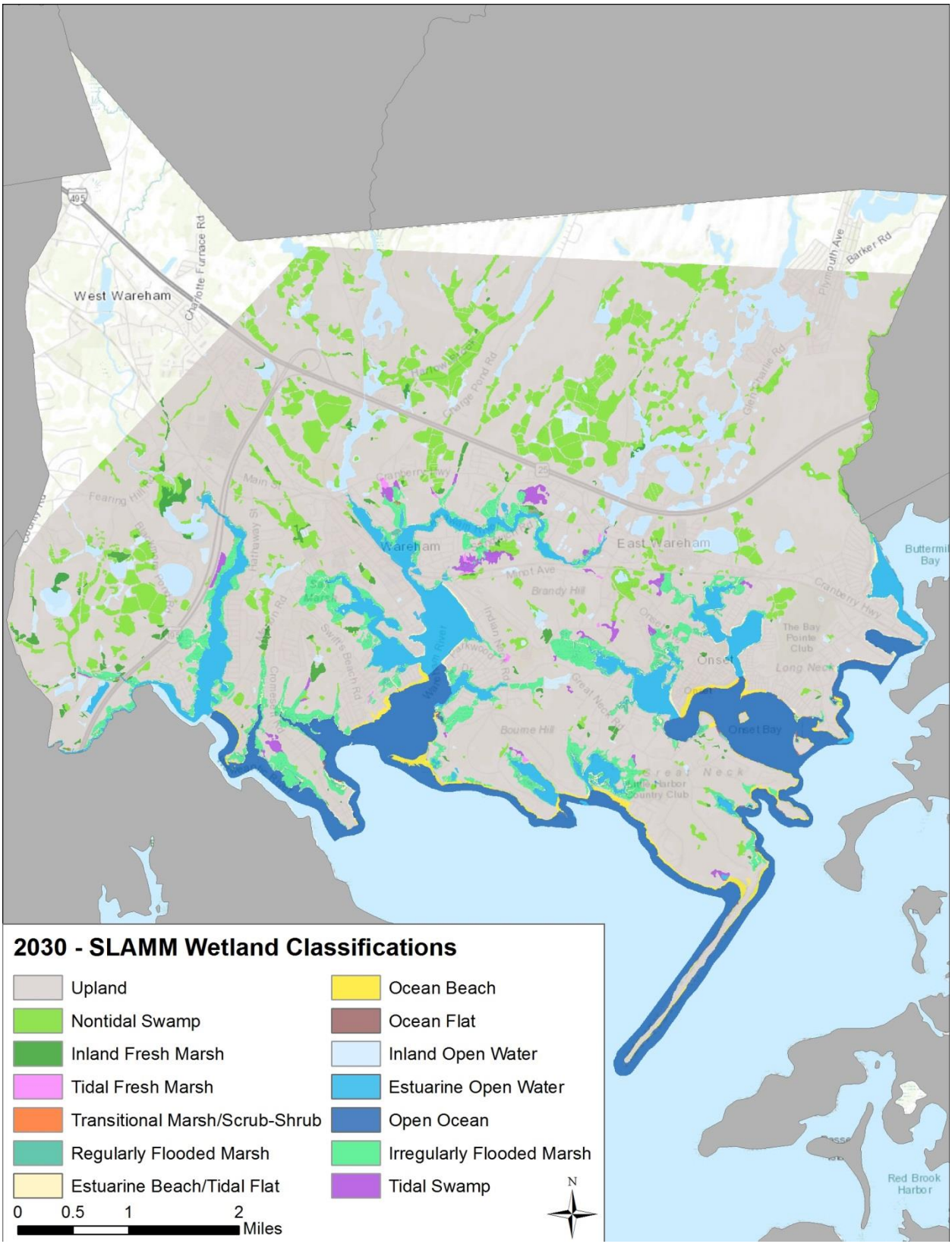
	Area of Service Loss	Duration of Service Loss	Cost of Damage	Impacts to Public Safety	Impacts to Economic Activities	Impacts to Public Health & Environ.	Consequence Score
Scores	3	2	4	2	2	5	60

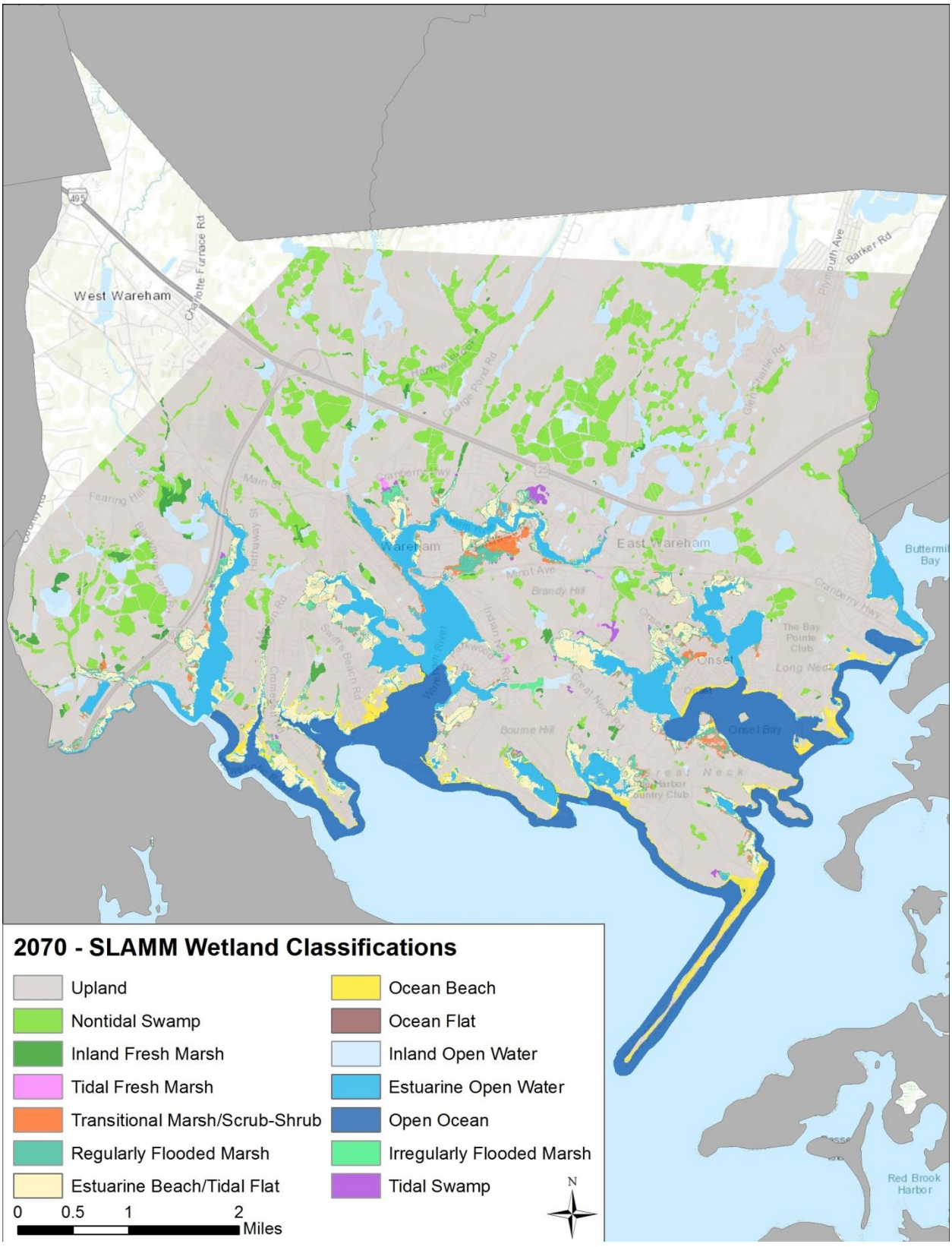
Risk of Exceedance

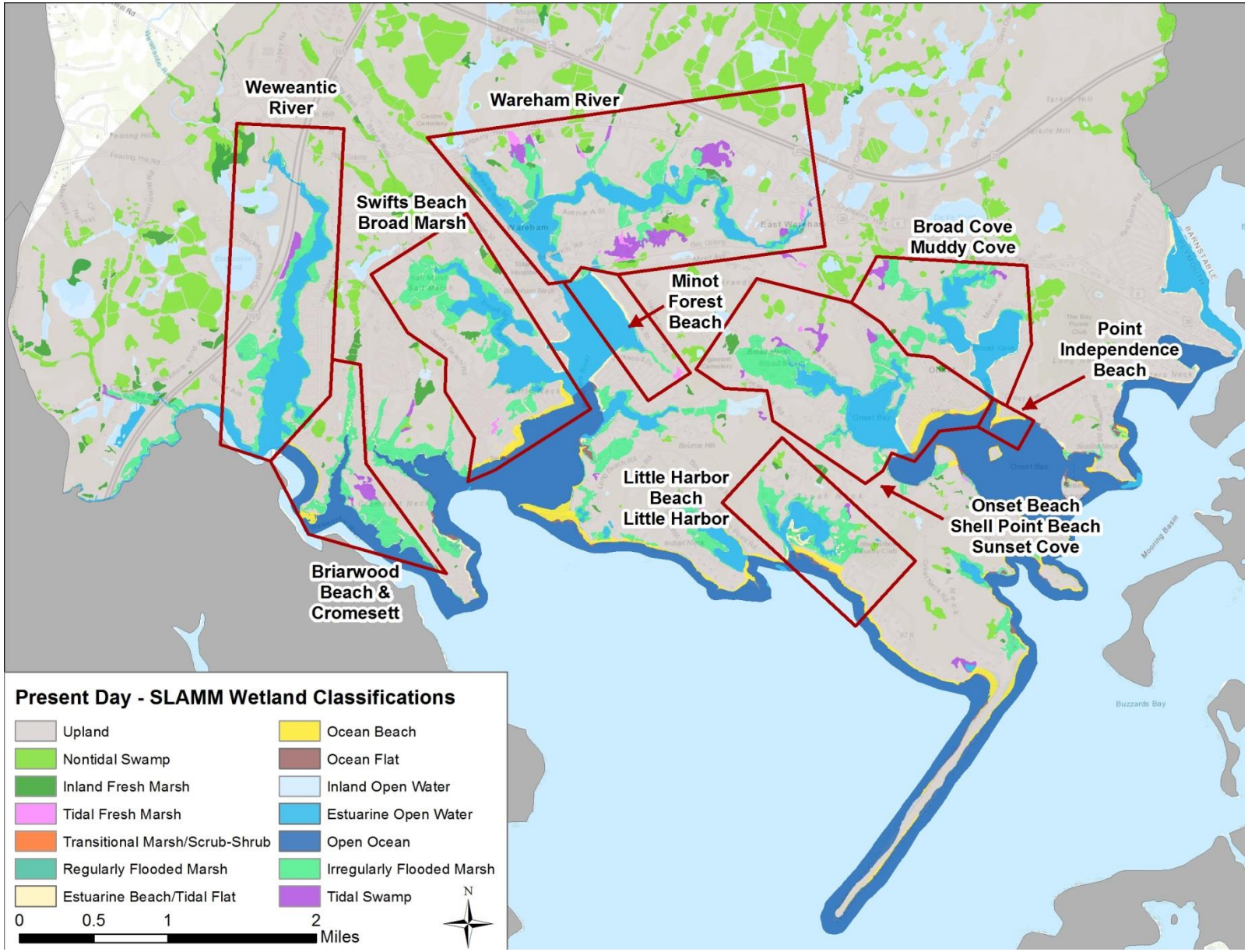
Time horizon	Probability of Exceedance	Consequence Score	Risk Score	Weight	Composite Risk Score	Composite Risk Rank
Present	20	60	1200	0.5	2340	26
2030	30	60	1800	0.3		
2070	100	60	6000	0.2		

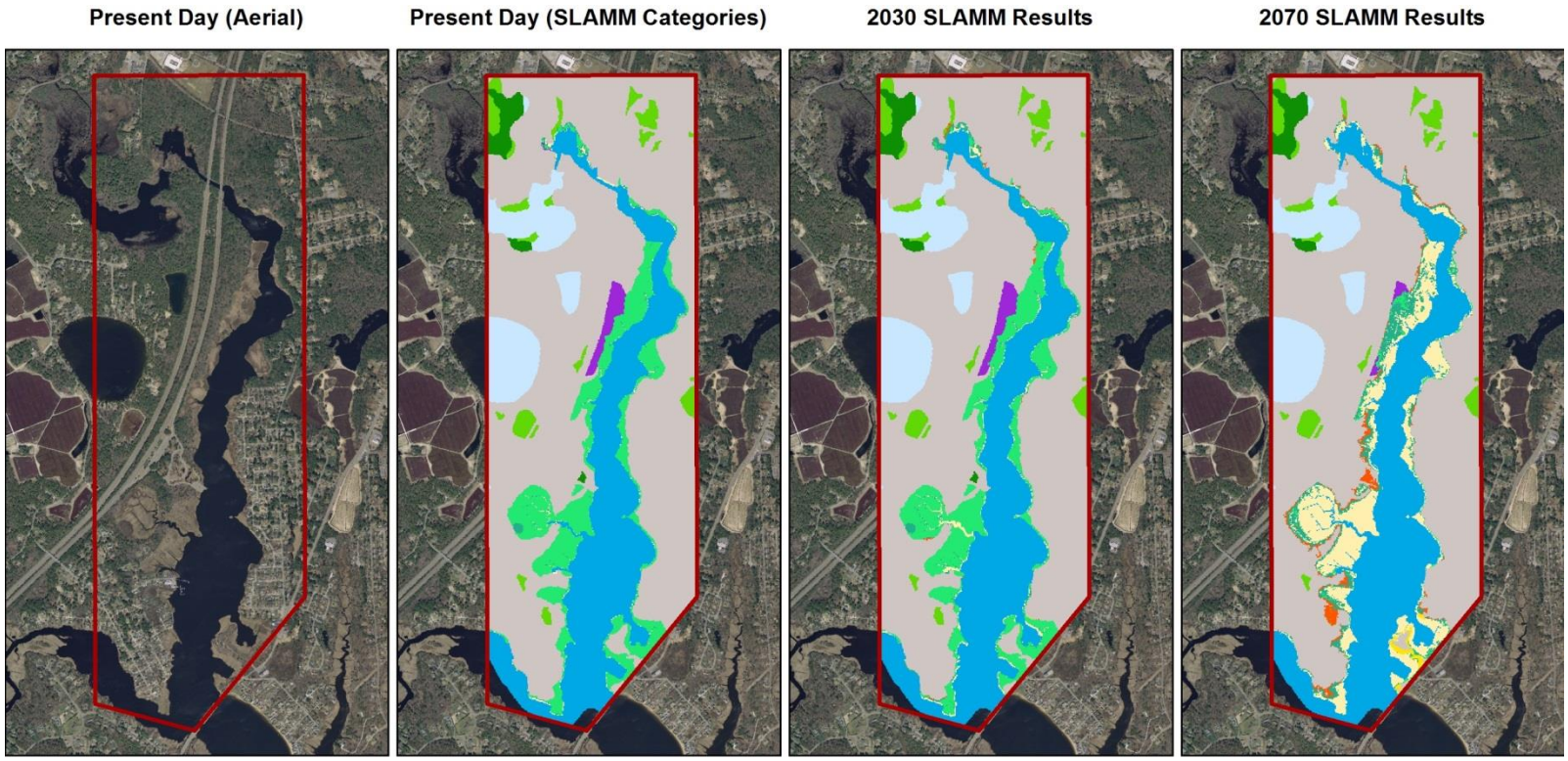
APPENDIX D. NATURAL RESOURCES CHANGES


West Wareham
Wareham
East Wareham
Onset
Onset Bay
Great Neck
Red Brook Harbor
Buttermilk Bay
Present Day - SLAMM Wetland Classifications
Upland
Nontidal Swamp
Inland Fresh Marsh
Tidal Fresh Marsh
Transitional Marsh/Scrub-Shrub
Regularly Flooded Marsh
Estuarine Beach/Tidal Flat
Ocean Beach
Ocean Flat
Inland Open Water
Estuarine Open Water
Open Ocean
Irregularly Flooded Marsh
Tidal Swamp
0 0.5 1 2
Miles
N


West Wareham
Wareham
East Wareham
Onset
Onset Bay
Great Neck
Red Brook Harbor
Buttermilk Bay
Charlotte Furnace Rd
Barker Rd
Cranberry Hwy
Main St
Minot Ave
Brandy Hill
Bourne Hill
Swift's Beach Rd
Indian Neck Rd
Long Neck
The Bay Pointe Club
2030 - SLAMM Wetland Classifications
Upland
Nontidal Swamp
Inland Fresh Marsh
Tidal Fresh Marsh
Transitional Marsh/Scrub-Shrub
Regularly Flooded Marsh
Estuarine Beach/Tidal Flat
Ocean Beach
Ocean Flat
Inland Open Water
Estuarine Open Water
Open Ocean
Irregularly Flooded Marsh
Tidal Swamp
0 0.5 1 2
Miles
N


West Wareham
Wareham
East Wareham
Onset
Onset Bay
Buttermilk Bay
Red Brook Harbor
Charlotte Furnace Rd
Barker Rd
Plymouth Ave
Cranberry Hwy
Main St
Minot Ave
Brandy Hill
Boume Hill
Great Neck
Long Neck
Swift's Beach Rd
Indian Ave
Hathaway St
Fearing Hill
Charge Pond Rd
Glen Charlie Rd
The Bay Pointe Club
2070 - SLAMM Wetland Classifications
Upland
Nontidal Swamp
Inland Fresh Marsh
Tidal Fresh Marsh
Transitional Marsh/Scrub-Shrub
Regularly Flooded Marsh
Estuarine Beach/Tidal Flat
Ocean Beach
Ocean Flat
Inland Open Water
Estuarine Open Water
Open Ocean
Irregularly Flooded Marsh
Tidal Swamp
0 0.5 1 2
Miles
N


Weweantic River
Wareham River
Swifts Beach Broad Marsh
Broad Cove Muddy Cove
Minot Forest Beach
Point Independence Beach
Little Harbor Beach Little Harbor
Onset Beach Shell Point Beach Sunset Cove
Briarwood Beach & Cromesett
Present Day - SLAMM Wetland Classifications
Upland
Nontidal Swamp
Inland Fresh Marsh
Tidal Fresh Marsh
Transitional Marsh/Scrub-Shrub
Regularly Flooded Marsh
Estuarine Beach/Tidal Flat
Ocean Beach
Ocean Flat
Inland Open Water
Estuarine Open Water
Open Ocean
Irregularly Flooded Marsh
Tidal Swamp
0 0.5 1 2
Miles
N



Weweantic River

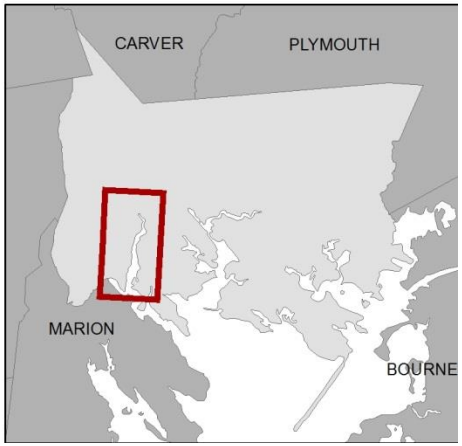
SLAMM Wetland Categories

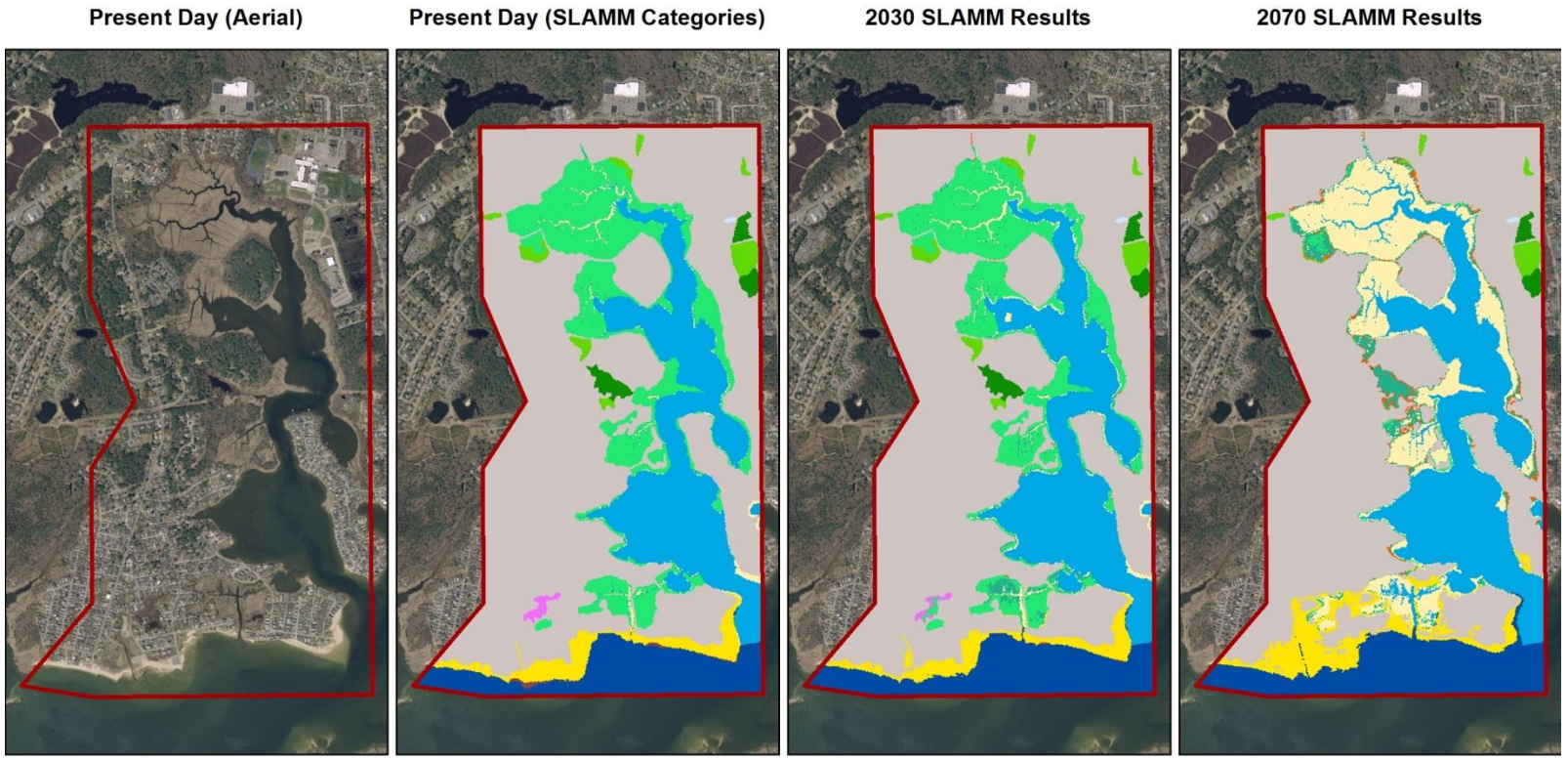
- Upland
- Nontidal Swamp
- Inland Fresh Marsh
- Tidal Fresh Marsh
- Transitional Marsh/Scrub-Shrub
- Regularly Flooded Marsh
- Estuarine Beach/Tidal Flat
- Ocean Beach
- Ocean Flat
- Inland Open Water
- Estuarine Open Water
- Open Ocean
- Irregularly Flooded Marsh
- Tidal Swamp

0 1500 3000 6000 Feet

N

	Area (acres)		
	2011	2030	2070
Upland	578.3	576.4	545.1
Nontidal Swamp	25.8	25.5	24.2
Inland Fresh Marsh	12.8	12.8	12.4
Transitional Marsh/Scrub-Shrub	0.0	1.1	10.7
Regularly Flooded Marsh	4.0	8.1	28.5
Estuarine Beach/Tidal Flat	4.1	9.2	80.6
Ocean Beach	0.0	0.1	2.5
Inland Open Water	62.8	62.8	62.8
Estuarine Open Water	184.2	180.7	196.7
Irregularly Flooded Marsh	90.6	85.9	5.1
Tidal Swamp	7.9	7.7	1.9





Swifts Beach / Broad Marsh

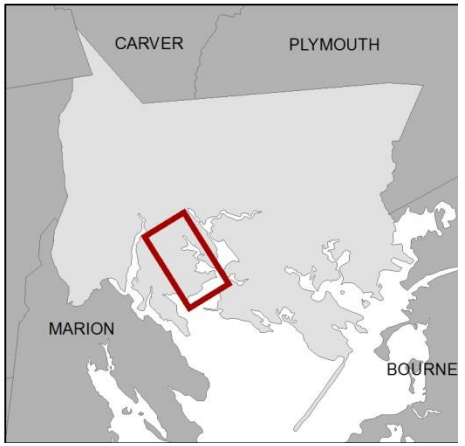
SLAMM Wetland Categories

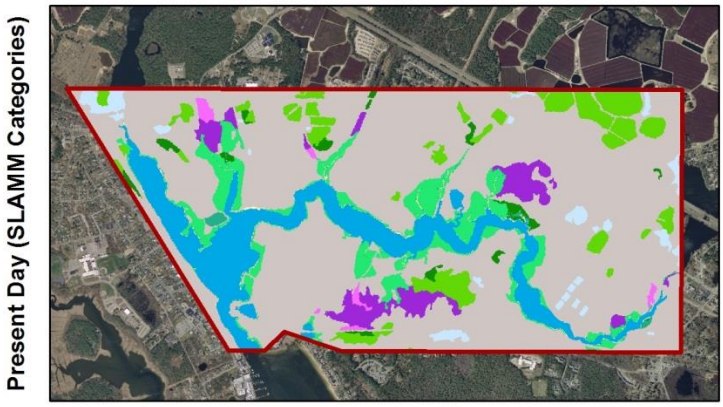
- Upland
- Nontidal Swamp
- Inland Fresh Marsh
- Tidal Fresh Marsh
- Transitional Marsh/Scrub-Shrub
- Regularly Flooded Marsh
- Estuarine Beach/Tidal Flat
- Ocean Beach
- Ocean Flat
- Inland Open Water
- Estuarine Open Water
- Open Ocean
- Irregularly Flooded Marsh
- Tidal Swamp

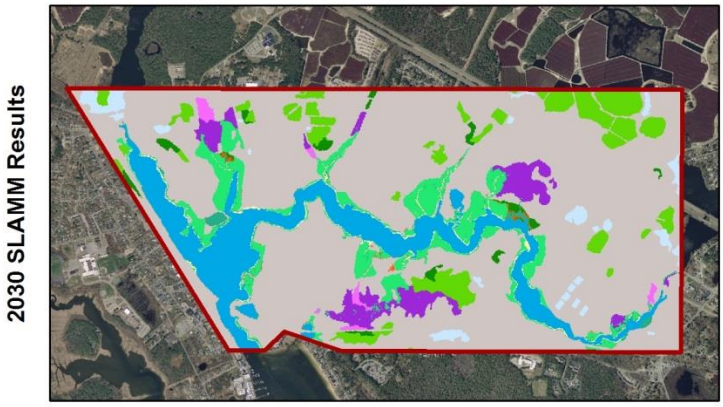
0 1250 2500 5000 Feet

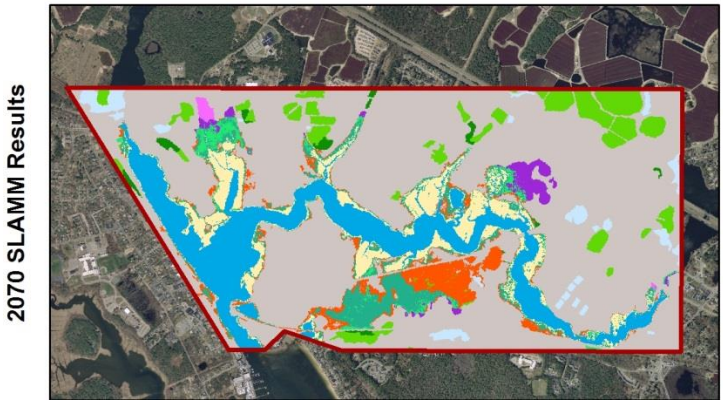
N

	Area (acres)		
	2011	2030	2070
Upland	436.6	434.7	396.7
Nontidal Swamp	9.7	9.7	5.7
Inland Fresh Marsh	7.1	7.1	3.7
Tidal Fresh Marh	1.8	1.1	0.0
Transitional Marsh/Scrub-Shrub	0.0	0.4	5.6
Regularly Flooded Marsh	2.4	8.4	18.7
Estuarine Beach/Tidal Flat	6.5	10.6	91.0
Ocean Beach	19.9	18.4	33.0
Ocean Flat	1.3	0.2	0.0
Inland Open Water	0.2	0.2	0.2
Estuarine Open Water	120.8	118.6	134.7
Open Ocean	55.1	58.7	68.0
Irregularly Flooded Marsh	99.9	93.3	4.2









Wareham River

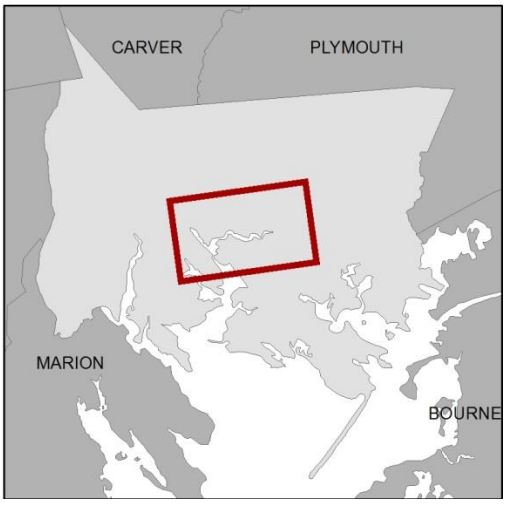
SLAMM Wetland Categories

- Upland
- Nontidal Swamp
- Inland Fresh Marsh
- Tidal Fresh Marsh
- Transitional Marsh/Scrub-Shrub
- Regularly Flooded Marsh
- Estuarine Beach/Tidal Flat
- Inland Open Water
- Estuarine Open Water
- Irregularly Flooded Marsh
- Tidal Swamp

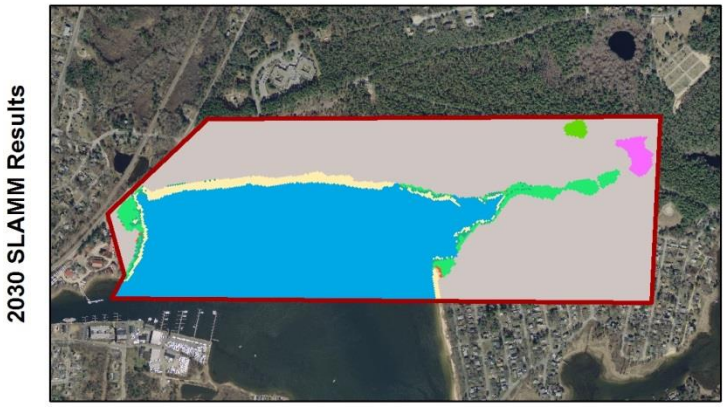
0 2000 4000 8000 Feet

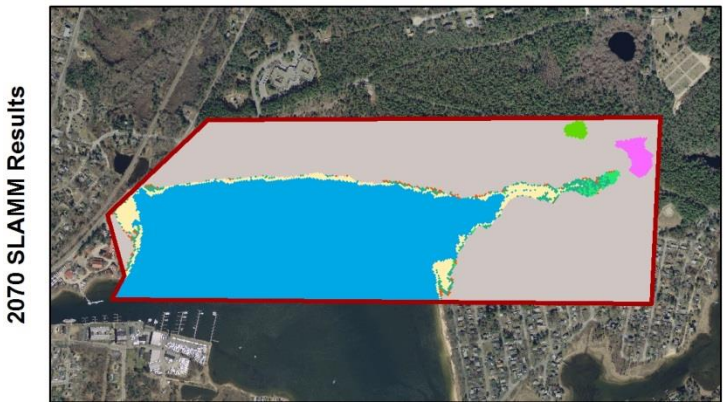
N

	Area (acres)		
	2011	2030	2070
Upland	1025.4	1022.5	943.9
Nontidal Swamp	99.3	99.3	85.1
Inland Fresh Marsh	16.8	15.0	10.0
Tidal Fresh Marh	8.5	8.2	3.7
Transitional Marsh/Scrub-Shrub	0.0	2.6	60.4
Regularly Flooded Marsh	7.1	13.7	71.0
Estuarine Beach/Tidal Flat	6.6	14.3	100.0
Inland Open Water	32.6	32.6	32.4
Estuarine Open Water	178.4	172.1	197.0
Irregularly Flooded Marsh	111.8	107.7	20.1
Tidal Swamp	55.5	54.1	18.6



Minot Forest Beach





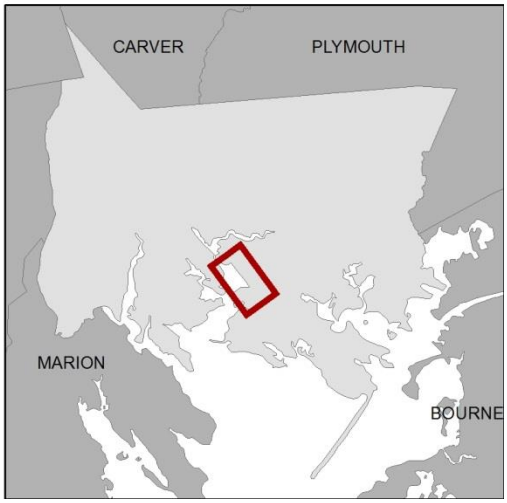
SLAMM Wetland Categories

- Upland
- Nontidal Swamp
- Tidal Fresh Marsh
- Transitional Marsh/Scrub-Shrub
- Regularly Flooded Marsh
- Estuarine Beach/Tidal Flat
- Estuarine Open Water
- Irregularly Flooded Marsh

0 750 1500 3000 Feet

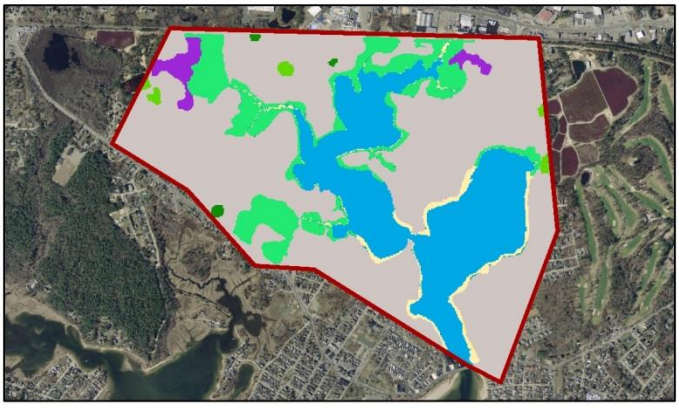
N

	Area (acres)		
	2011	2030	2070
Upland	111.0	110.7	107.8
Nontidal Swamp	0.7	0.7	0.7
Tidal Fresh Marh	1.8	1.8	1.8
Transitional Marsh/Scrub-Shrub	0.0	0.1	0.6
Regularly Flooded Marsh	0.6	1.5	2.5
Estuarine Beach/Tidal Flat	5.8	6.1	6.0
Estuarine Open Water	74.8	75.1	80.7
Irregularly Flooded Marsh	6.2	5.1	0.8



Present Day (Aerial)

Present Day (SLAMM Categories)



2030 SLAMM Results

2070 SLAMM Results

Broad Cove / Muddy Cove

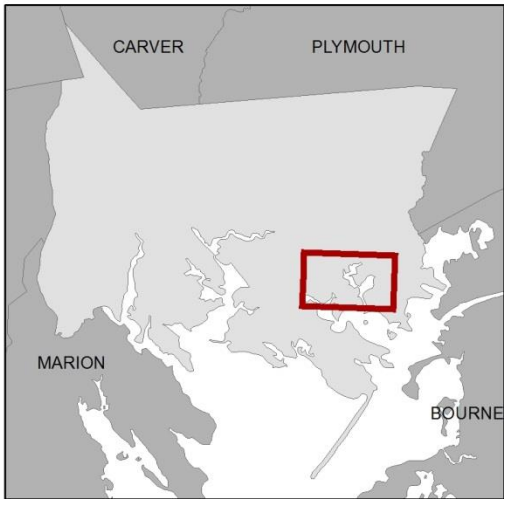
SLAMM Wetland Categories

- Upland
- Nontidal Swamp
- Inland Fresh Marsh
- Transitional Marsh/Scrub-Shrub
- Regularly Flooded Marsh
- Estuarine Beach/Tidal Flat
- Ocean Beach
- Estuarine Open Water
- Open Ocean
- Irregularly Flooded Marsh
- Tidal Swamp

0 1250 2500 5000 Feet

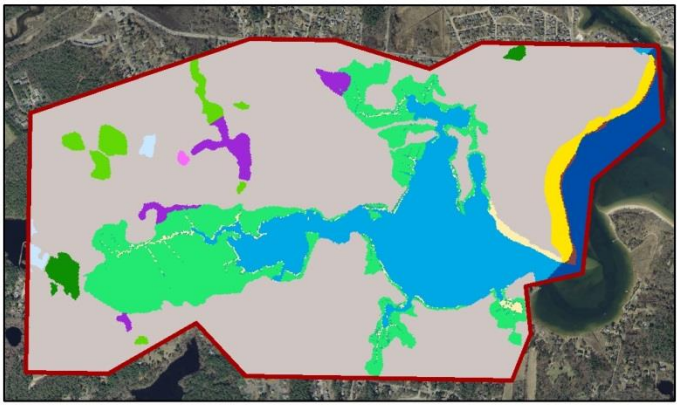
N

	Area (acres)		
	2011	2030	2070
Upland	298.1	296.9	268.5
Nontidal Swamp	3.6	3.6	3.6
Inland Fresh Marsh	1.2	1.2	1.0
Transitional Marsh/Scrub-Shrub	0.0	0.5	10.0
Regularly Flooded Marsh	1.6	7.0	20.3
Estuarine Beach/Tidal Flat	11.4	14.5	60.4
Ocean Beach	0.1	0.1	1.2
Estuarine Open Water	113.1	111.0	127.8
Open Ocean	0.0	0.0	0.1
Irregularly Flooded Marsh	58.7	53.3	3.5
Tidal Swamp	8.6	8.3	0.1

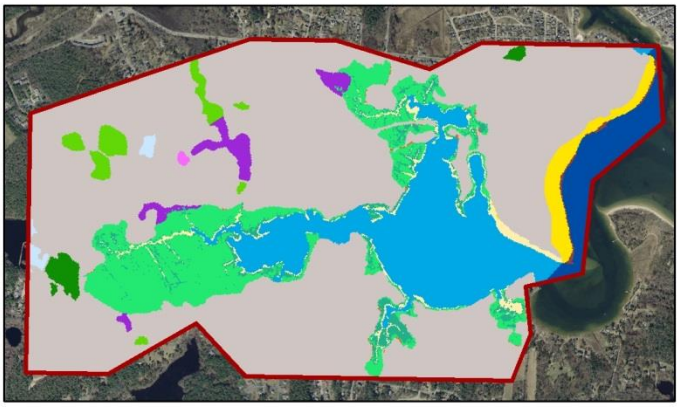


Present Day (Aerial)

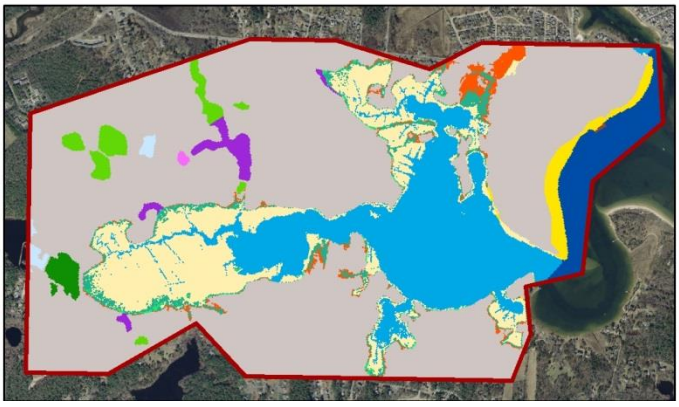
Present Day (SLAMM Categories)



2030 SLAMM Results



2070 SLAMM Results



Onset Beach / Sunset Cove Shell Point Beach

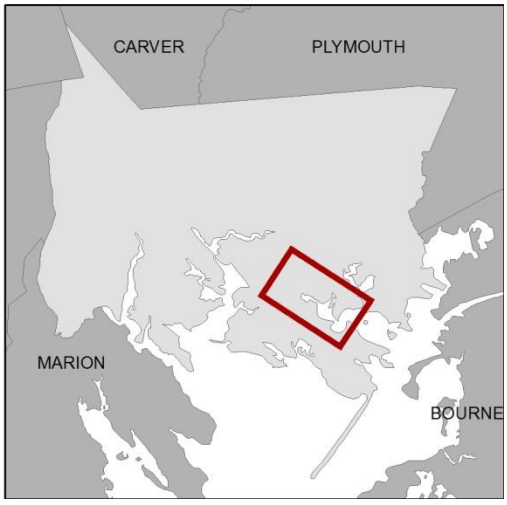
SLAMM Wetland Categories

- Upland
- Nontidal Swamp
- Inland Fresh Marsh
- Tidal Fresh Marsh
- Transitional Marsh/Scrub-Shrub
- Regularly Flooded Marsh
- Estuarine Beach/Tidal Flat
- Ocean Beach
- Ocean Flat
- Inland Open Water
- Estuarine Open Water
- Open Ocean
- Irregularly Flooded Marsh
- Tidal Swamp

0 1250 2500 5000 Feet

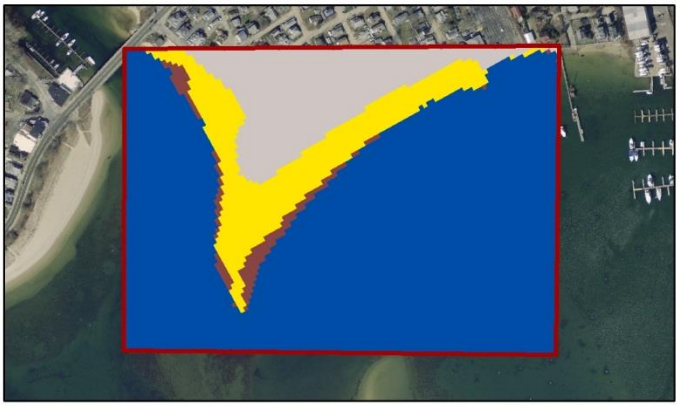
N

	Area (acres)		
	2011	2030	2070
Upland	576.7	575.0	544.2
Nontidal Swamp	12.7	12.7	12.7
Inland Fresh Marsh	6.7	6.7	5.5
Tidal Fresh Marh	0.6	0.6	0.6
Transitional Marsh/Scrub-Shrub	0.0	0.6	13.5
Regularly Flooded Marsh	4.7	20.5	21.6
Estuarine Beach/Tidal Flat	8.7	15.1	101.8
Ocean Beach	15.1	15.1	12.7
Ocean Flat	2.3	1.8	0.2
Inland Open Water	3.7	3.7	3.7
Estuarine Open Water	117.7	114.5	140.5
Open Ocean	30.3	30.9	35.6
Irregularly Flooded Marsh	112.4	94.6	2.7
Tidal Swamp	12.2	12.1	8.6

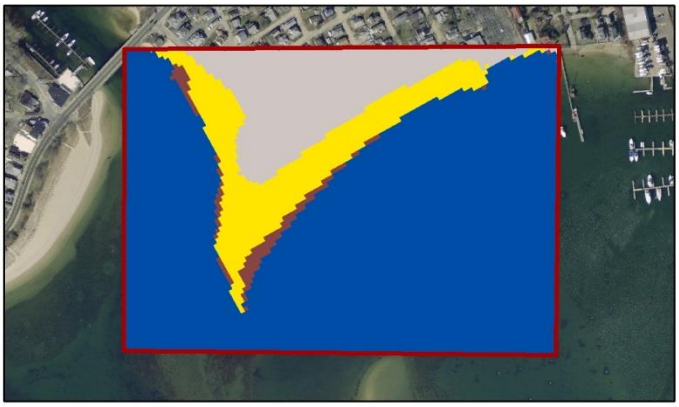


Present Day (Aerial)

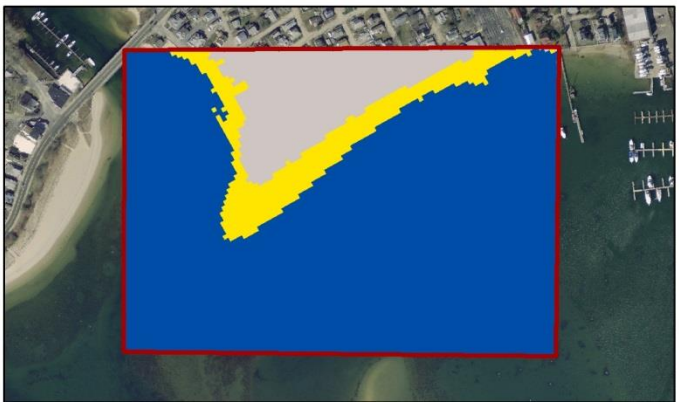
Present Day (SLAMM Categories)



2030 SLAMM Results



2070 SLAMM Results



Point Independence Beach

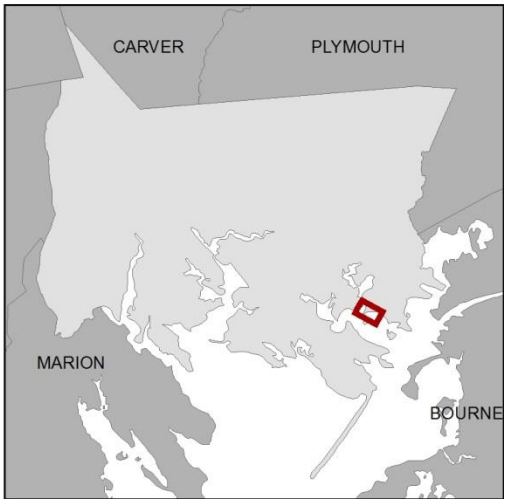
SLAMM Wetland Categories

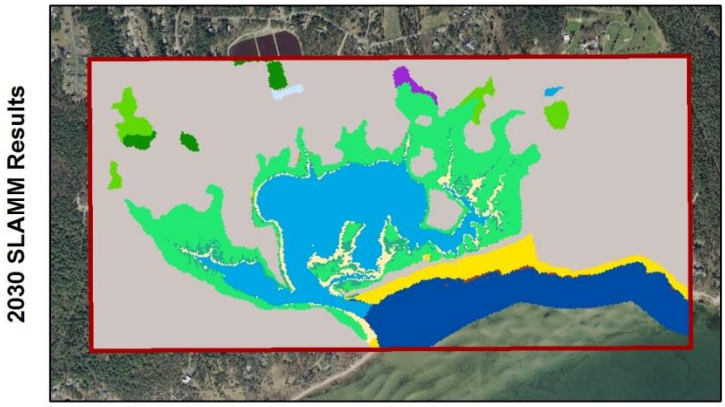
- Upland
- Ocean Beach
- Ocean Flat
- Open Ocean

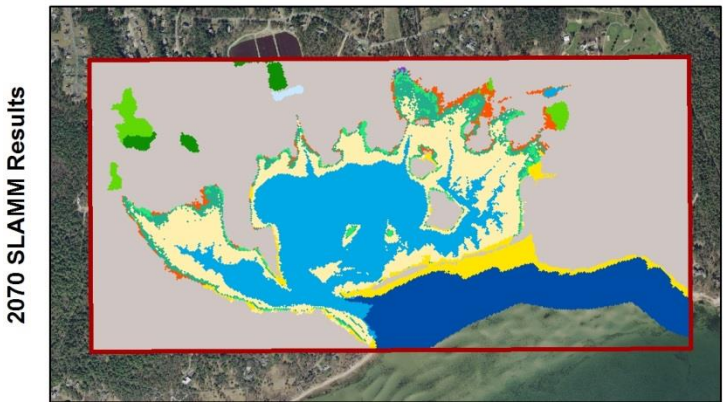
0 300 600 1200 Feet

N

	Area (acres)		
	2011	2030	2070
Upland	6.3	6.3	5.7
Ocean Beach	5.4	5.3	3.8
Ocean Flat	1.0	0.8	0.0
Open Ocean	31.0	31.3	34.2







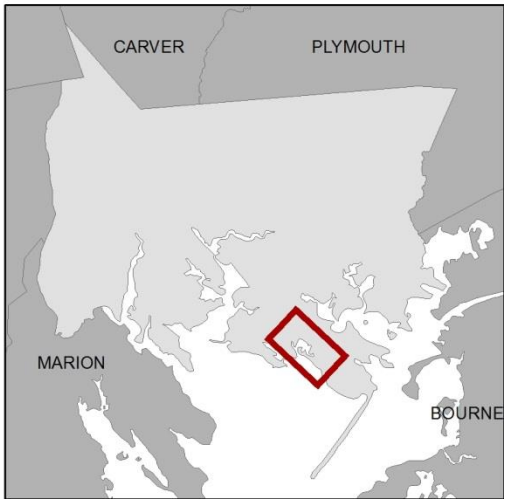
Little Harbor Beach
Little Harbor

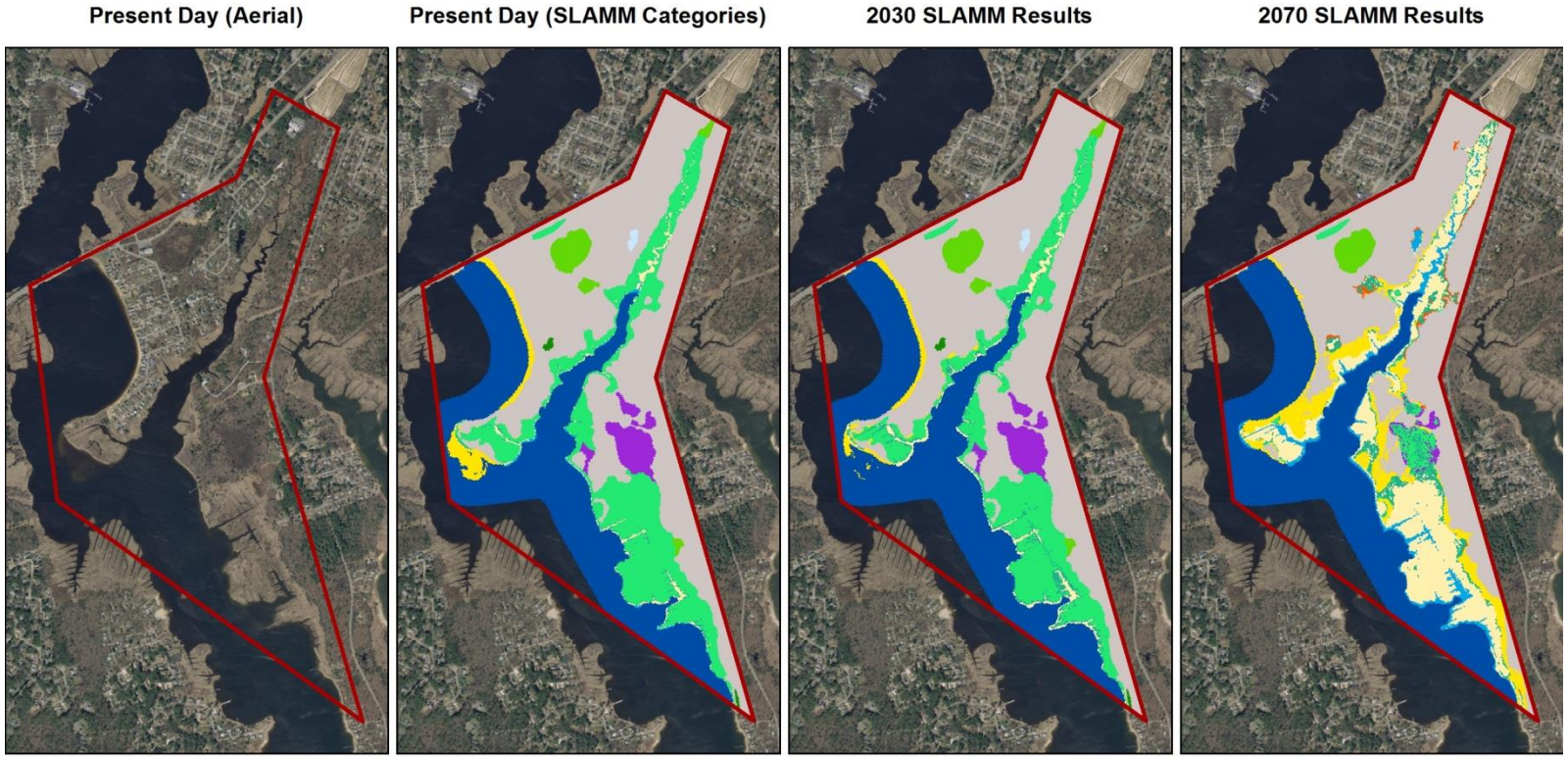
SLAMM Wetland Categories

- Upland
- Nontidal Swamp
- Inland Fresh Marsh
- Transitional Marsh/Scrub-Shrub
- Regularly Flooded Marsh
- Estuarine Beach/Tidal Flat
- Ocean Beach
- Ocean Flat
- Inland Open Water
- Estuarine Open Water
- Open Ocean
- Irregularly Flooded Marsh
- Tidal Swamp

0 750 1500 3000 Feet

	Area (acres)		
	2011	2030	2070
Upland	266.4	265.7	252.1
Nontidal Swamp	6.2	6.2	4.8
Inland Fresh Marsh	3.2	3.2	3.2
Transitional Marsh/Scrub-Shrub	0.0	0.1	5.1
Regularly Flooded Marsh	2.8	7.2	12.7
Estuarine Beach/Tidal Flat	9.4	9.0	47.2
Ocean Beach	12.8	12.2	12.0
Ocean Flat	3.9	0.7	0.0
Inland Open Water	0.7	0.7	0.7
Estuarine Open Water	43.6	45.9	59.2
Open Ocean	33.1	37.1	42.0
Irregularly Flooded Marsh	60.6	54.6	4.6
Tidal Swamp	1.2	1.2	0.2





Briarwood Beach / Cromesett

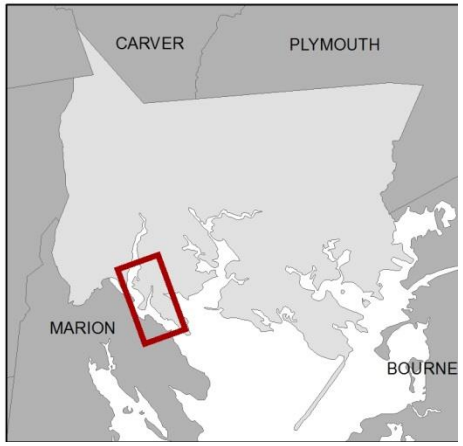
SLAMM Wetland Categories

- Upland
- Nontidal Swamp
- Inland Fresh Marsh
- Transitional Marsh/Scrub-Shrub
- Regularly Flooded Marsh
- Estuarine Beach/Tidal Flat
- Ocean Beach
- Inland Open Water
- Estuarine Open Water
- Open Ocean
- Irregularly Flooded Marsh
- Tidal Swamp

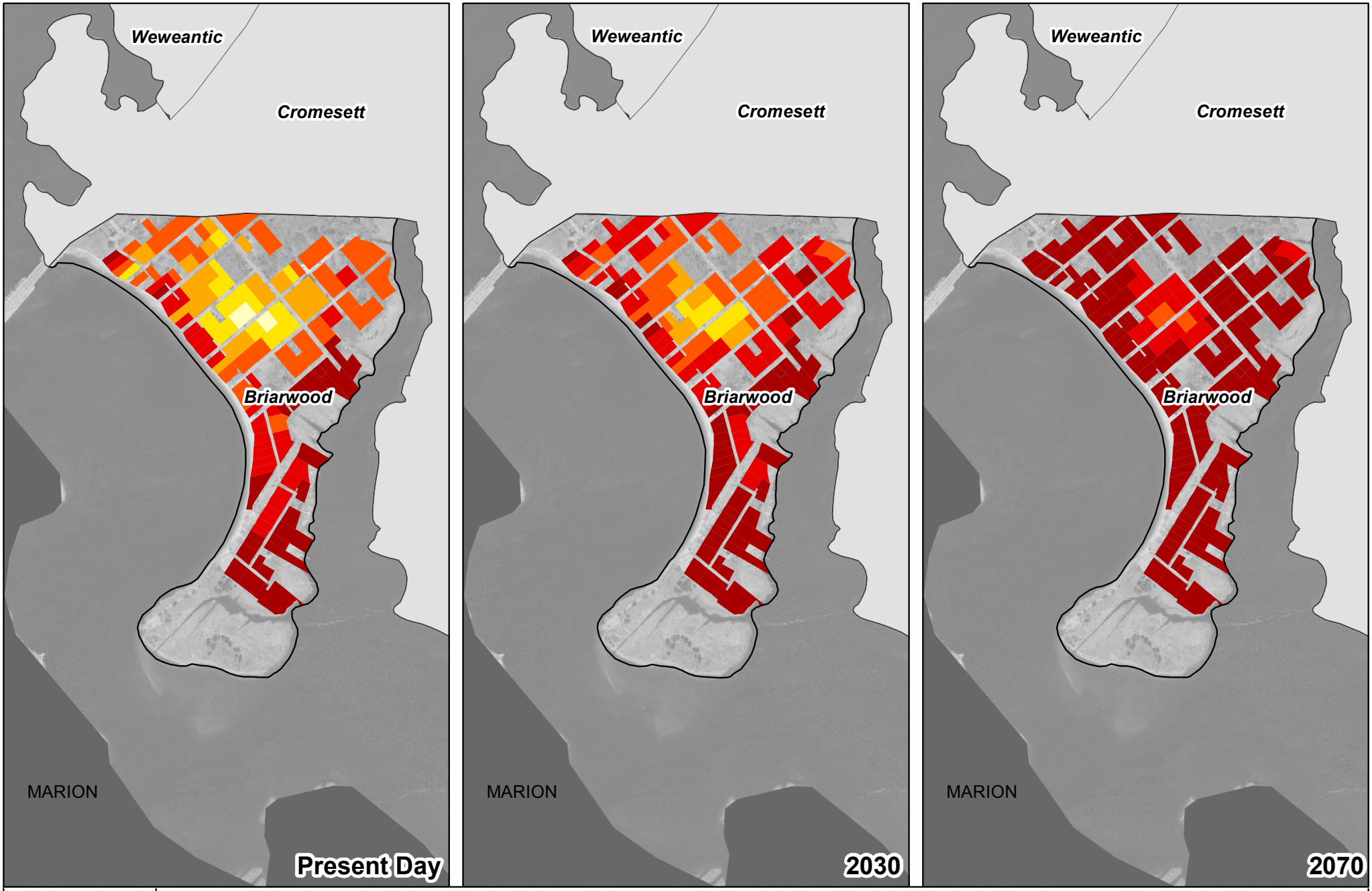
0 1250 2500 5000 Feet

N

	Area (acres)		
	2011	2030	2070
Upland	172.1	171.0	140.8
Nontidal Swamp	7.4	7.4	5.4
Inland Fresh Marsh	0.6	0.6	0.0
Transitional Marsh/Scrub-Shrub	0.0	0.1	2.2
Regularly Flooded Marsh	2.5	6.5	11.8
Estuarine Beach/Tidal Flat	4.3	7.5	59.6
Ocean Beach	7.5	5.7	27.7
Inland Open Water	0.6	0.6	0.0
Estuarine Open Water	1.2	0.1	12.6
Open Ocean	107.1	110.0	113.5
Irregularly Flooded Marsh	70.1	64.1	7.3
Tidal Swamp	9.8	9.8	2.4



APPENDIX E. NEIGHBORHOOD-SPECIFIC INUNDATION RISK MAPS



N

Neighborhood: Briarwood

Probability of Inundation for Developed Residential Parcels

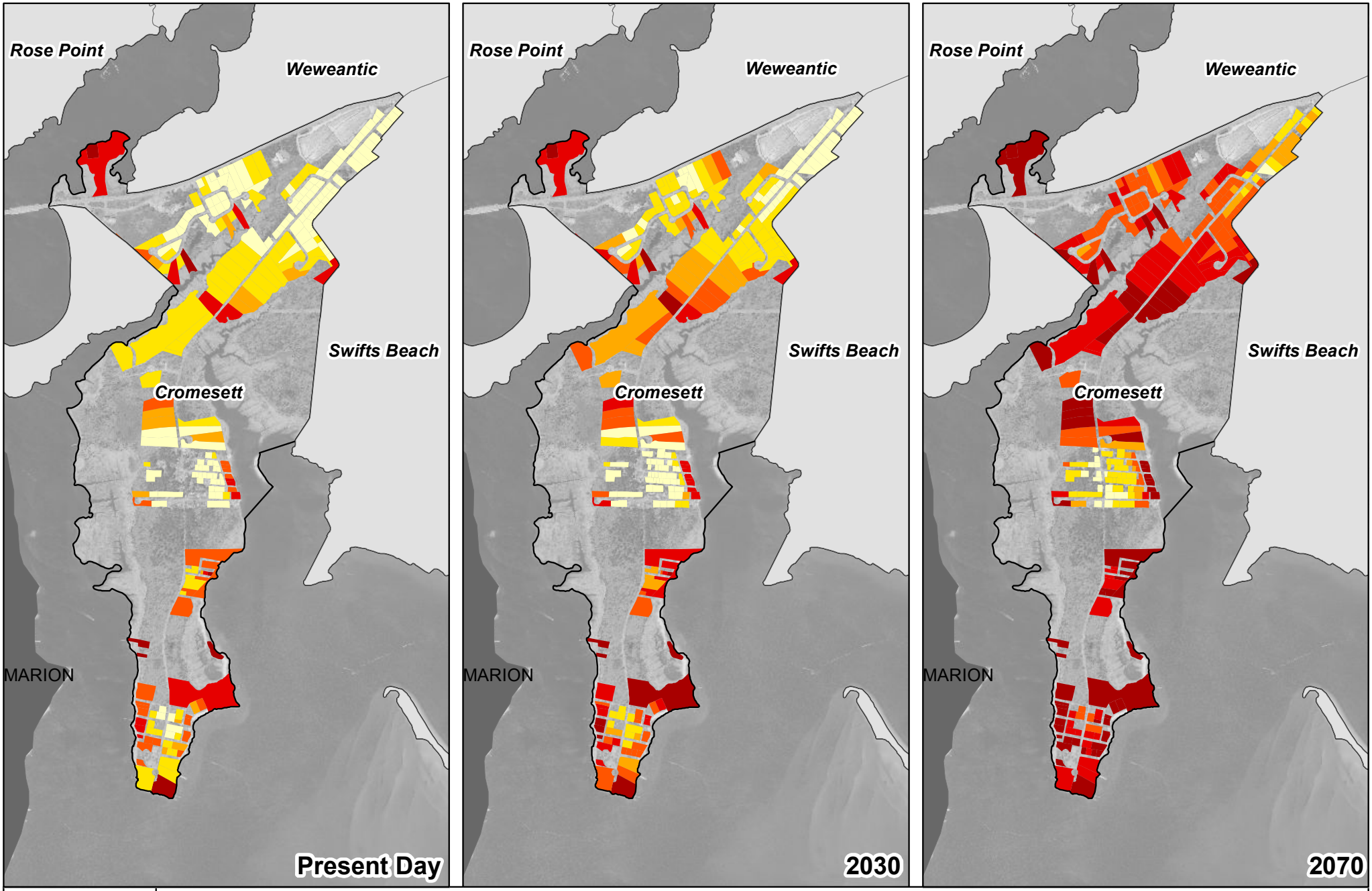
Dry | < 1% | 5 to 1% | 10 to 5% | 25 to 10% | 50 to 25% | 100% to 50%

E-1

Neighborhood: Central Transition

Probability of Inundation for Developed Residential Parcels

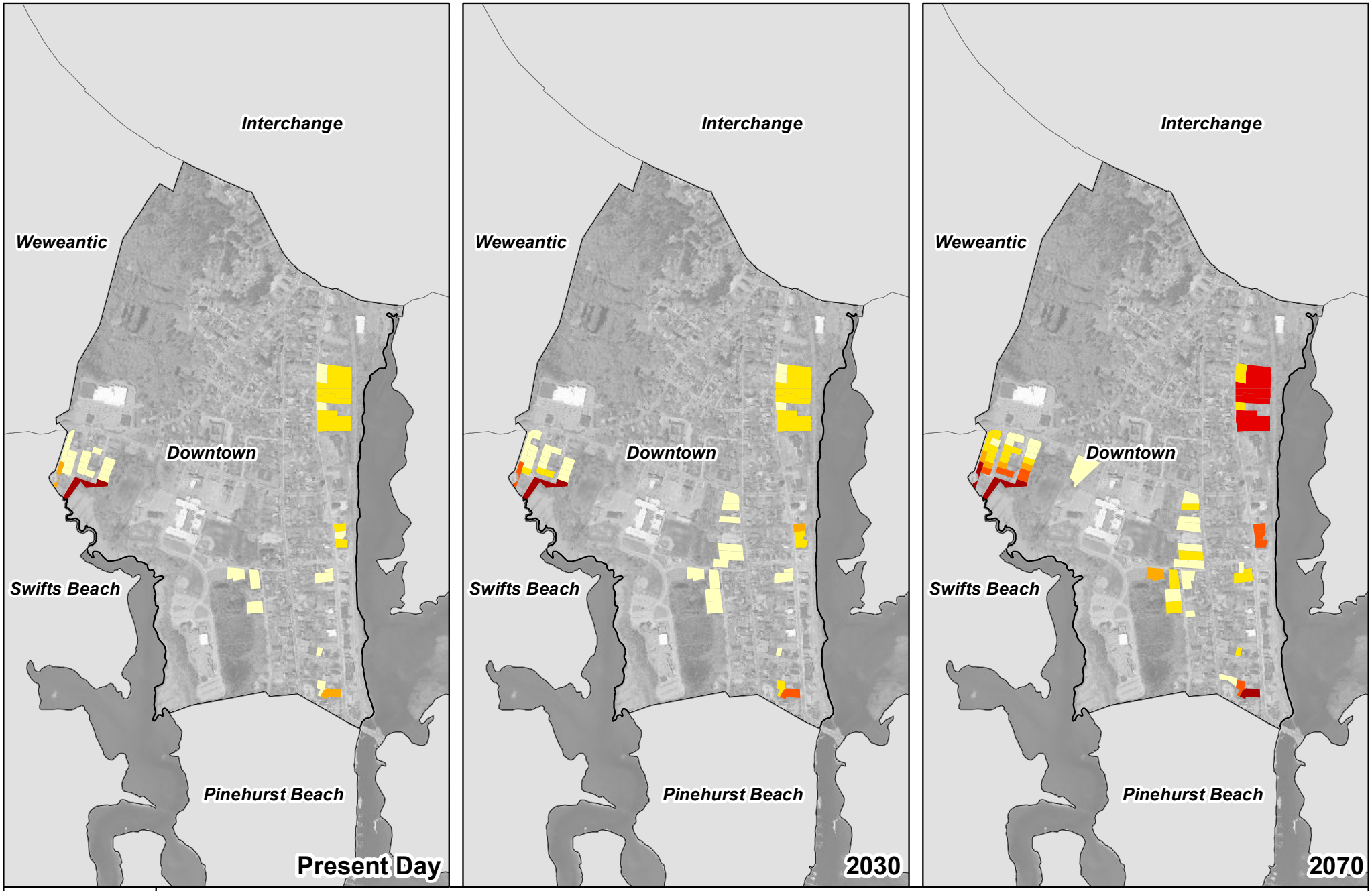
Dry | < 1% | 5 to 1% | 10 to 5% | 25 to 10% | 50 to 25% | 100% to 50%



Neighborhood: Cromesett

Probability of Inundation for Developed Residential Parcels

Dry | < 1% | 5 to 1% | 10 to 5% | 25 to 10% | 50 to 25% | 100% to 50%



Neighborhood: Downtown

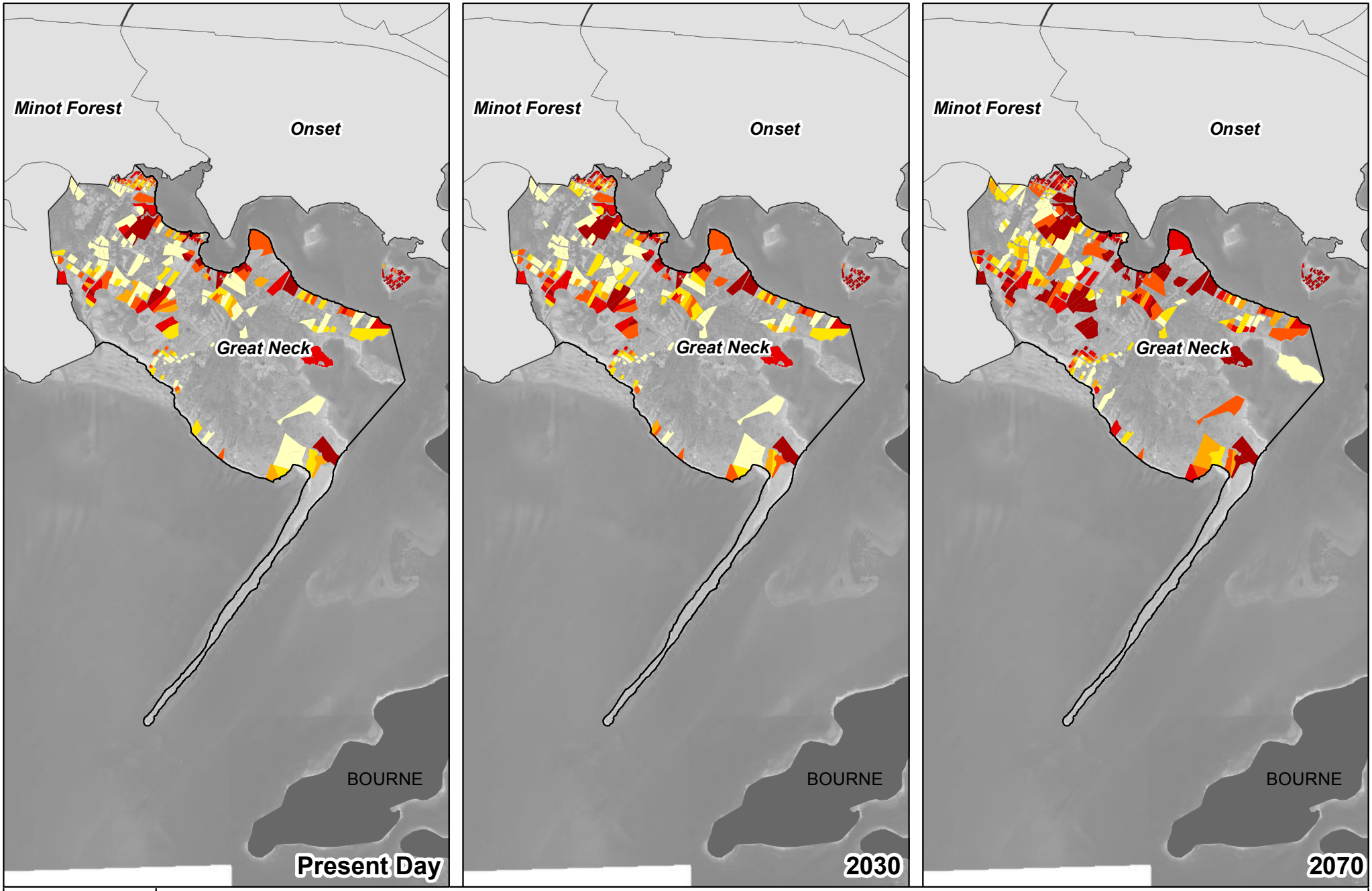
Probability of Inundation for Developed Residential Parcels

Dry | < 1% | 5 to 1% | 10 to 5% | 25 to 10% | 50 to 25% | 100% to 50%

Neighborhood: East Wareham Corridor

Probability of Inundation for Developed Residential Parcels

Dry | < 1% | 5 to 1% | 10 to 5% | 25 to 10% | 50 to 25% | 100% to 50%



N

Neighborhood: Great Neck

Probability of Inundation for Developed Residential Parcels

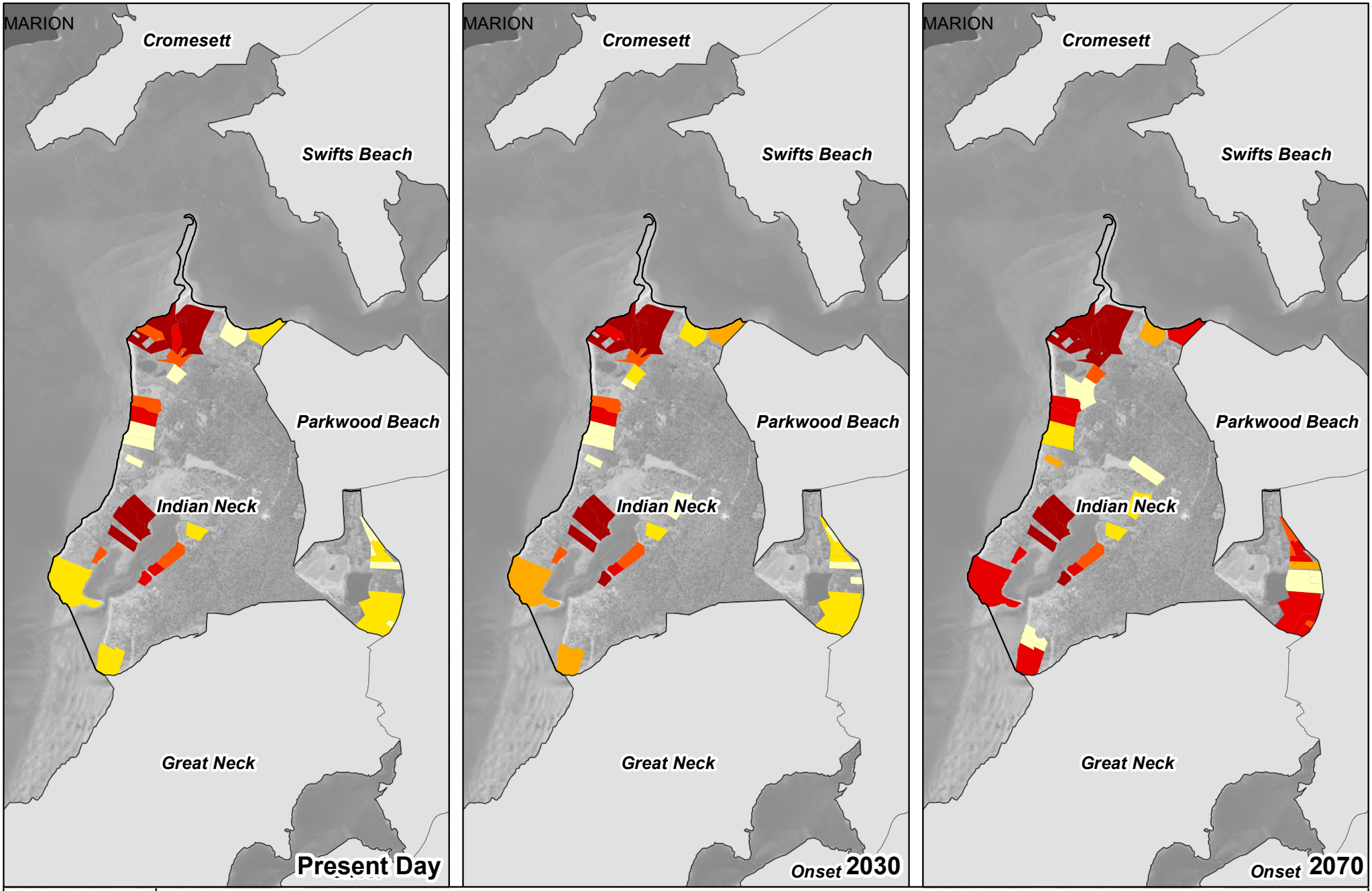
Dry | < 1% | 5 to 1% | 10 to 5% | 25 to 10% | 50 to 25% | 100% to 50%

N

Neighborhood: Indian Mound

Probability of Inundation for Developed Residential Parcels

Dry | < 1% | 5 to 1% | 10 to 5% | 25 to 10% | 50 to 25% | 100% to 50%

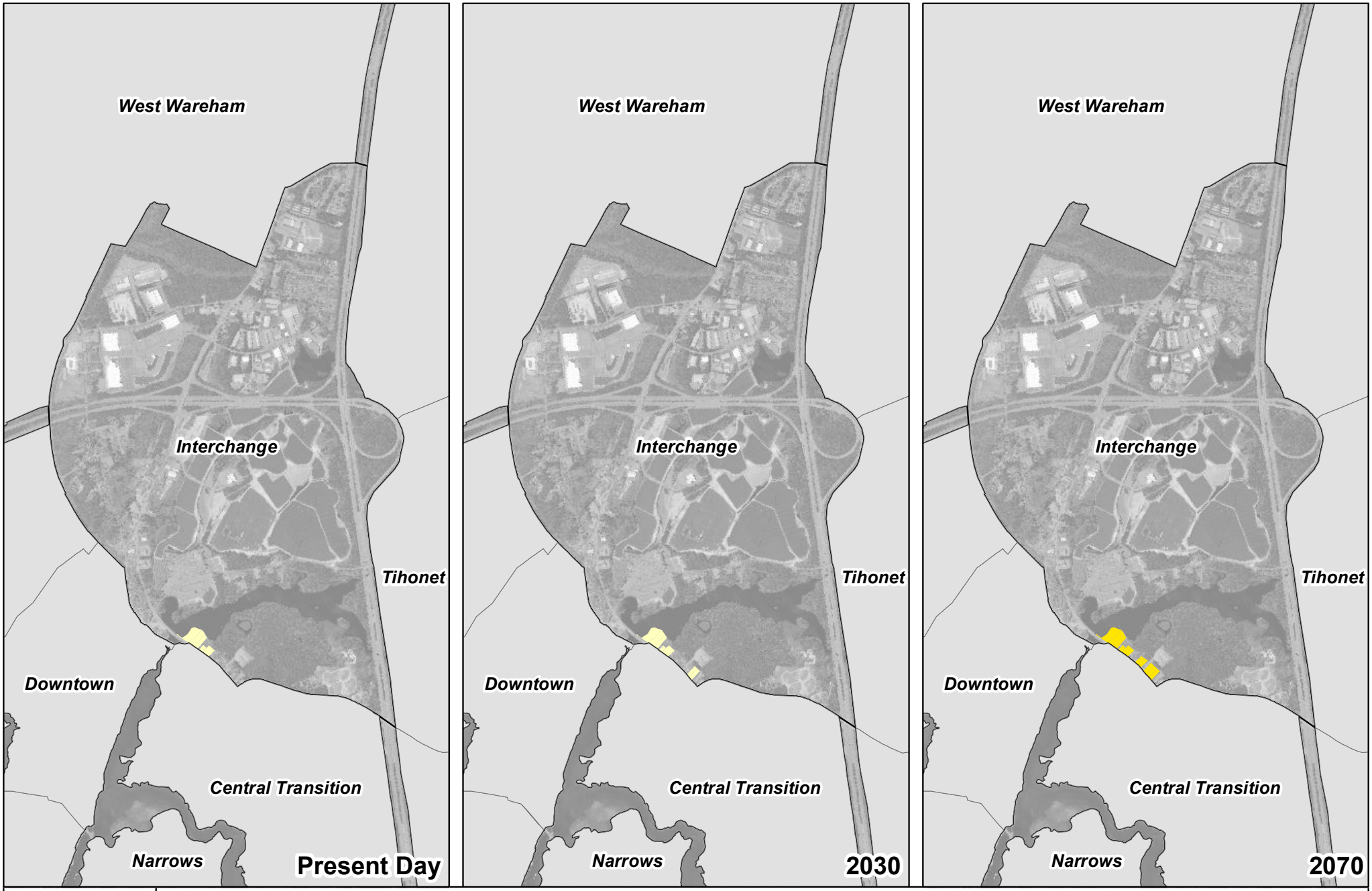


Neighborhood: Indian Neck

Probability of Inundation for Developed Residential Parcels

N

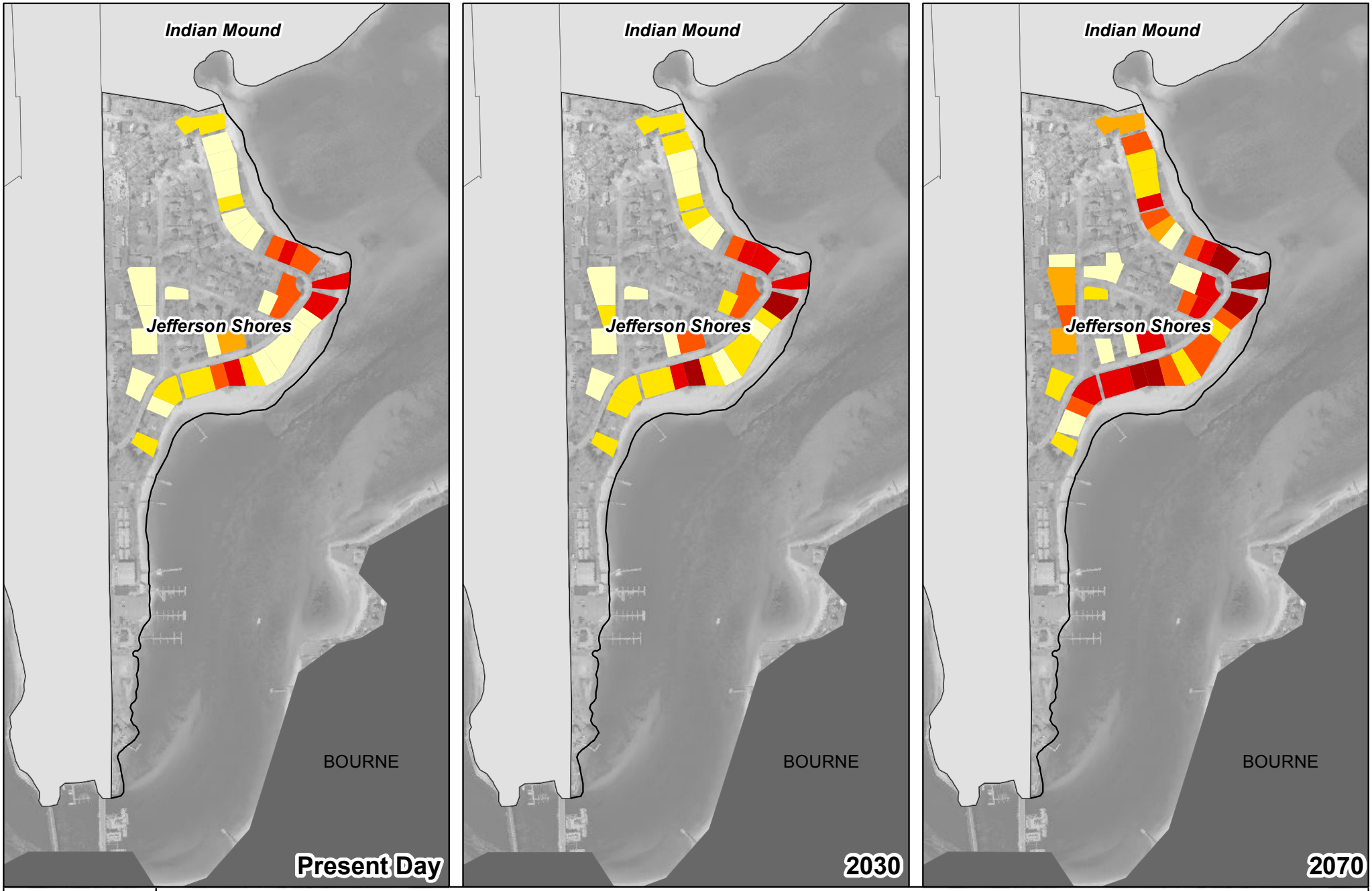
Dry | < 1% | 5 to 1% | 10 to 5% | 25 to 10% | 50 to 25% | 100% to 50%



Neighborhood: Interchange

Probability of Inundation for Developed Residential Parcels

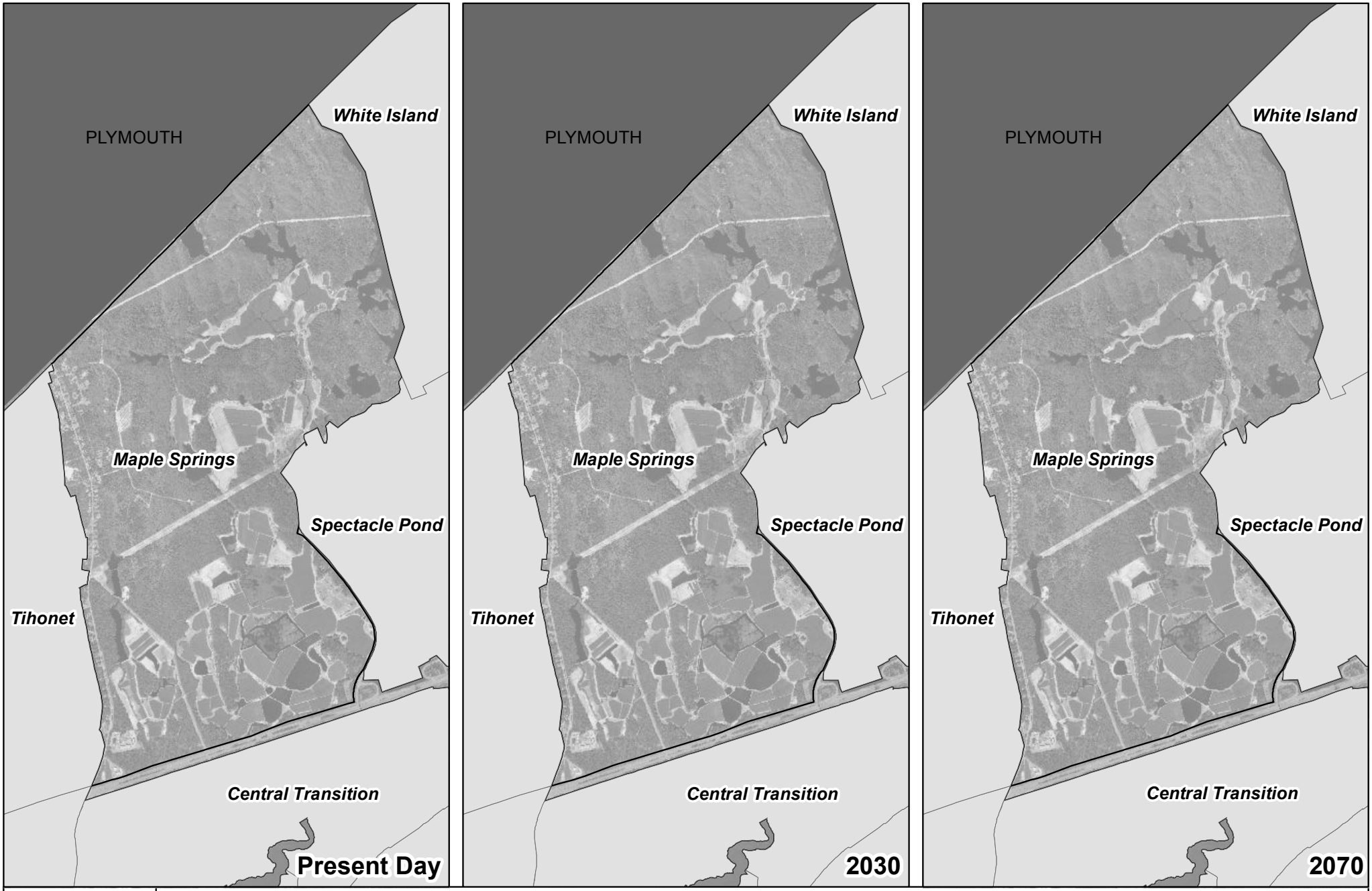
Dry | < 1% | 5 to 1% | 10 to 5% | 25 to 10% | 50 to 25% | 100% to 50%



Neighborhood: Jefferson Shores

Probability of Inundation for Developed Residential Parcels

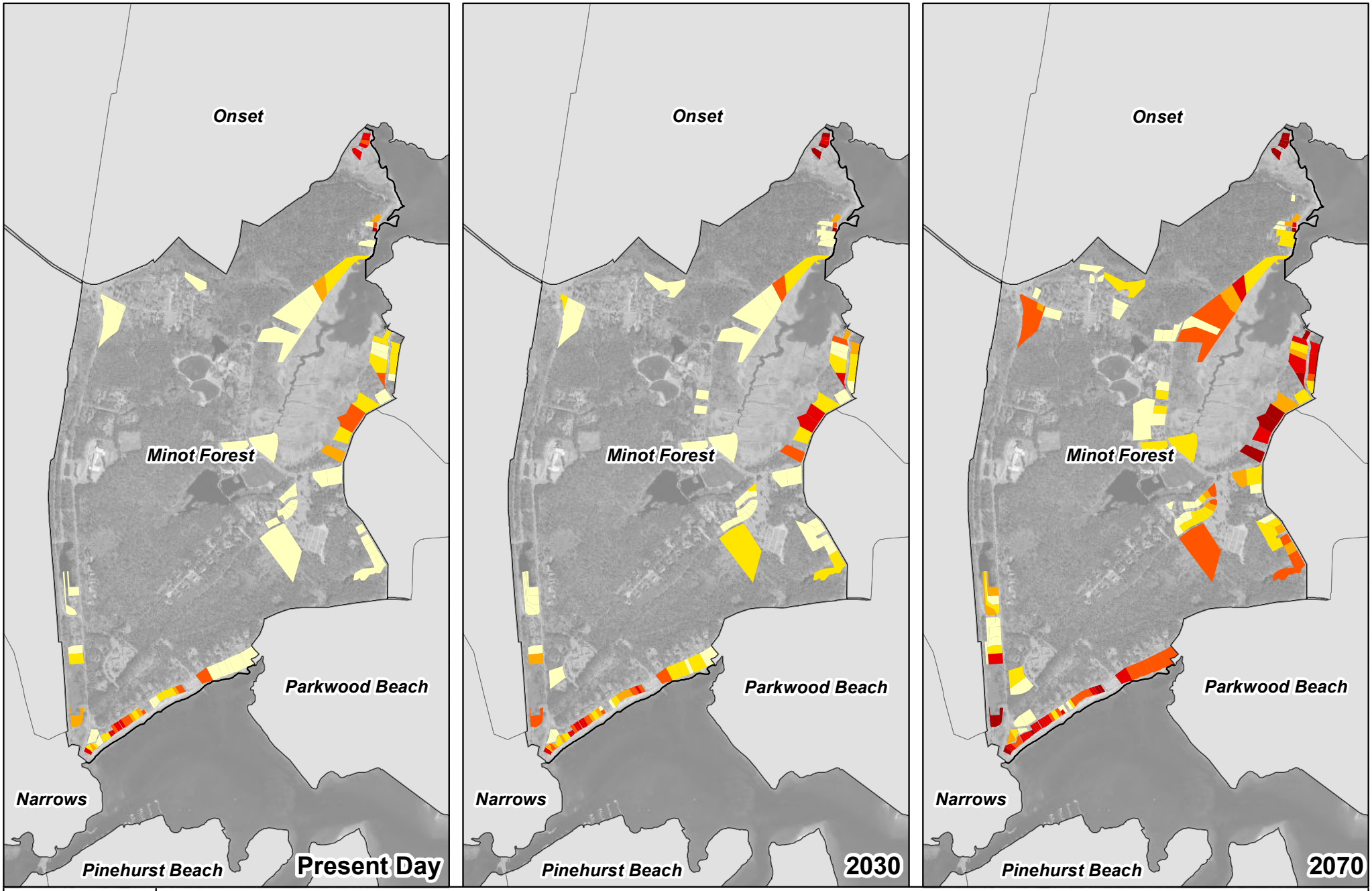
Dry | < 1% | 5 to 1% | 10 to 5% | 25 to 10% | 50 to 25% | 100% to 50%



Neighborhood: Maple Springs

Probability of Inundation for Developed Residential Parcels

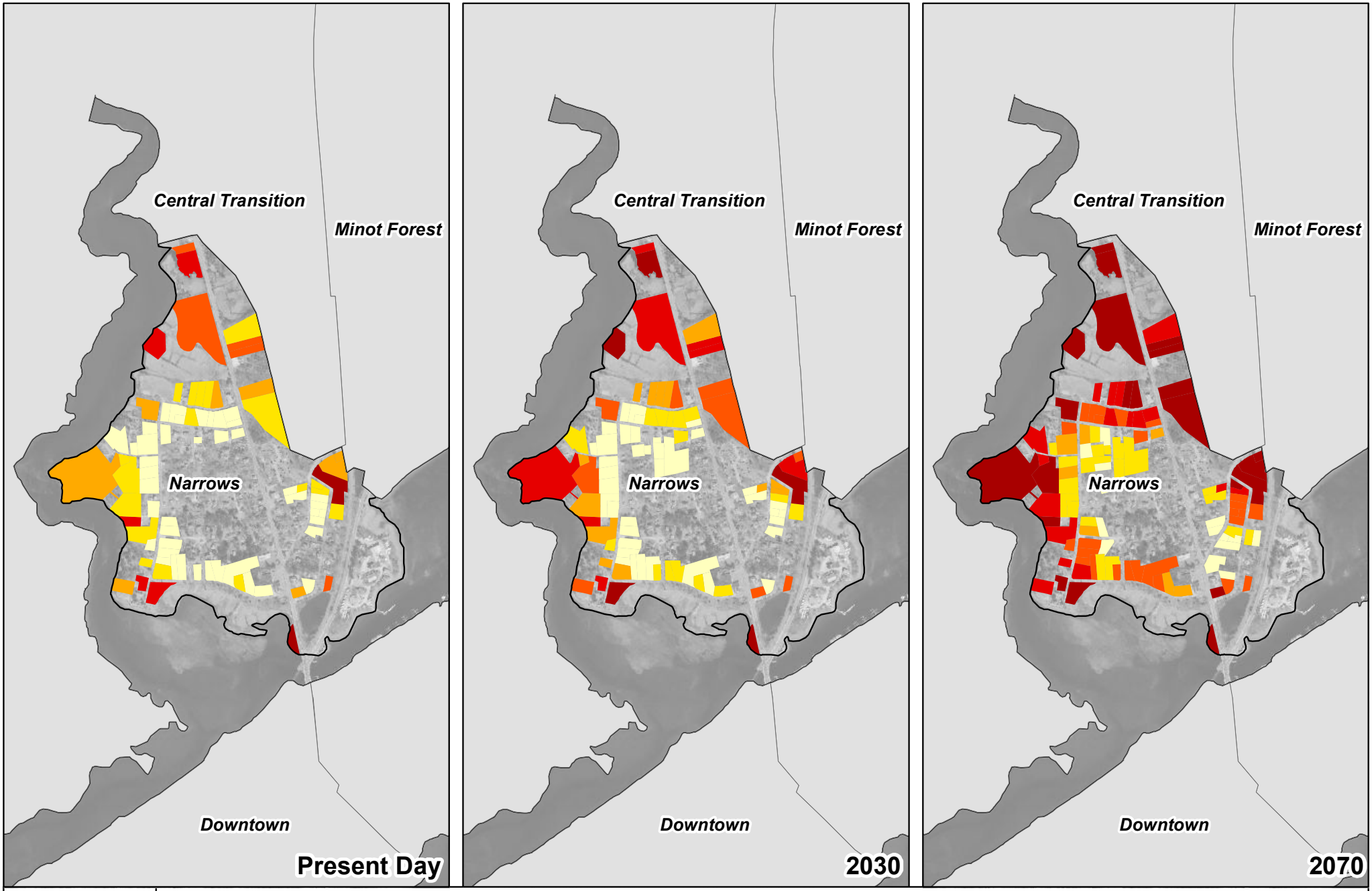
Dry | < 1% | 5 to 1% | 10 to 5% | 25 to 10% | 50 to 25% | 100% to 50%



Neighborhood: Minot Forest

Probability of Inundation for Developed Residential Parcels

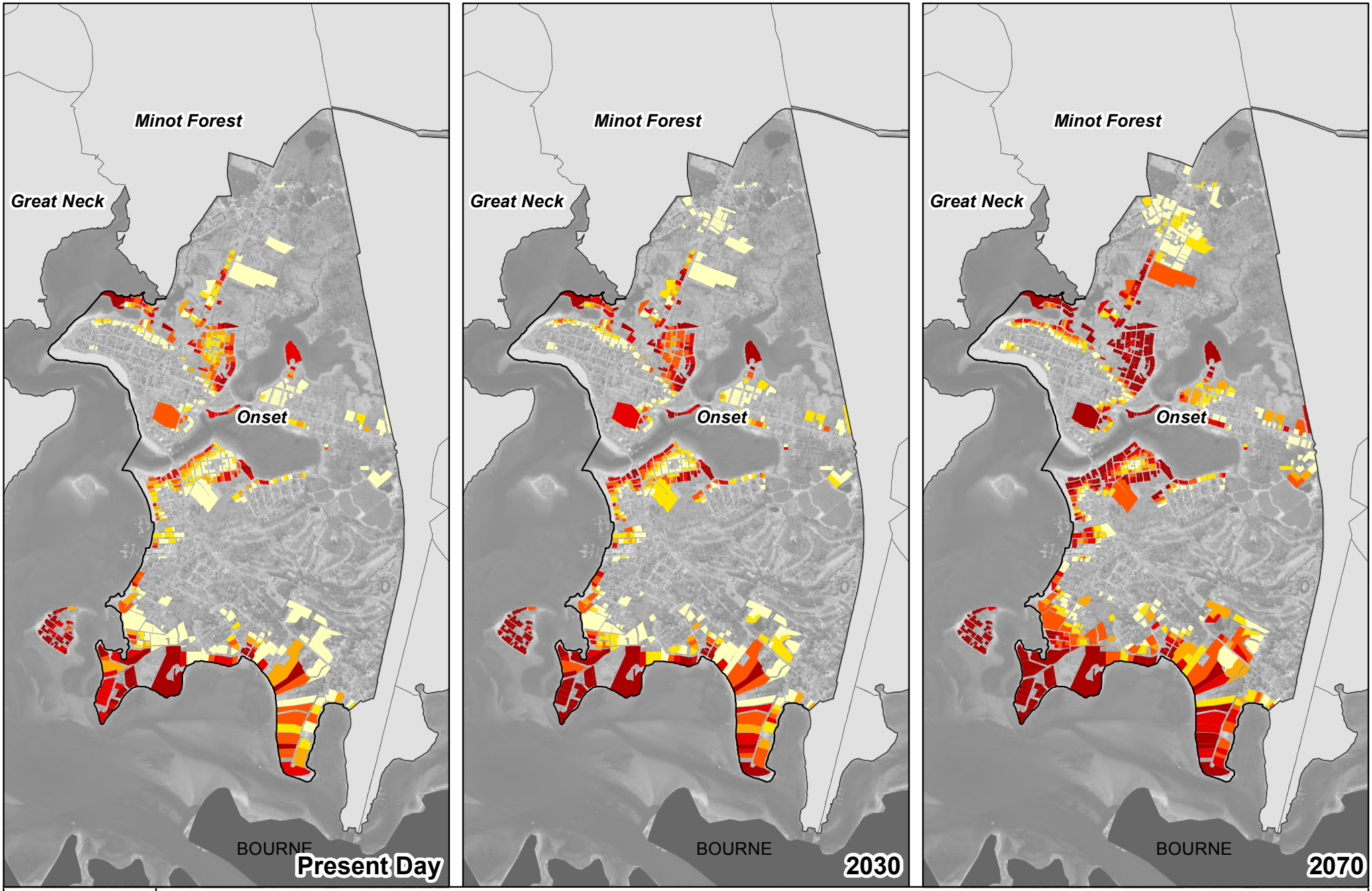
Dry | < 1% | 5 to 1% | 10 to 5% | 25 to 10% | 50 to 25% | 100% to 50%



Neighborhood: Narrows

Probability of Inundation for Developed Residential Parcels

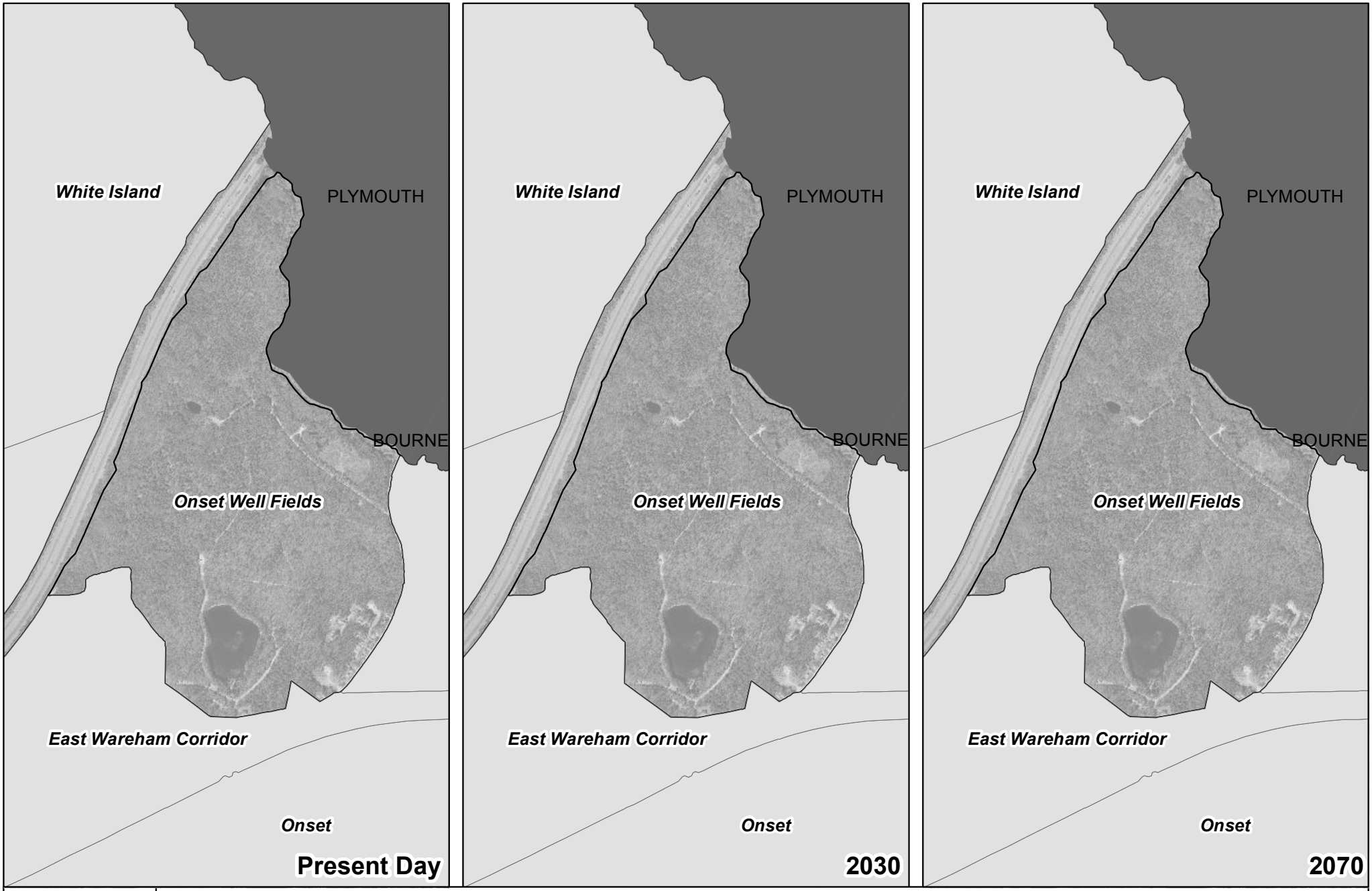
Dry | < 1% | 5 to 1% | 10 to 5% | 25 to 10% | 50 to 25% | 100% to 50%



Neighborhood: Onset

Probability of Inundation for Developed Residential Parcels

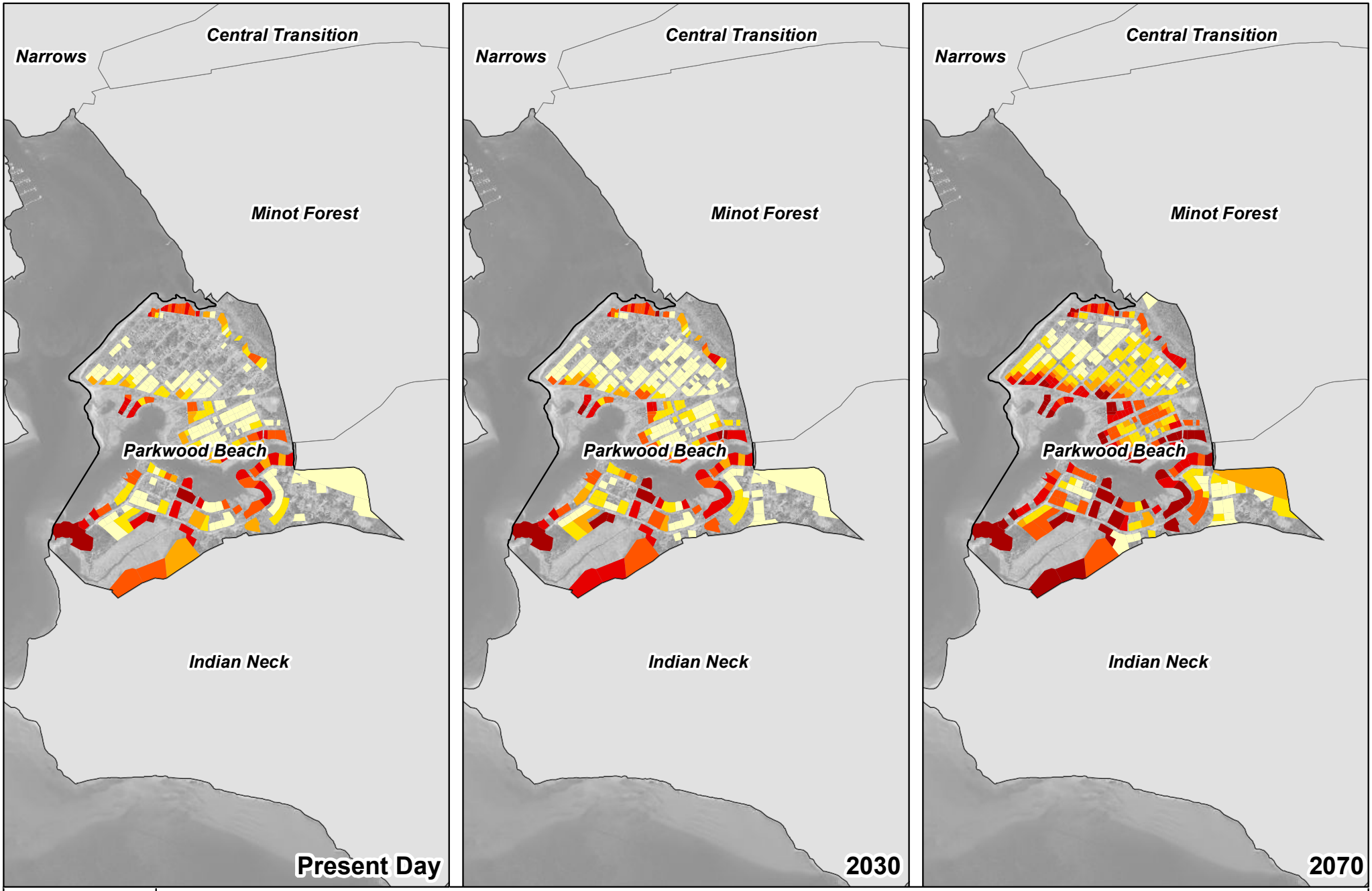
Dry | < 1% | 5 to 1% | 10 to 5% | 25 to 10% | 50 to 25% | 100% to 50%



Neighborhood: Onset Well Fields

Probability of Inundation for Developed Residential Parcels

Dry | < 1% | 5 to 1% | 10 to 5% | 25 to 10% | 50 to 25% | 100% to 50%

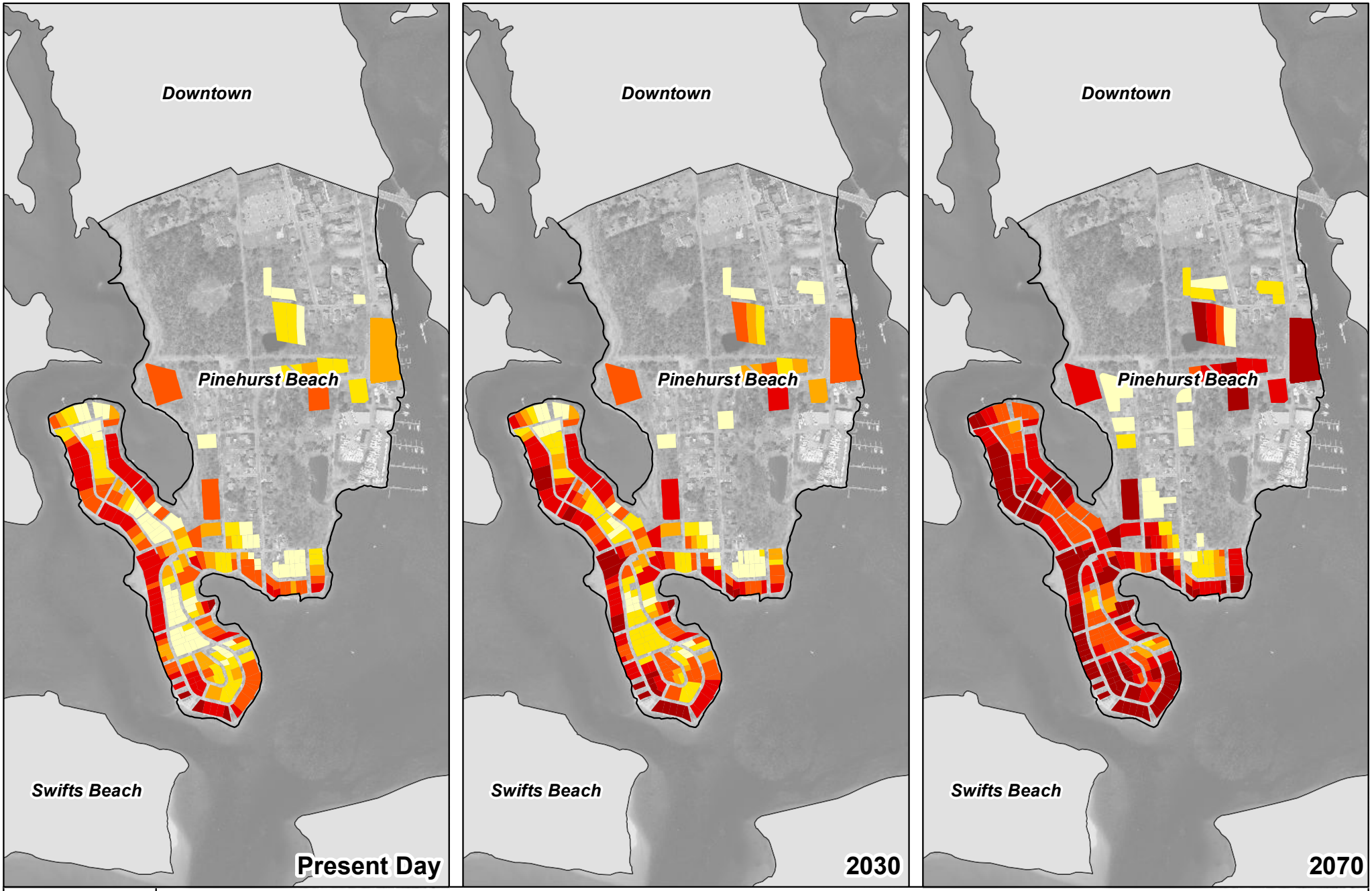


N

Neighborhood: Parkwood Beach

Probability of Inundation for Developed Residential Parcels

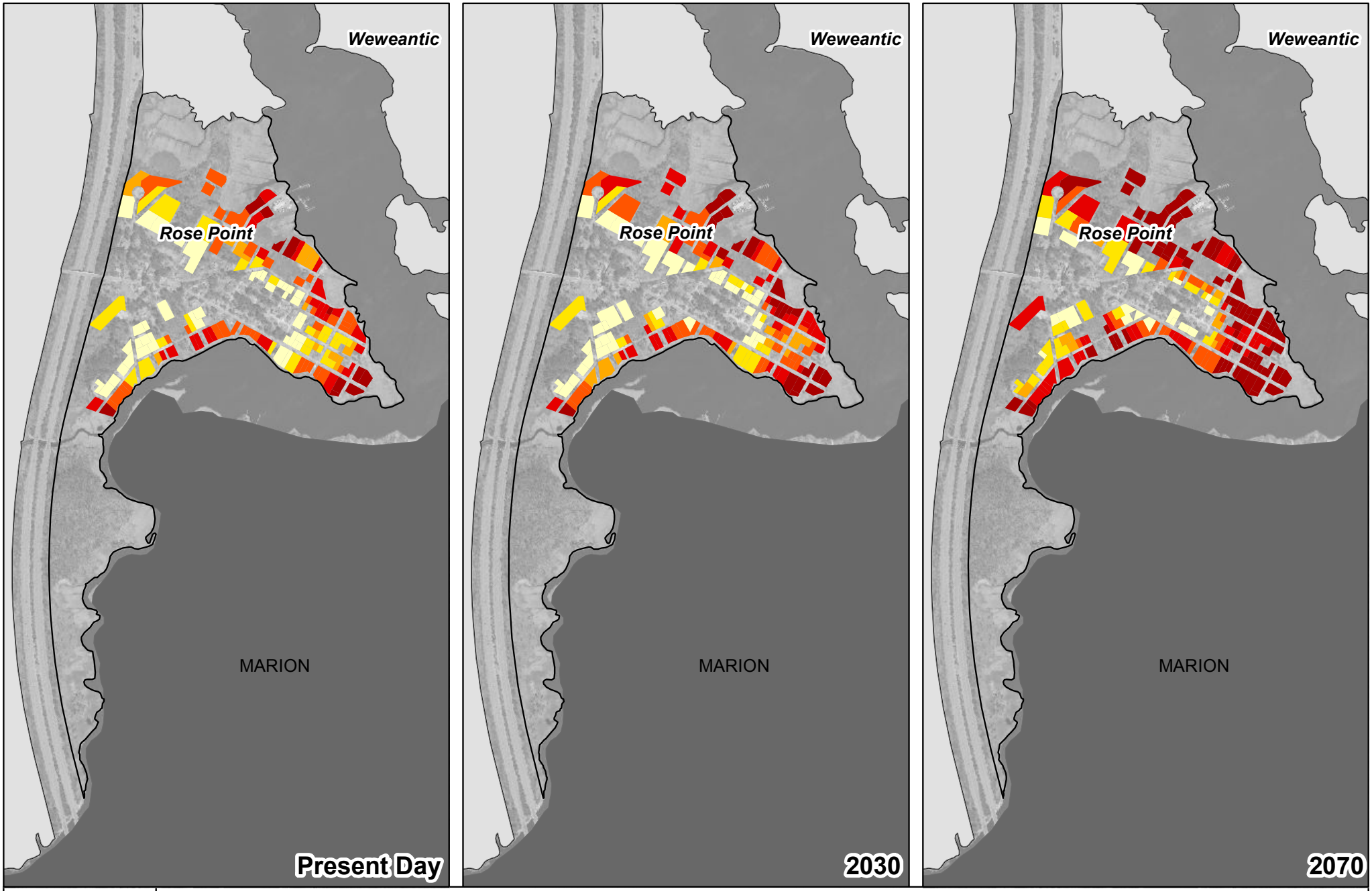
Dry | < 1% | 5 to 1% | 10 to 5% | 25 to 10% | 50 to 25% | 100% to 50%



Neighborhood: Pinehurst Beach

Probability of Inundation for Developed Residential Parcels

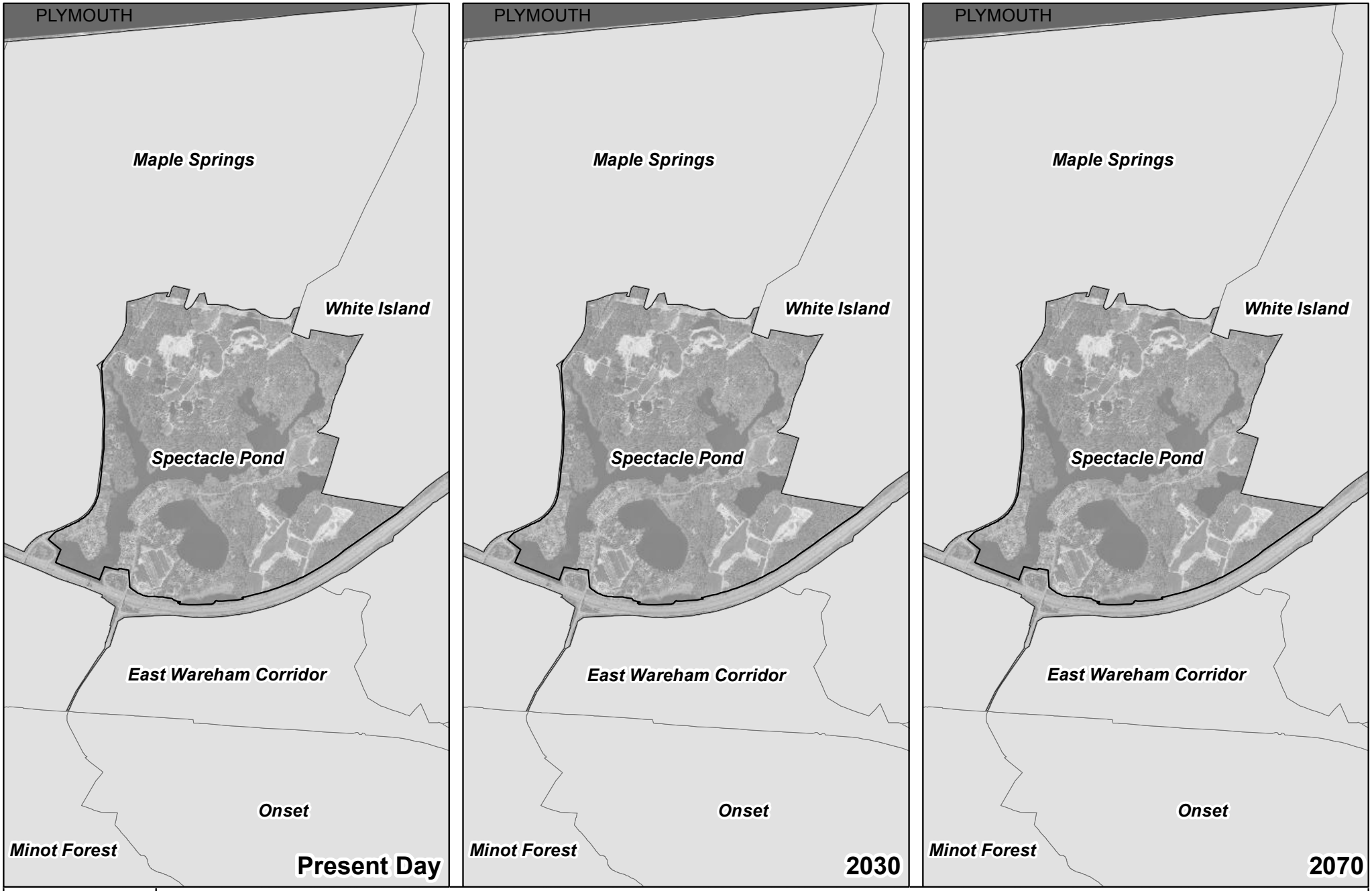
Dry | < 1% | 5 to 1% | 10 to 5% | 25 to 10% | 50 to 25% | 100% to 50%



Neighborhood: Rose Point

Probability of Inundation for Developed Residential Parcels

Dry | < 1% | 5 to 1% | 10 to 5% | 25 to 10% | 50 to 25% | 100% to 50%

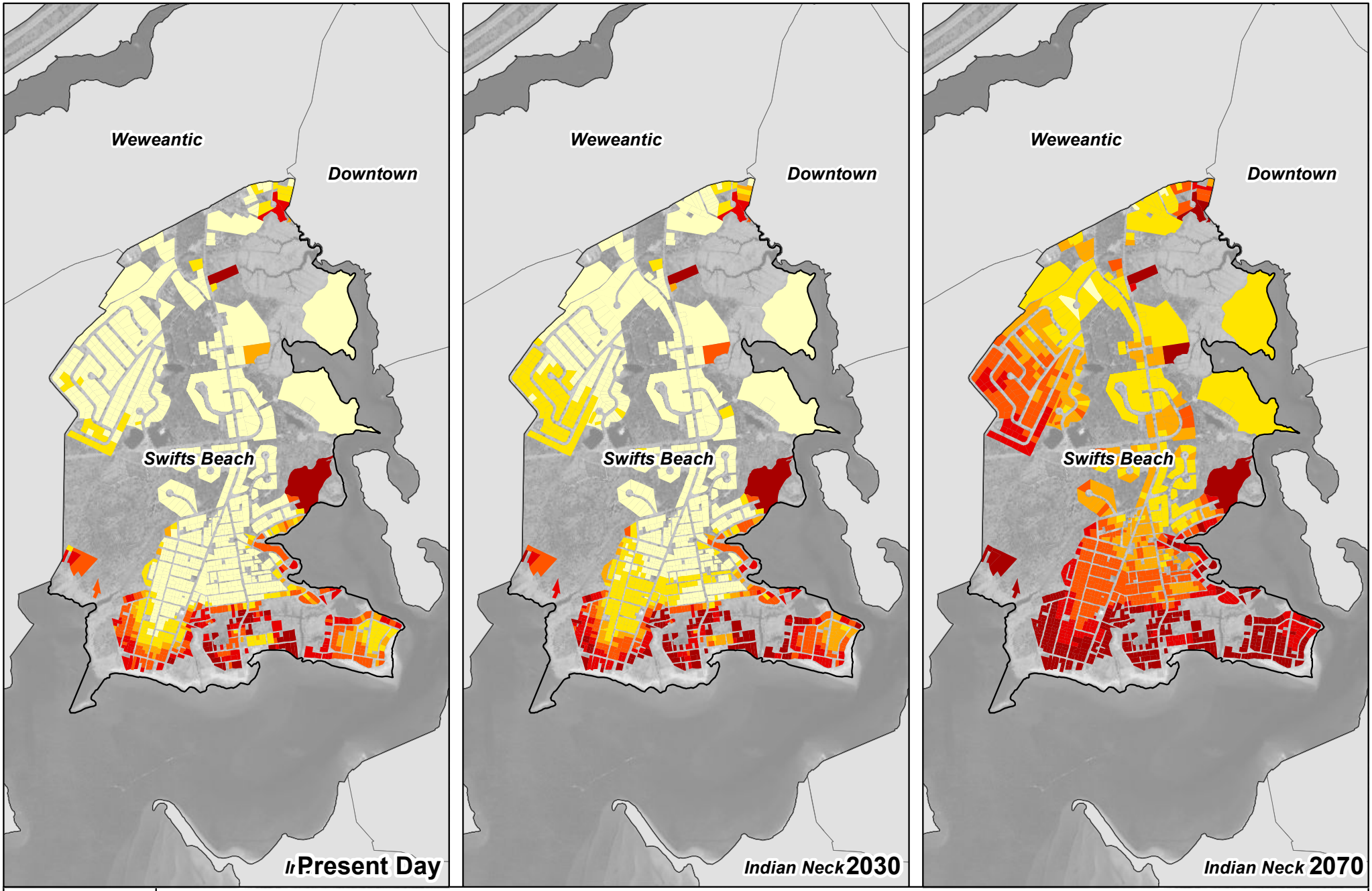


N

Neighborhood: Spectacle Pond

Probability of Inundation for Developed Residential Parcels

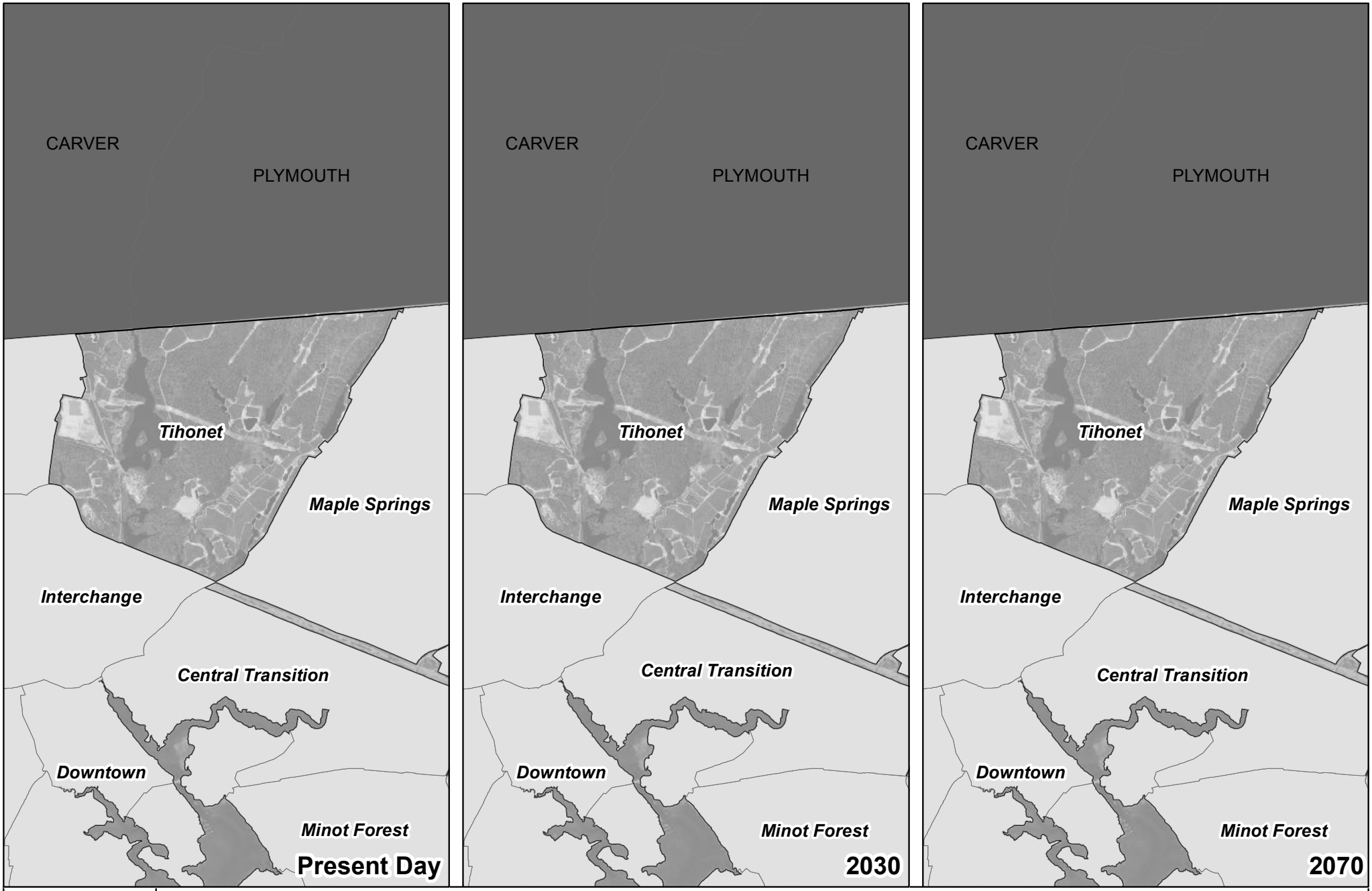
Dry | < 1% | 5 to 1% | 10 to 5% | 25 to 10% | 50 to 25% | 100% to 50%



Neighborhood: Swifts Beach

Probability of Inundation for Developed Residential Parcels

Dry | < 1% | 5 to 1% | 10 to 5% | 25 to 10% | 50 to 25% | 100% to 50%

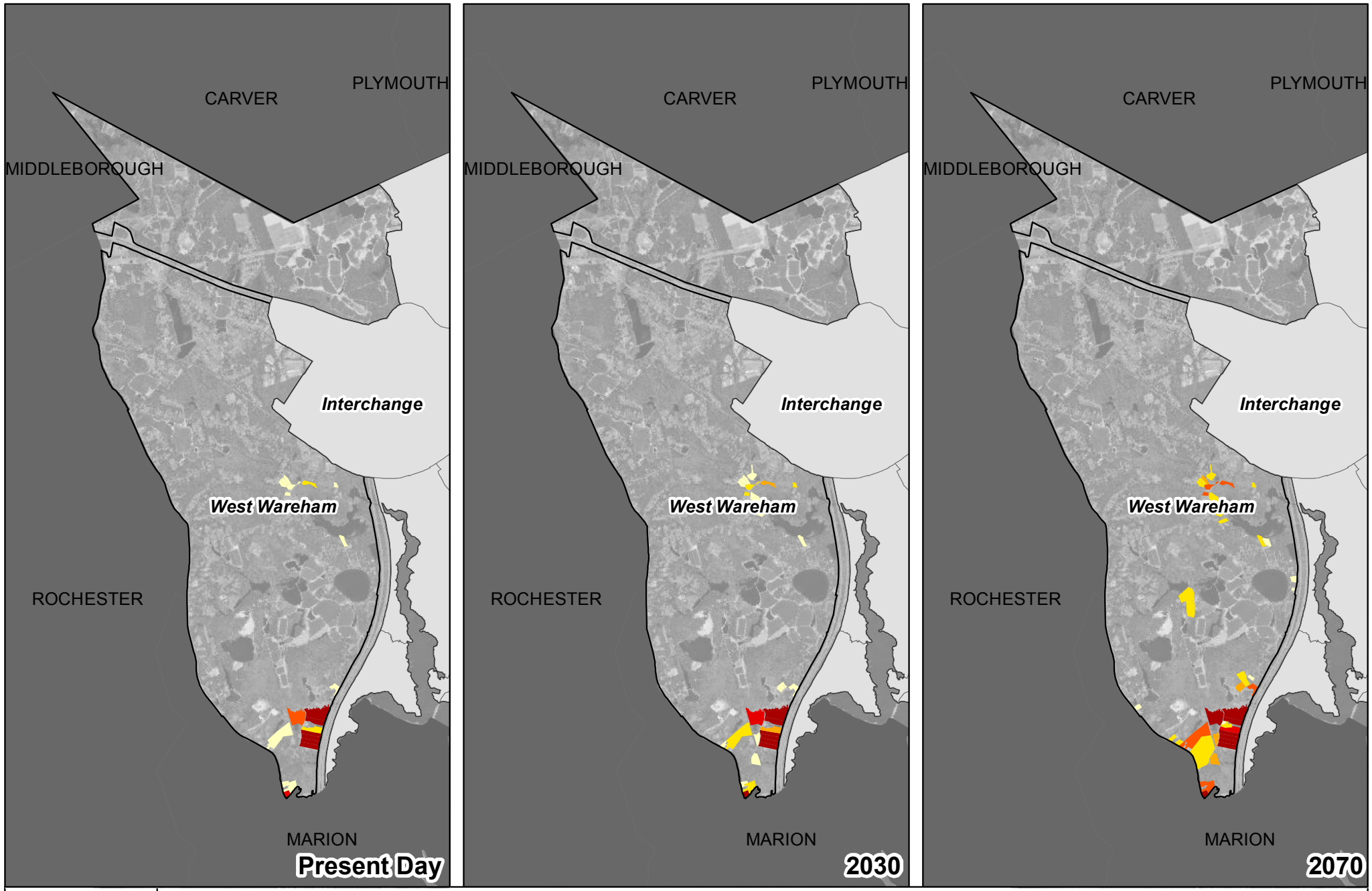


N

Neighborhood: Tihonet

Probability of Inundation for Developed Residential Parcels

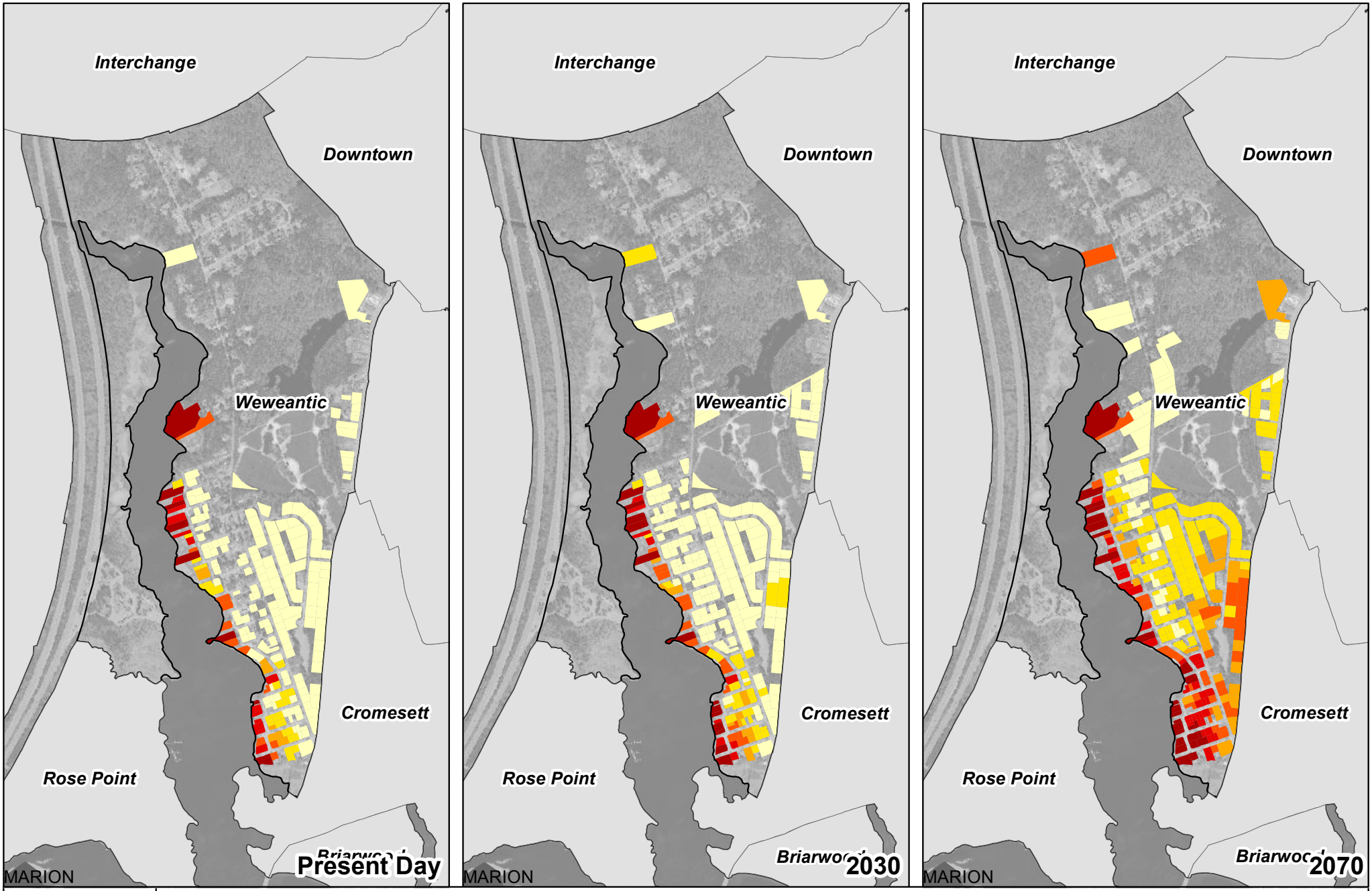
Dry | < 1% | 5 to 1% | 10 to 5% | 25 to 10% | 50 to 25% | 100% to 50%



Neighborhood: West Wareham

Probability of Inundation for Developed Residential Parcels

Dry | < 1% | 5 to 1% | 10 to 5% | 25 to 10% | 50 to 25% | 100% to 50%



Neighborhood: Weweantic

Probability of Inundation for Developed Residential Parcels

Dry | < 1% | 5 to 1% | 10 to 5% | 25 to 10% | 50 to 25% | 100% to 50%

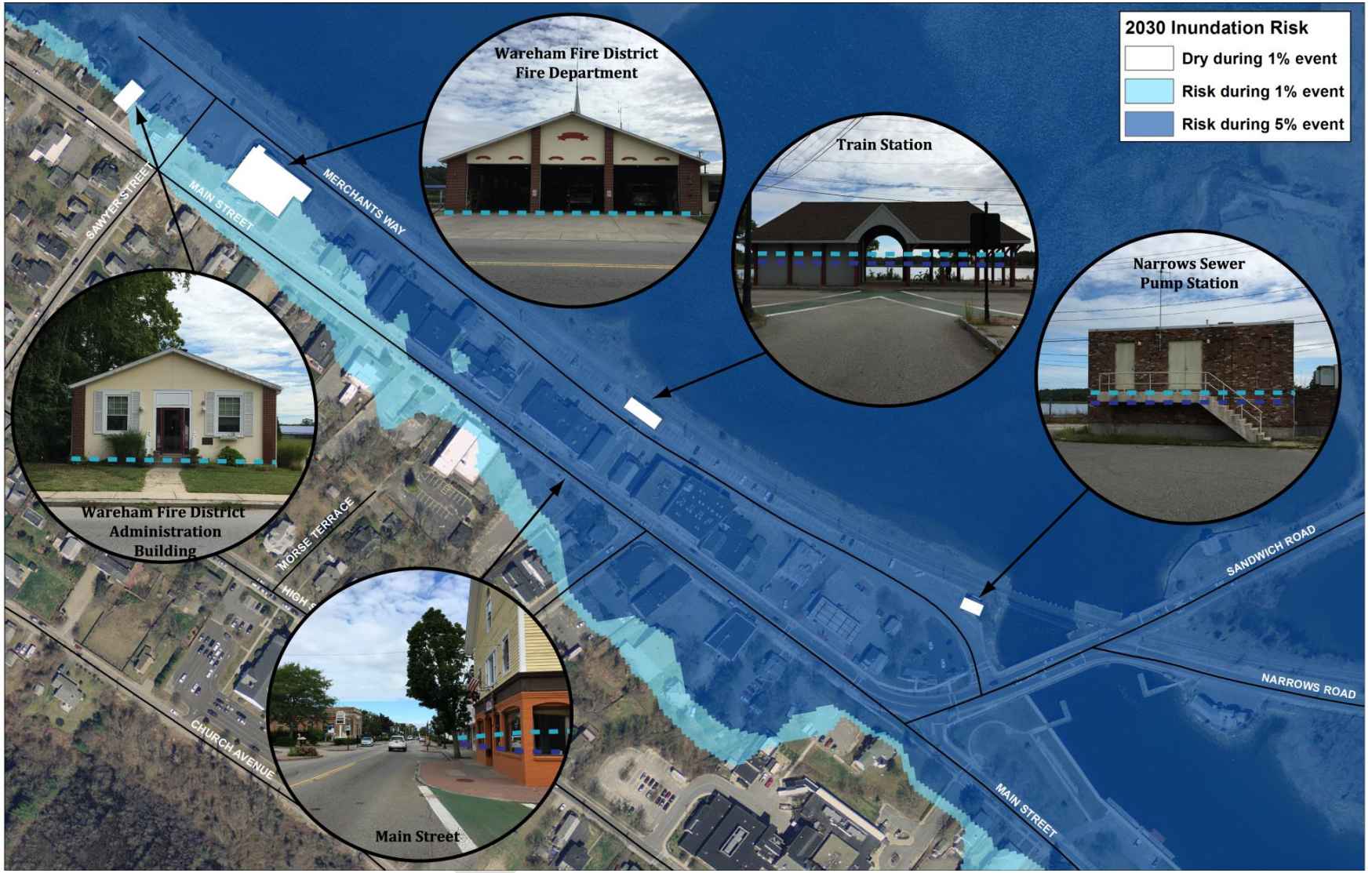
Neighborhood: White Island

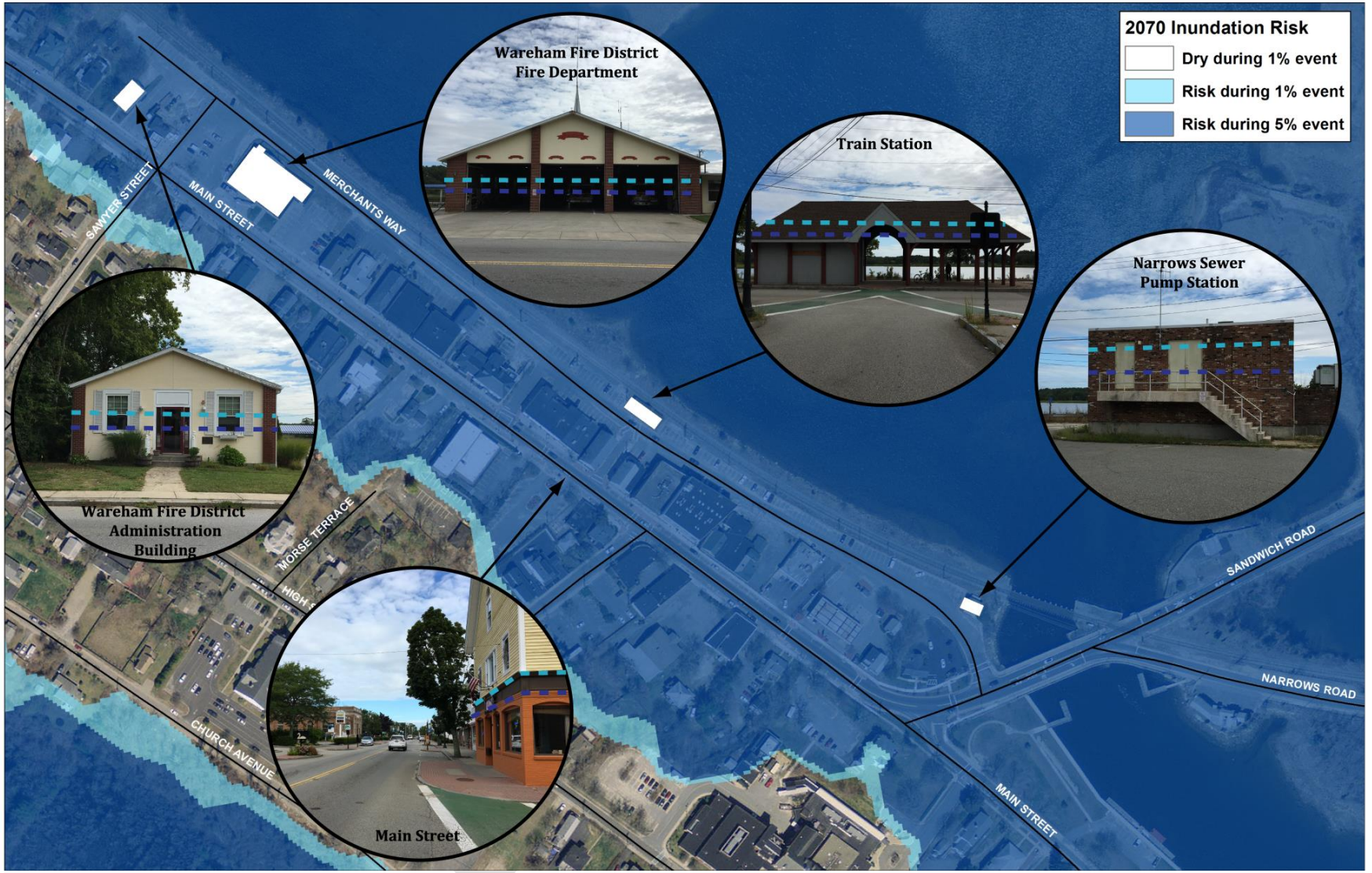
Probability of Inundation for Developed Residential Parcels

Dry | < 1% | 5 to 1% | 10 to 5% | 25 to 10% | 50 to 25% | 100% to 50%

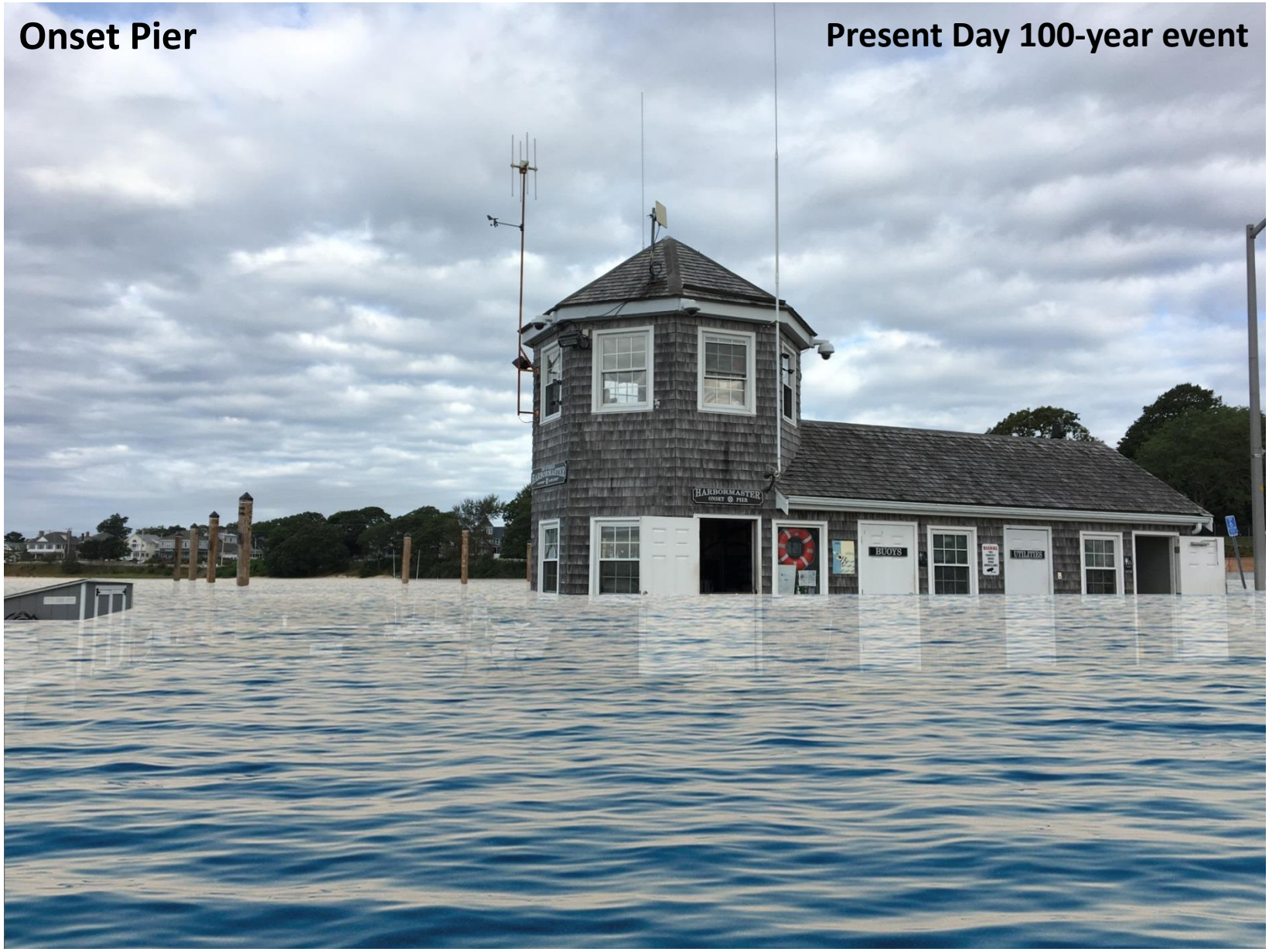
APPENDIX F. FLOOD RISK VISUALIZATIONS


2019 Inundation Risk
Dry during 1% event
Risk during 1% event
Risk during 5% event
Wareham Fire District Fire Department
Dry in Present Day
Train Station
Narrows Sewer Pump Station
Dry in Present Day
Wareham Fire District Administration Building
Main Street
SAWYER STREET
MAIN STREET
MERCHANTS WAY
MORSE TERRACE
CHURCH AVENUE
SANDWICH ROAD
NARROWS ROAD
MAIN STREET

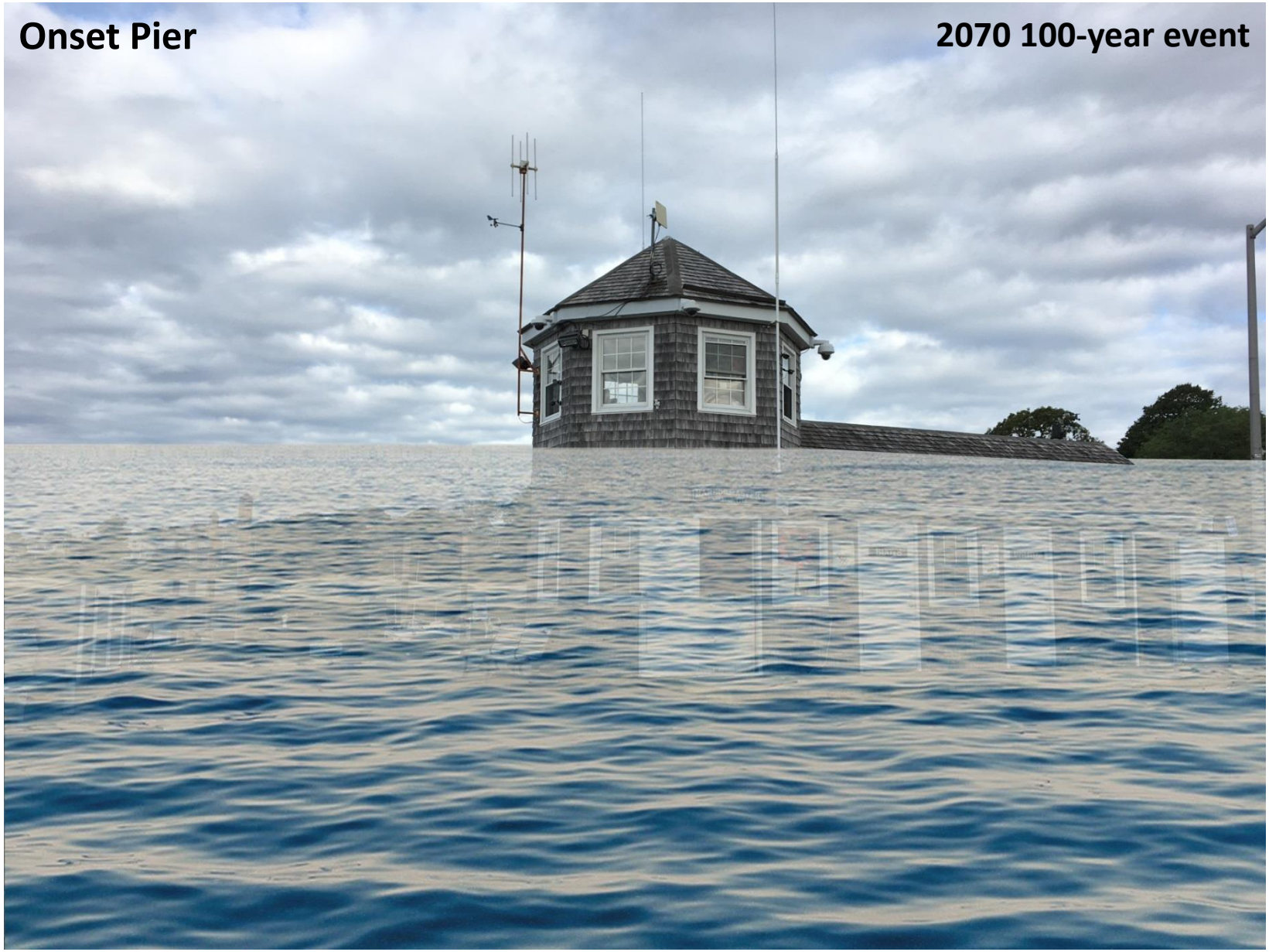

2030 Inundation Risk
Dry during 1% event
Risk during 1% event
Risk during 5% event
Wareham Fire District Fire Department
Train Station
Narrows Sewer Pump Station
Wareham Fire District Administration Building
Main Street
SAWYER STREET
MAIN STREET
MERCHANTS WAY
MORSE TERRACE
CHURCH AVENUE
SANDWICH ROAD
NARROWS ROAD
MAIN STREET

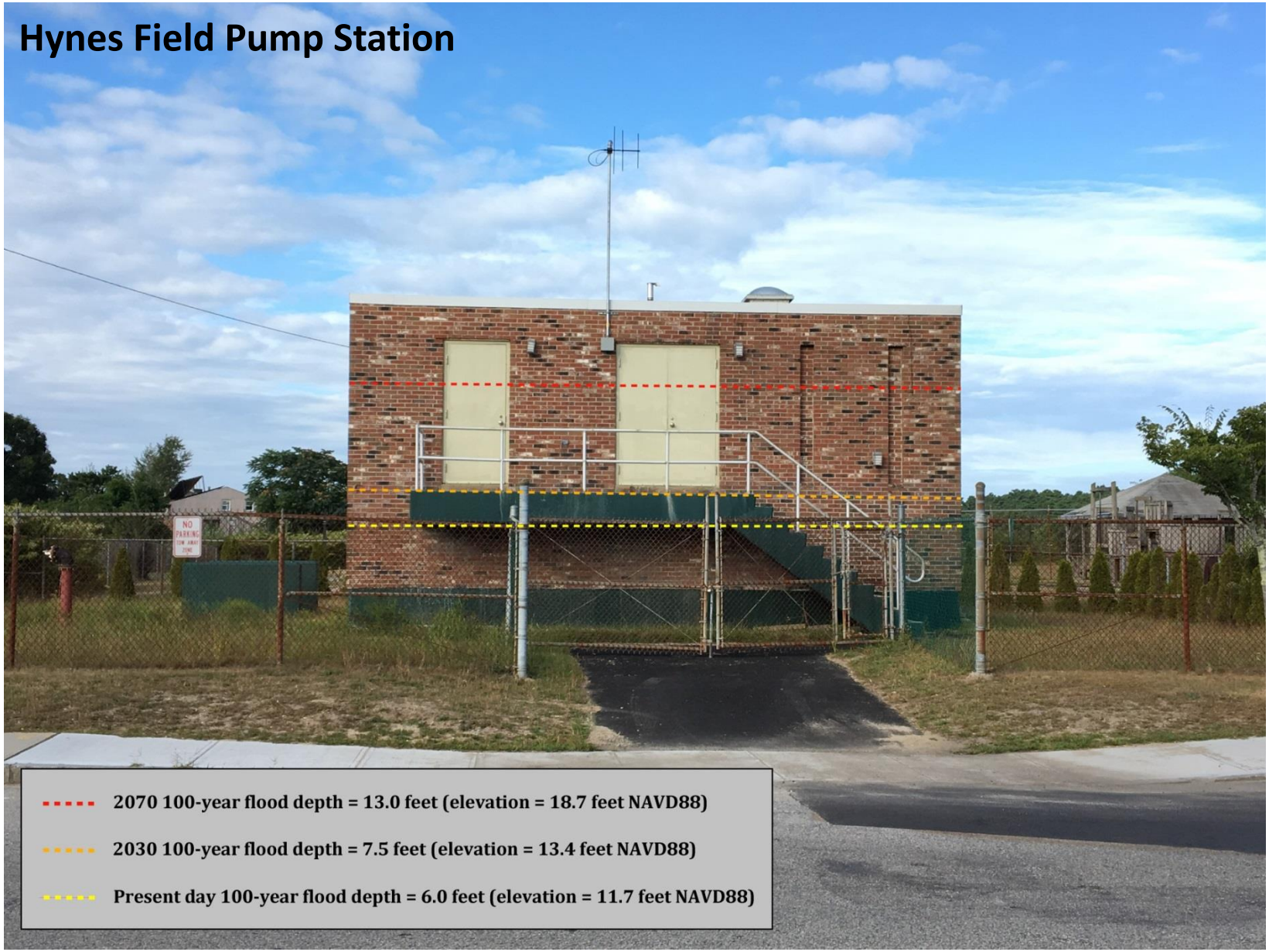

2070 Inundation Risk
Dry during 1% event
Risk during 1% event
Risk during 5% event
Wareham Fire District Fire Department
Train Station
Narrows Sewer Pump Station
Wareham Fire District Administration Building
Main Street
SAWYER STREET
MAIN STREET
MERCHANTS WAY
MORSE TERRACE
CHURCH AVENUE
SANDWICH ROAD
NARROWS ROAD
MAIN STREET

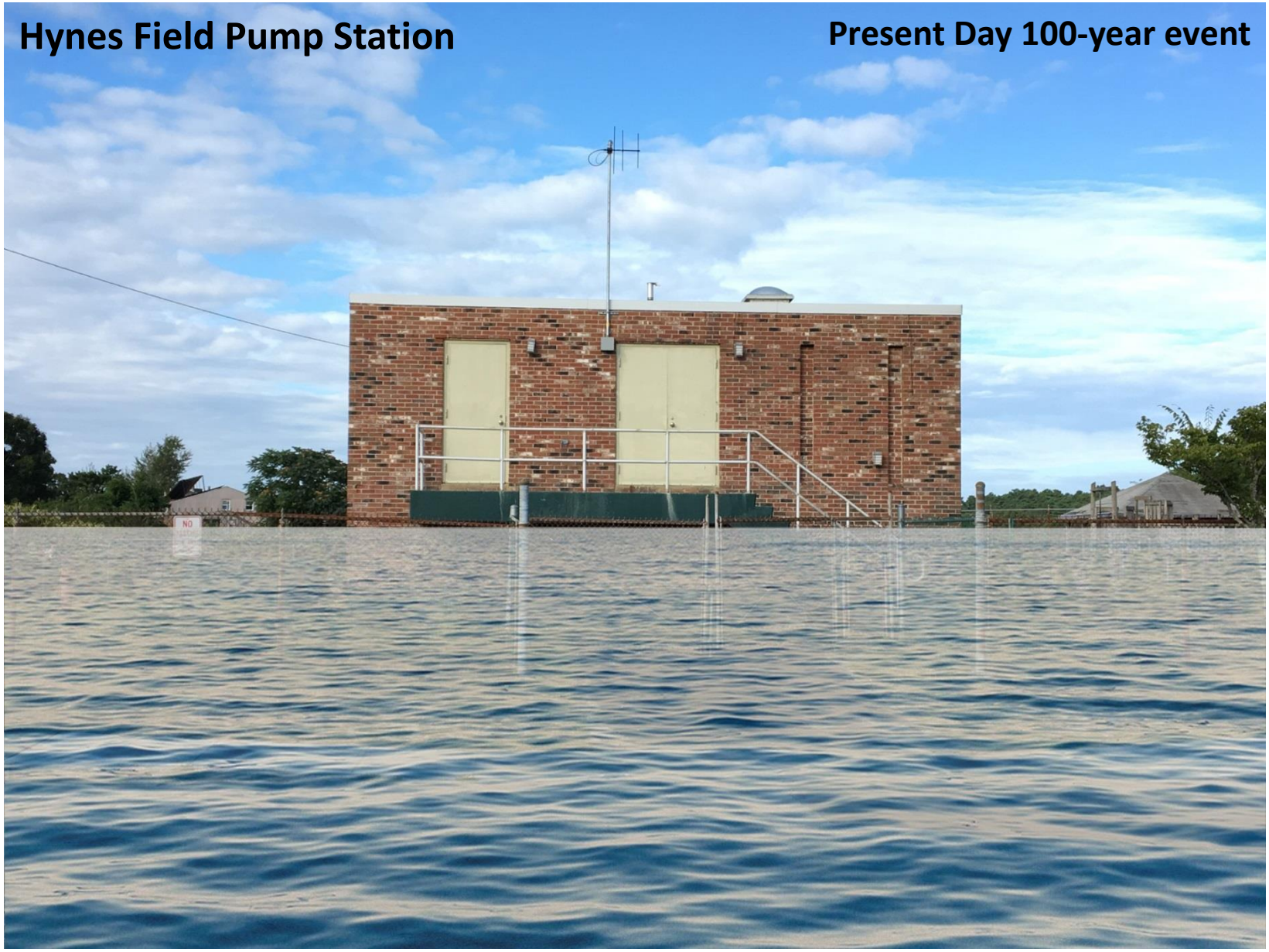

Onset Pier
HARBORMASTER
ONSET PIER
BUOYS
UTILITIES
2070 100-year flood depth = 11.7 feet (elevation = 19.9 feet NAVD88)
2030 100-year flood depth = 5.6 feet (elevation = 13.8 feet NAVD88)
Present day 100-year flood depth = 3.9 feet (elevation = 12.1 feet NAVD88)


Onset Pier
Present Day 100-year event
HARBORMASTER
BUOYS
UTILITIES

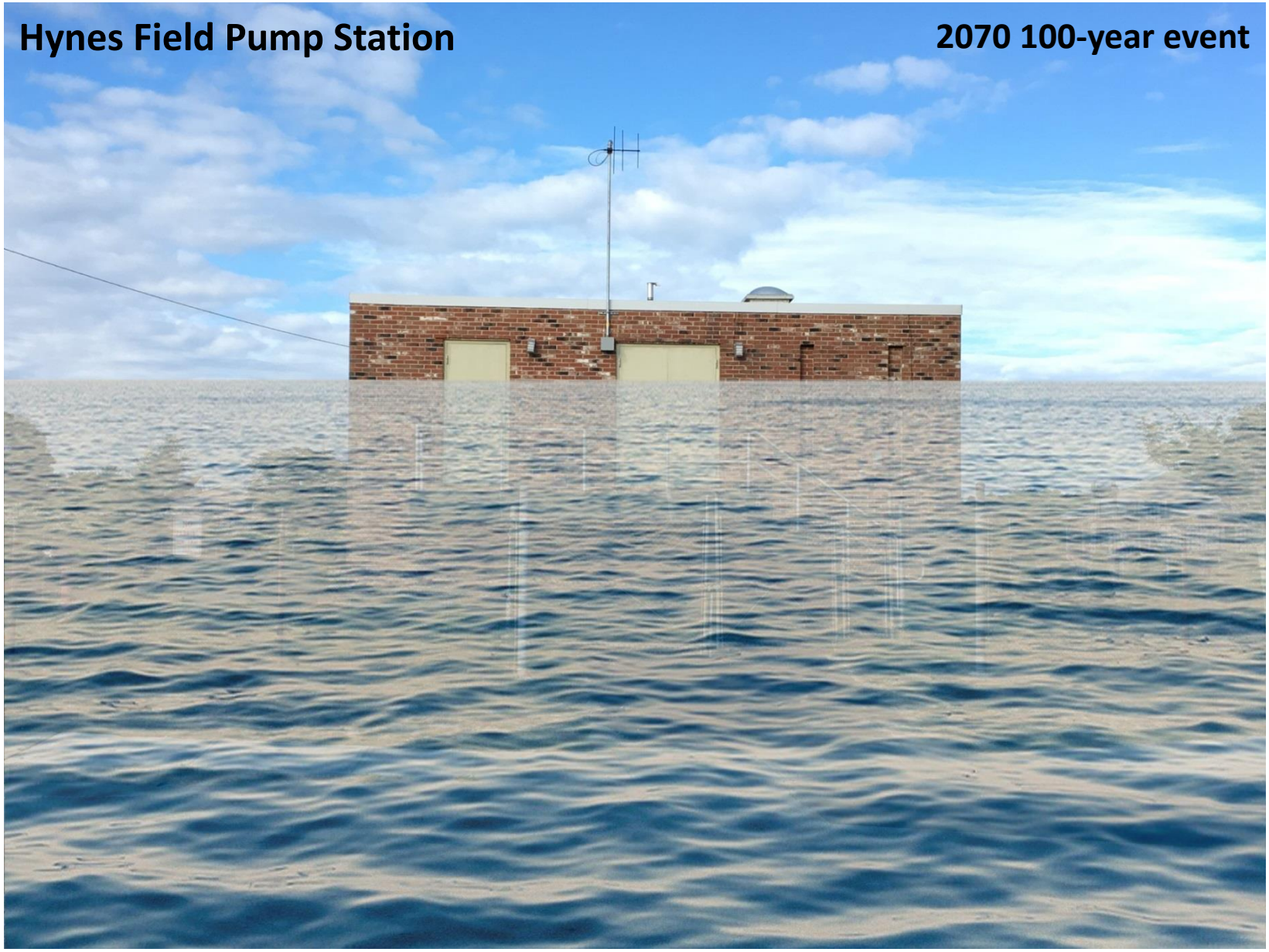

Onset Pier
2030 100-year event
HARBORMASTER
BUOYS
UTILITIES


Onset Pier
2070 100-year event


Hynes Field Pump Station
2070 100-year flood depth = 13.0 feet (elevation = 18.7 feet NAVD88)
2030 100-year flood depth = 7.5 feet (elevation = 13.4 feet NAVD88)
Present day 100-year flood depth = 6.0 feet (elevation = 11.7 feet NAVD88)


Hynes Field Pump Station
Present Day 100-year event


Hynes Field Pump Station
2030 100-year event


Hynes Field Pump Station
2070 100-year event