



# Oxford 2100 A Strategic Vision

Volume II  
Maps, Sections, & Perspectives  
By Preservation Green LLC & GMB  
October 13, 2023

PRODUCED IN COLLABORATION WITH PRESERVATION GREEN & GMB FOR THE TOWN OF OXFORD, MARYLAND

With the financial assistance provided by the Coastal Zone Management Act of 1972, as amended, administered by the Office for Coastal Management,  
National Oceanic and Atmospheric Administration





## Credits

This report was prepared in conjunction with the Town of Oxford, Maryland using Federal funds under award number NOS204190206 from NOAA, U.S. Department of Commerce. The statements, findings, conclusions, and recommendations are those of the author(s) and do not necessarily reflect the views of NOAA or the U.S. Department of Commerce.

Preservation Green LLC & George, Miles & Buhr, LLC prepared the Volume I Oxford 2100 A Strategic Vision Report, Volume II Oxford 2100 A Strategic Vision, & Volume III Student Projects MD School of Architecture, Planning & Preservation in conjunction with the Town of Oxford, Maryland.

The Oxford 2100 Strategic Vision is preceded by various resiliency projects including the Stormwater and Flood Management, Financing Study issued in 2013 by the Maryland Environmental Finance Center in collaboration with the National Fish and Wildlife Foundation, the Eastern Shore Land Conservancy, and the Chesapeake Bay Foundation; the Stormwater Management and Shoreline Protection Inventory and Masterplan Study, prepared in GMB in 2014; the creation of the Causeway Park and The Wetlands Park; and finally with funding from the Maryland Department of Natural Resources (DNR) and the National Oceanic and Atmospheric Administration (NOAA), students from the Maryland School of Architecture, Planning, and Preservation developed the initial phase of the Oxford 2100 Strategic Vision as part of the University's Partnership for Action in Sustainability (PALS) in collaboration with the Town of Oxford.

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## Background & Purpose of the Oxford 2100 A Strategic Vision

The Town of Oxford, MD is a historic port community in Talbot County, located on Maryland's Eastern Shore. The town sits at the mouth of the Tred Avon River, at the confluence of the Tred Avon and Choptank Rivers, and is comprised of a northern and southern peninsula. The northern peninsula is surrounded by the Tred Avon River to the west and north and Town Creek to the south. The southern peninsula is surrounded by the Tred Avon River to the west, the Choptank River to the south, and Boone Creek to the east. The Town lies generally below elevation 10' and, as a result, currently suffers from nuisance flooding from both "sunny day" tidal events and routine precipitation events. It is anticipated that flooding conditions will increase in severity and frequency from rising sea levels and precipitation events with increasing intensity resulting from a changing climate. While steps and planning are currently underway to address nuisance flooding, the Town understands there is a need to develop a long-range vision to address major flooding. This includes difficult conversations on the necessary adaptations in the light of climate change and predicted sea level rise. The purpose of this study is to consider the climate related impacts of changes in precipitation patterns and sea level rise as they relate to the built environment and the ability to maintain the port Town of Oxford as a thriving, liveable community over the next 100 years, utilizing the University of Maryland student project boards as a starting point to craft the final Vision.

This project provides the community with a visual interpretation of a possible interpretation for Oxford in the year 2100. The final report includes the identification of potential climate mitigation strategies, public and private infrastructure adaptations, and several approaches and alternatives necessary to achieve this goal. The final report will serve as a guiding document for the Town and its leaders into the future towards the year 2100. It is intended to be reviewed periodically, addressed as the landscape and engineering technologies change, and updated to keep pace with the current state of sea level rise and localized flooding. It is recommended that a 100-year capital improvement program be crafted from the guidance herein, identifying priority areas and the tougher hurdles that will need to be overcome for success.

Oxford will successfully embrace climate change, specifically sea level rise, with thoughtful consideration, extensive planning, and aggressive adaptation. Learning to live with the water will be key for the future.



*Aerial image of the Town of Oxford surrounded by the Tred Avon River & Town Creek.*

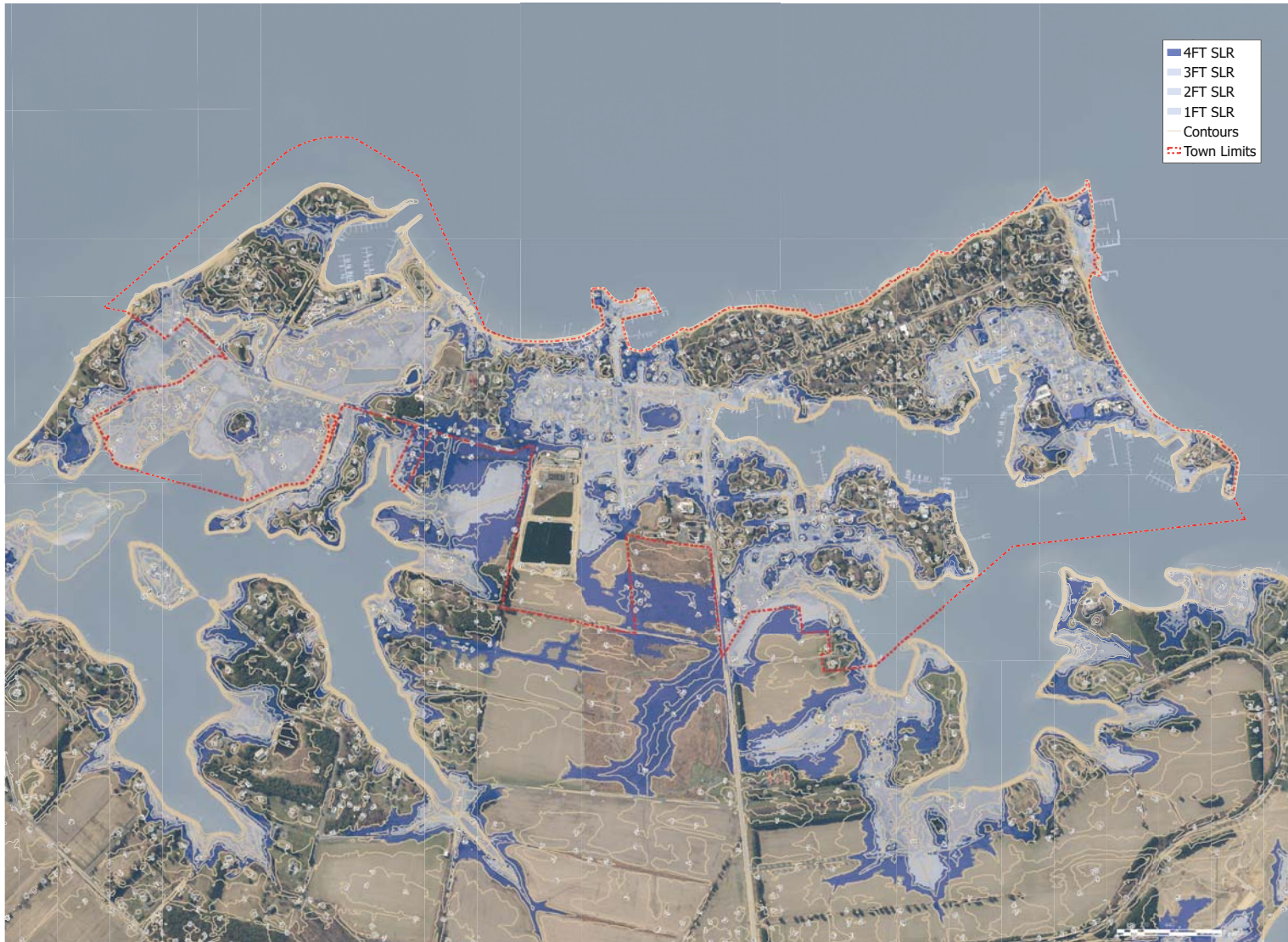




Fig. IV.A.1 Existing Municipal Boundary and Topography of Oxford, MD.



# 4 Feet Sea Level Rise



**Fig. IV.B.3**  
*Inundation at elevation 4.0' due to sea level rise or storm surge for Oxford, MD.*



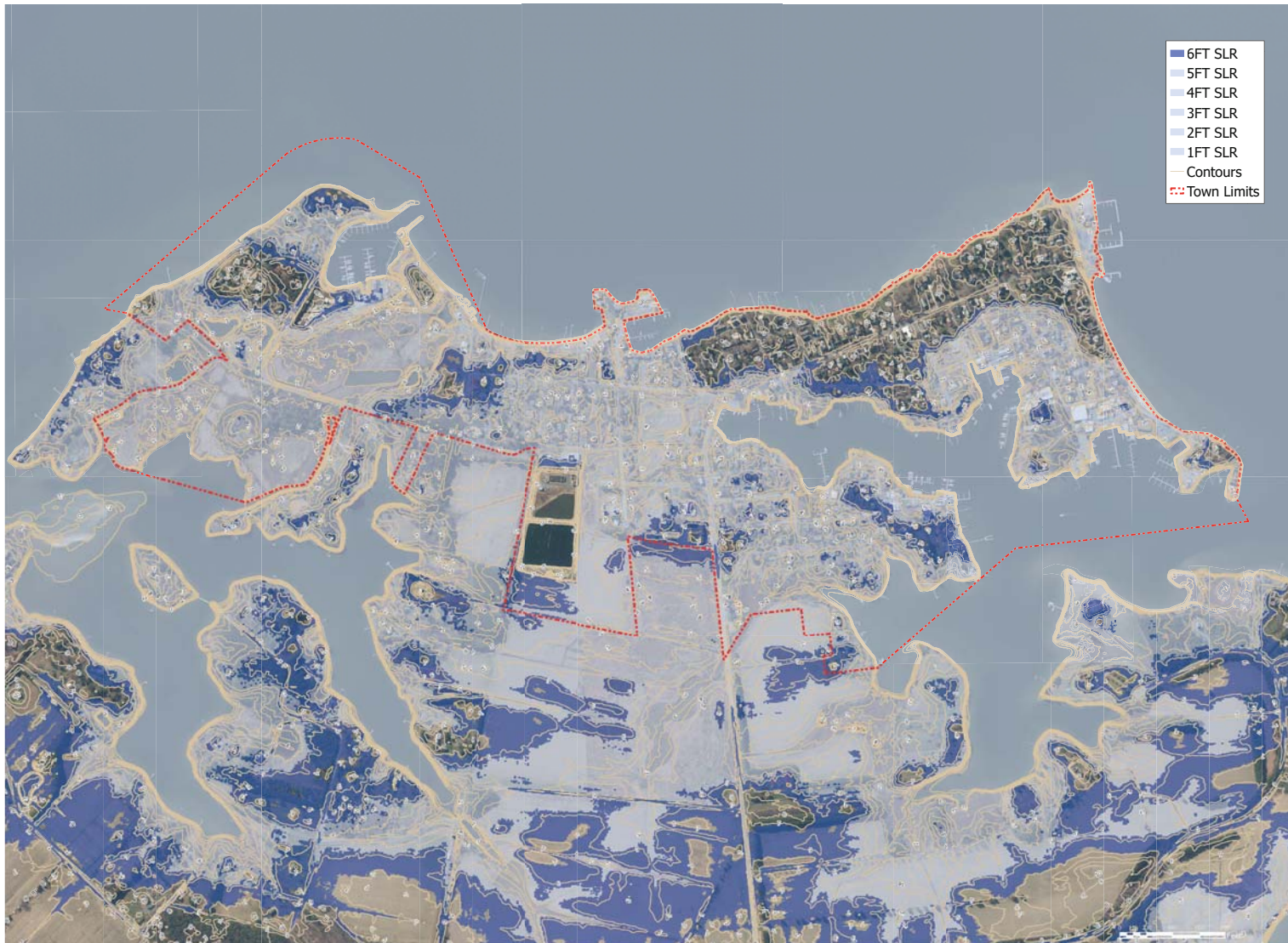


Fig. IV.B.4  
Inundation at  
elevation 6.0' due to  
sea level rise or storm  
surge for Oxford, MD.



# FEMA Map #1

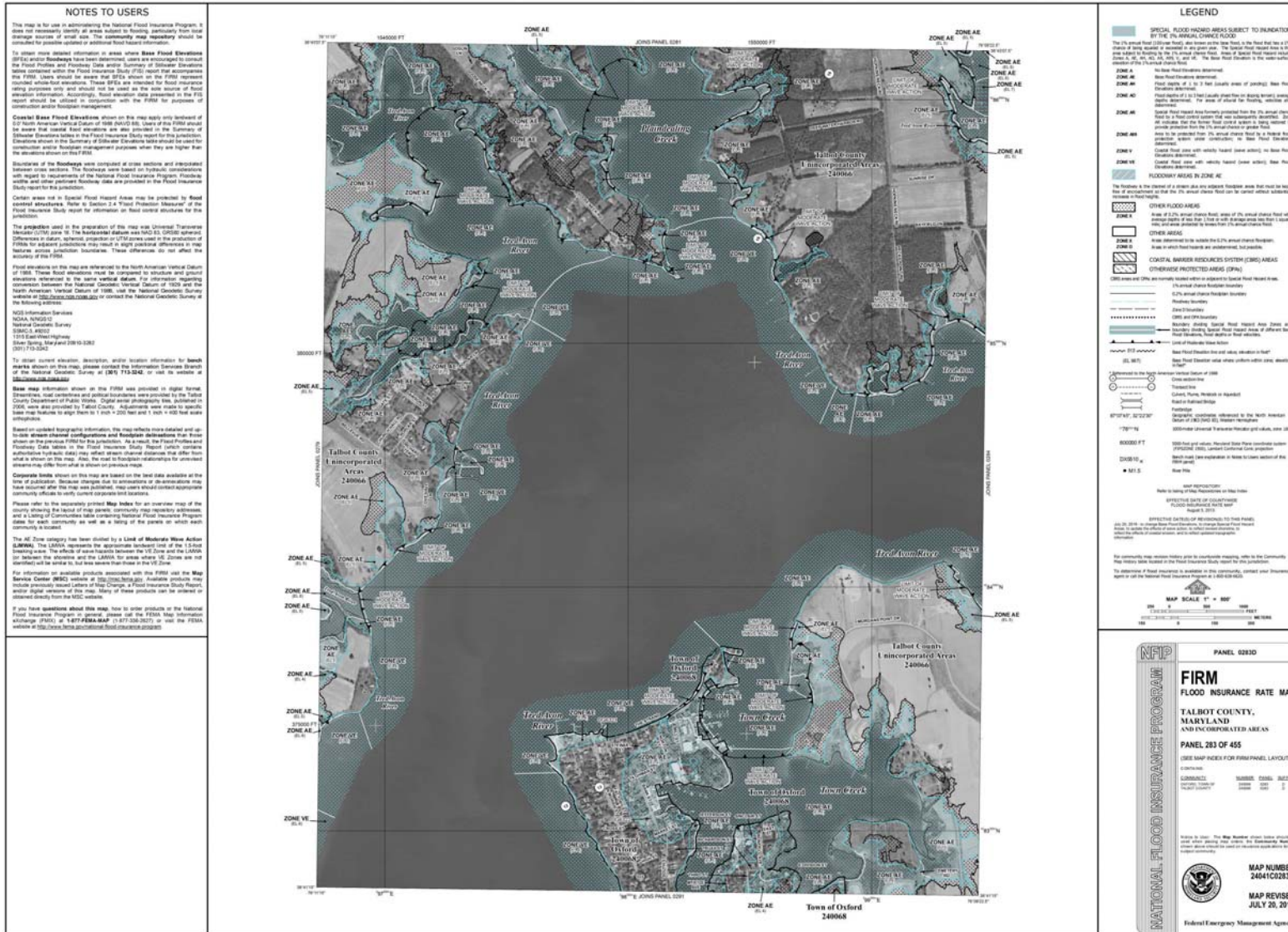


Fig. IV.C.1  
FEMA Flood Zone  
Map for Oxford, MD.



FEMA Map #2

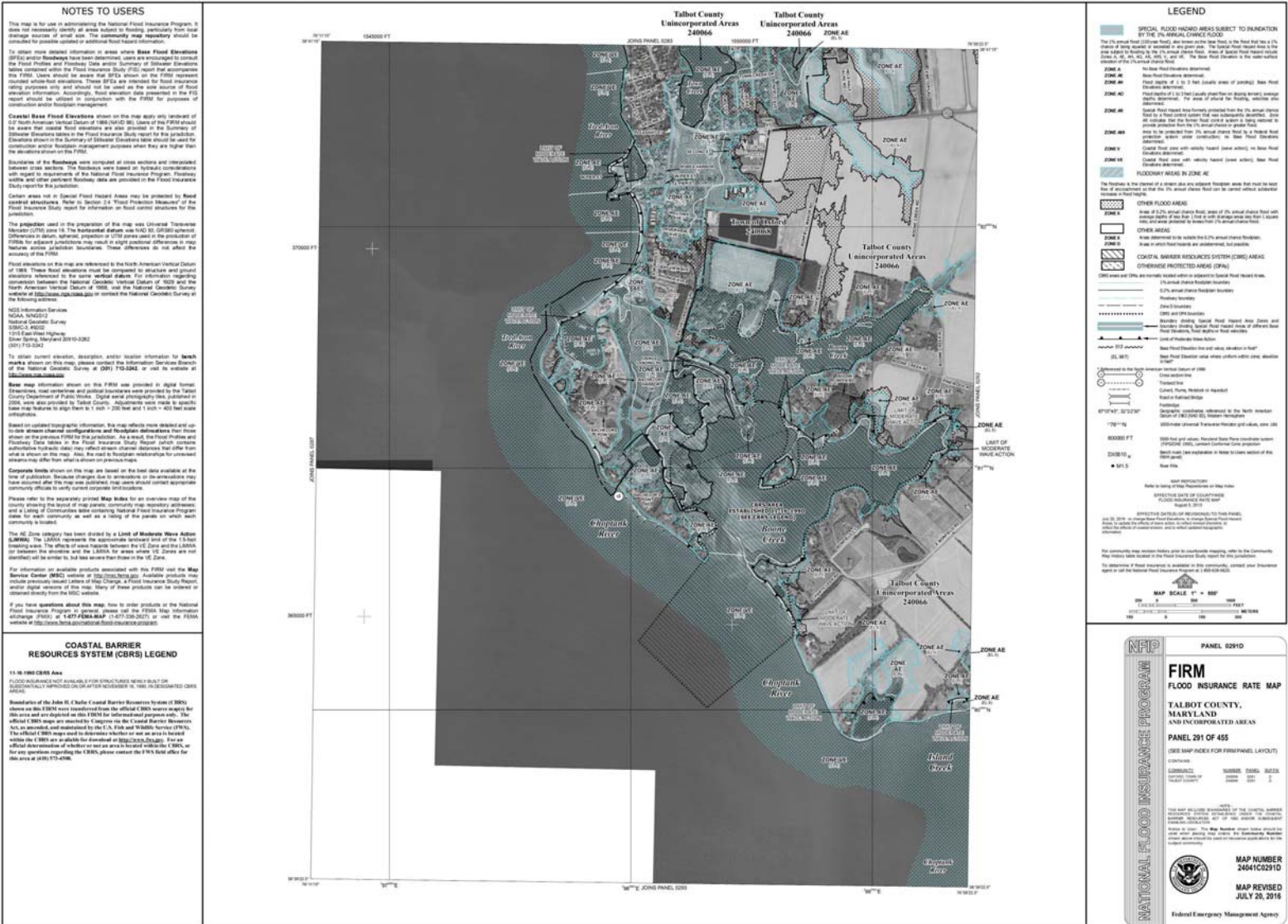


Fig. IV.C.2  
FEMA Flood Zone  
Map for Oxford, MD.



# Masterplan Locations





# Masterplan Strategies





North Morris Town Creek Boathouse Seawalls & Shoreline Protection





North Morris Town Creek Boathouse Seawalls & Shoreline Protection



View of North Morris Town Creek Point





North Morris Town Creek Residential Seawalls







North Morris Town Creek Residential Seawalls



View of North Morris Town Creek  
Protected Residences



North Morris Town Creek

Elevated Homes along  
Existing Street

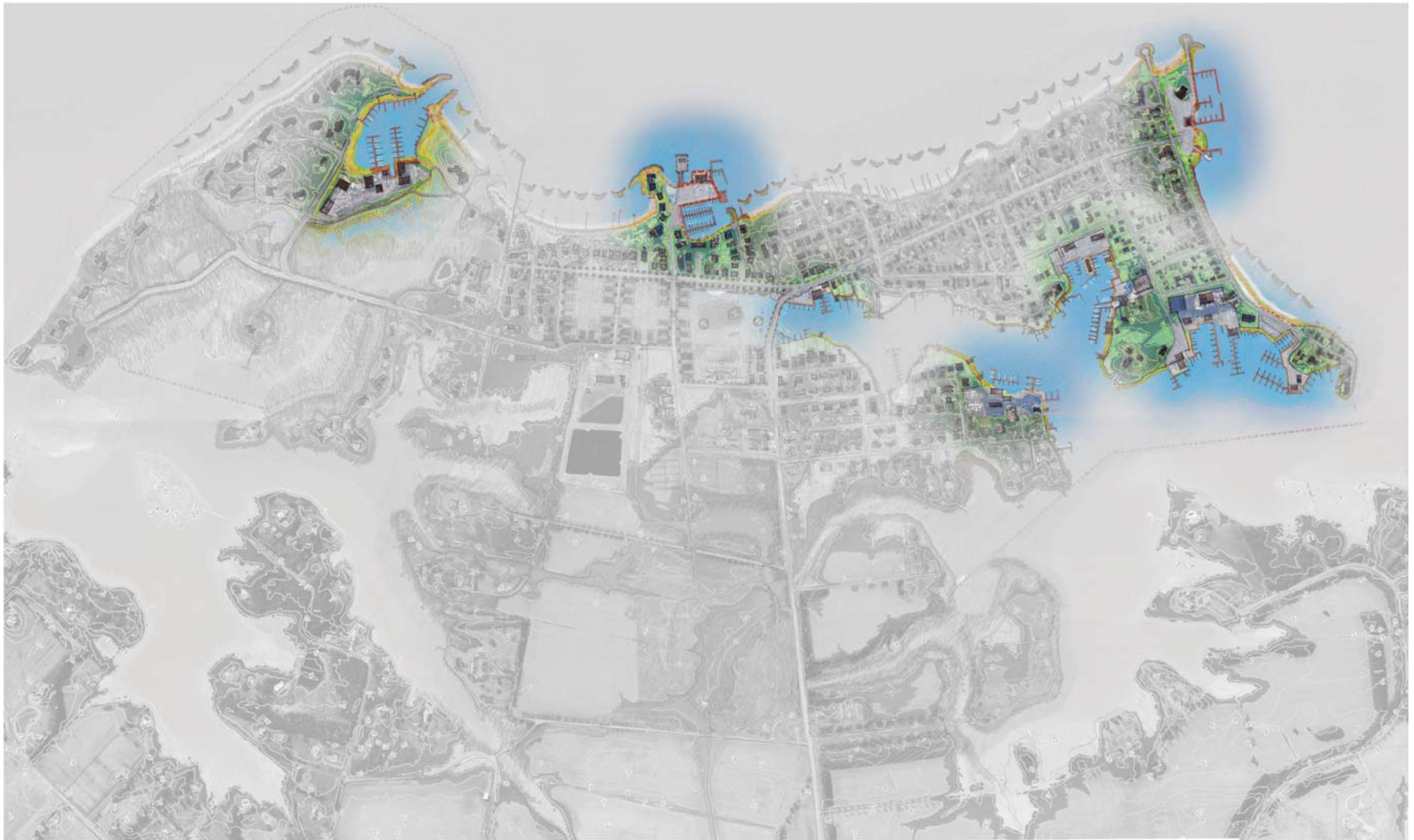
Sunken Garden

Garden Terrace  
Overlook

Seawall



Boatyards, Marinas, Floating Restaurants, & Ferry Landings as Seawall Prectections

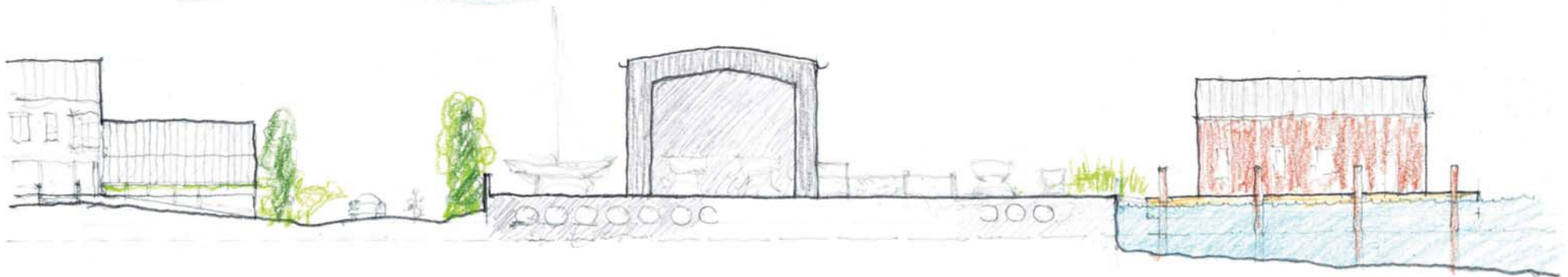




Boatyards, Marinas, Floating Restaurants, & Ferry Landings as Seawall Prectections



View of Boatyard



Elevated Structure along Existing Street

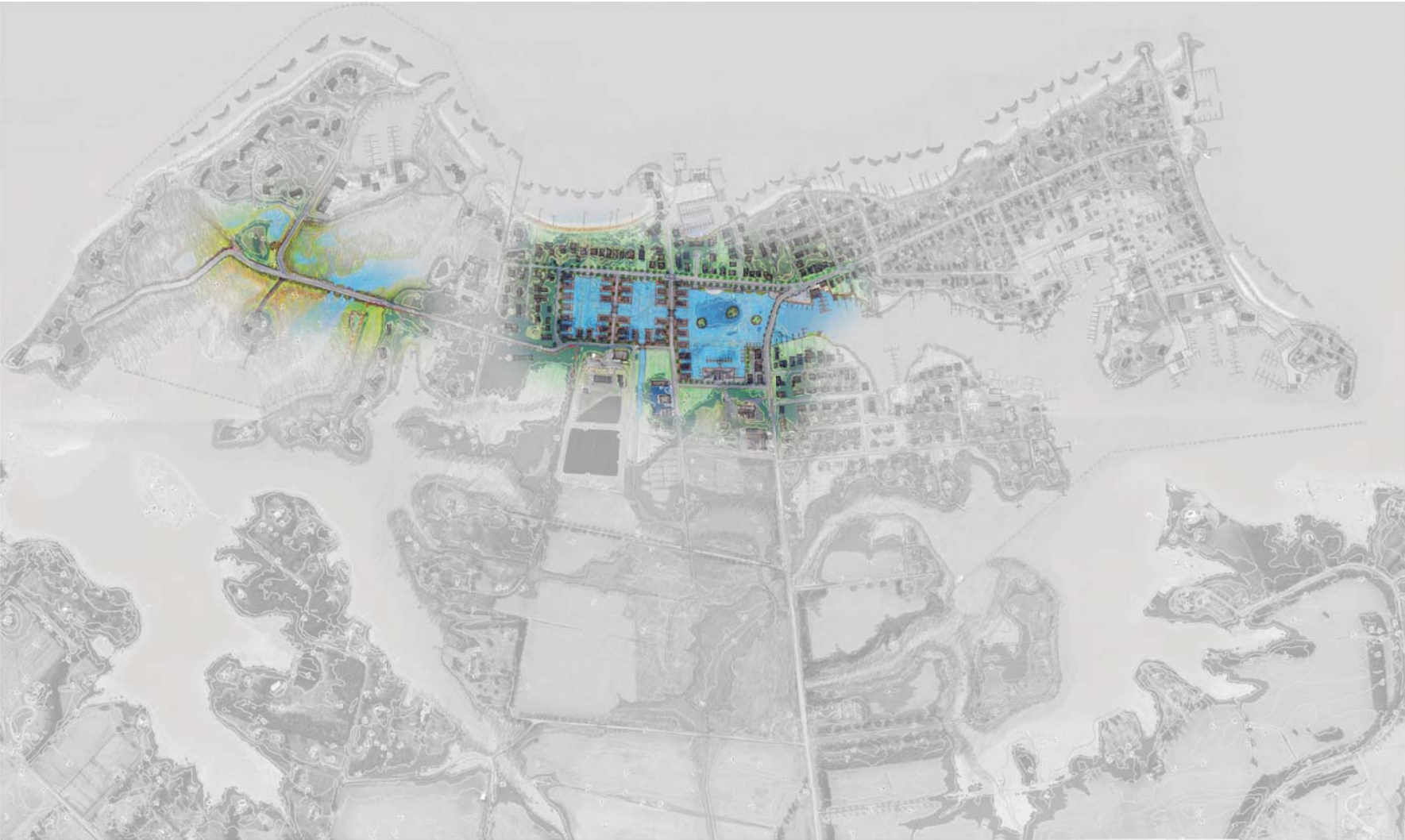
Seawall

Elevated Boatyard

Floating Shed, Restaurant, or Ferry Landing



Floating Homes & Elevated Causeways & Streets





Floating Homes & Elevated Causeways & Streets



View of the Elevated Causeway-Bridge



Elevated Street & Infrastructure

Floating Home

Elevated Boardwalk along South Morris

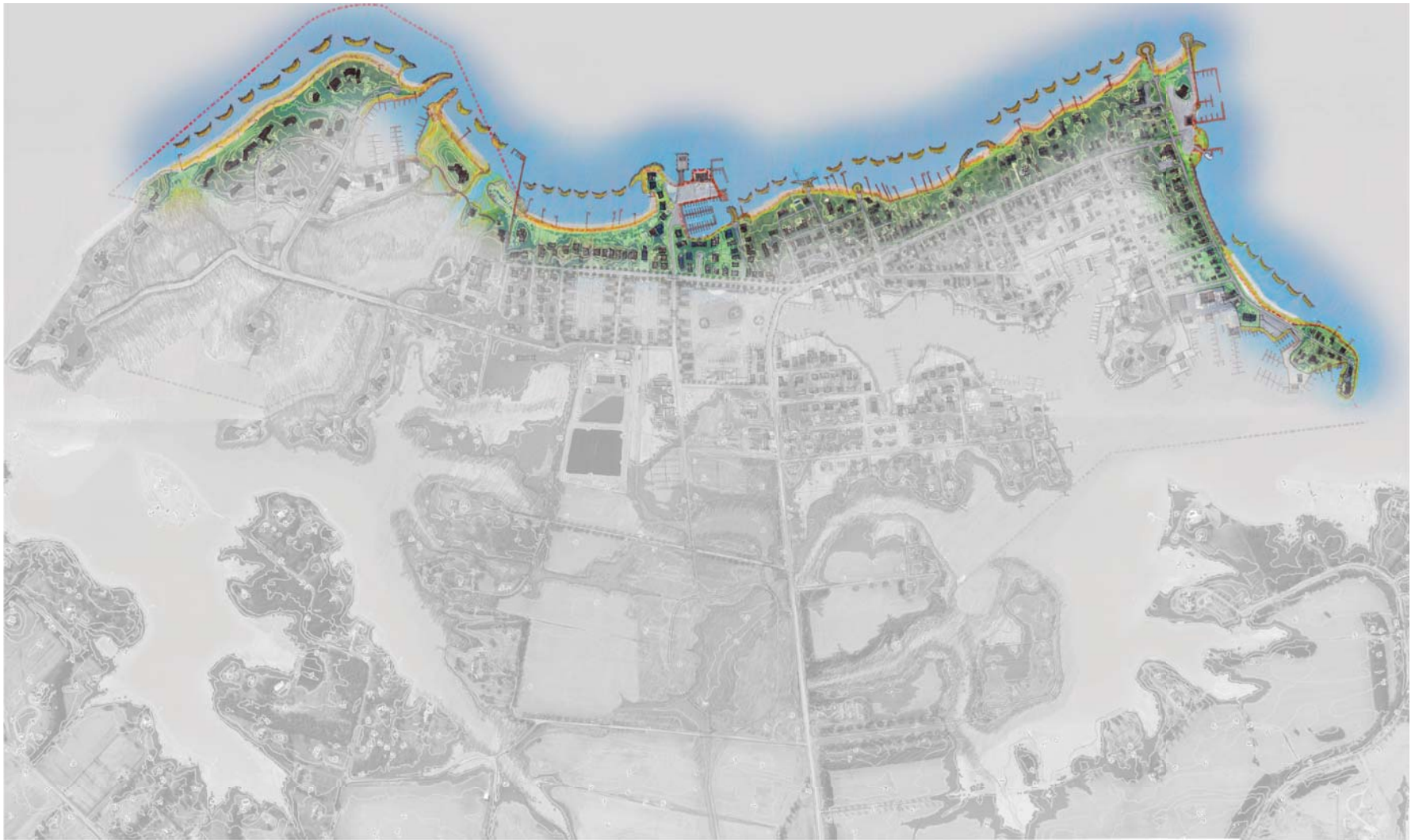
Floating Garden

Elevated Causeway-Bridge with Systems

Boathouse



# Shoreline Protection







Shoreline Protection



View of The Strand



Breakwaters

Dunes

Existing Street

## Shoreline Protection



View of TAYC Beach & Public Overlook





Shoreline Protection

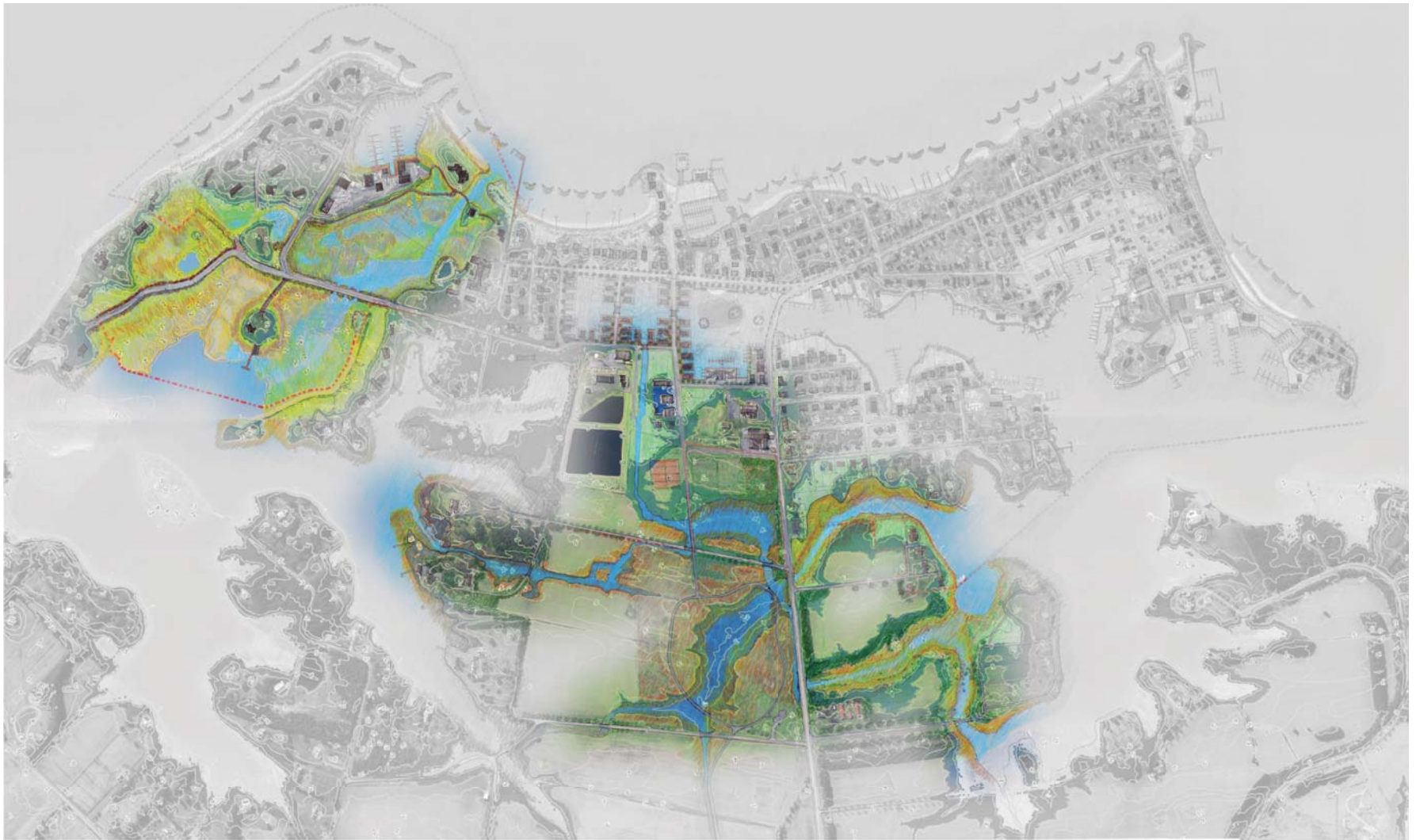


View of South Morris Beach



View of Bachelor's Point & NOAA Lab Estuary

Canals, Wetlands, & Park







Canals, Wetlands, & Park

View of NOAA Lab & Water Quality Monitoring Station



Public Works, beyond

• Recreation Center, beyond Expanded Canal System

View of Rails to Trails Path

# Resiliency Enhancement Timeline - Immediate Term

## 2023 - 2030

The following timeline is a projection of suggested timelots for activities described in Volume 1 of this report. These activities are divided between research & development and/or implementation & construction phases. See Volume 1 for details.

### LEGEND OF RESILIENCY ENHANCEMENT EFFORTS

| RESEARCH & DEVELOPMENT |                      | SHORELINE RESILIENCY ENHANCEMENT |                             |                |                |              |                | HARDSCAPES, CONSTRUCTION & INFRASTRUCTURES |                              |
|------------------------|----------------------|----------------------------------|-----------------------------|----------------|----------------|--------------|----------------|--|------------------------------|
| Monitoring             | Monitoring           | Marsh Restoration                | Marsh Restoration/Creation  | Fiber Logs     | Fiber Logs     | Breakwaters  | Breakwaters    | Tide Gates                                 | Repair or Replace Tide Gates |
| Survey                 | Survey               | Grading                          | Grading                     | Rock Sills     | Rock Sills     | Jetties      | Jetties/Groins | Floating Homes                             | Floating Homes               |
| Planning & Design      | Planning & Design    | Beach Restoration                | Wetland/Beach Nourishment   | Toe Revetments | Toe Revetments | Seawalls     | Seawalls       | Boathouse                                  | Boathouses                   |
| Review & Approval      | Community Approvals  | Dunes                            | Dune Creation & Restoration | Oyster Reefs   | Oyster Reefs   | Naturescapes | Naturescapes   | Walkways/Piers                             | Elevated Walkways            |
| Zoning Modifications   | Zoning Modifications |                                  |                             |                |                |              |                | Causeway or Bridge                         | Causeway Modifications       |
| Government Approvals   | Government Approvals |                                  |                             |                |                |              |                | Public Utilities                           | Public Utility Improvements  |
| Funding                | Funding              |                                  |                             |                |                |              |                | Pump Stations                              | Upgrade Pumping Stations     |

\* 10-YEAR OXFORD MASTERPLAN REVIEW

| AREA OF OXFORD   | 2023  |    |    |    | 2024        |    |    |    | 2025              |    |    |    | 2026              |    |    |    | 2027                 |    |    |    | 2028                 |    |    |    | 2029                |    |    |    | 2030 |    |    |    |
|--|---|----|----|----|-------------|----|----|----|-------------------|----|----|----|-------------------|----|----|----|----------------------|----|----|----|----------------------|----|----|----|---------------------|----|----|----|------|----|----|----|
|  | Q1  | Q2 | Q3 | Q4 | Q1          | Q2 | Q3 | Q4 | Q1                | Q2 | Q3 | Q4 | Q1                | Q2 | Q3 | Q4 | Q1                   | Q2 | Q3 | Q4 | Q1                   | Q2 | Q3 | Q4 | Q1                  | Q2 | Q3 | Q4 | Q1   | Q2 | Q3 | Q4 |
| <b>Town Park, North Morris, Tred Avon Bluff &amp; TAYC</b> | * 10 YEAR MASTERPLAN REVIEW   |    |    |    |             |    |    |    |                   |    |    |    |                   |    |    |    |                      |    |    |    |                      |    |    |    |                     |    |    |    |      |    |    |    |
|  | Tide Gates  |    |    |    | Monitoring  |    |    |    | Survey            |    |    |    | Planning & Design |    |    |    | Review & Approval    |    |    |    | Zoning Modifications |    |    |    |                     |    |    |    |      |    |    |    |
| <b>The Strand, Ferry, Town Creek Point</b>                 | STRAND SHORELINE RESILIENCY ENHANCEMENT - IMPLEMENTATION & CONSTRUCTION |    |    |    |             |    |    |    |                   |    |    |    |                   |    |    |    |                      |    |    |    |                      |    |    |    |                     |    |    |    |      |    |    |    |
|  | Jetties / Groins  |    |    |    | Breakwaters |    |    |    | Tide Gates        |    |    |    | Fiber Logs        |    |    |    | Rock Sills           |    |    |    | Toe Revetments       |    |    |    | Oyster Reefs        |    |    |    |      |    |    |    |
|  | Grading   |    |    |    | Dunes       |    |    |    | Walkways          |    |    |    | Beach Restoration |    |    |    | Marsh Restoration    |    |    |    |                      |    |    |    |                     |    |    |    |      |    |    |    |
| <b>North Morris Town Creek</b>                             | RESILIENCY ENHANCEMENT - PHASE I - RESEARCH & DEVELOPMENT               |    |    |    |             |    |    |    |                   |    |    |    |                   |    |    |    |                      |    |    |    |                      |    |    |    |                     |    |    |    |      |    |    |    |
|  | Tide Gates  |    |    |    | Monitoring  |    |    |    | Survey            |    |    |    | Planning & Design |    |    |    | Review & Approval    |    |    |    | Government Approvals |    |    |    | Funding             |    |    |    |      |    |    |    |
| <b>South Morris Town Creek</b>                             | ELEVATING CAUSEWAY - RESEARCH & DEVELOPMENT                             |    |    |    |             |    |    |    |                   |    |    |    |                   |    |    |    |                      |    |    |    |                      |    |    |    |                     |    |    |    |      |    |    |    |
|  | Tide Gates  |    |    |    | Survey      |    |    |    | Planning & Design |    |    |    | Review & Approval |    |    |    | Government Approvals |    |    |    | Funding              |    |    |    |                     |    |    |    |      |    |    |    |
| <b>Jack's Point</b>  | RESILIENCY ENHANCEMENT - RESEARCH & DEVELOPMENT                         |    |    |    |             |    |    |    |                   |    |    |    |                   |    |    |    |                      |    |    |    |                      |    |    |    |                     |    |    |    |      |    |    |    |
|  | Tide Gates  |    |    |    | Monitoring  |    |    |    | Survey            |    |    |    | Planning & Design |    |    |    | Review & Approval    |    |    |    | APPROVALS & FUNDING  |    |    |    |                     |    |    |    |      |    |    |    |
|  |   |    |    |    |             |    |    |    |                   |    |    |    |                   |    |    |    |                      |    |    |    | funding              |    |    |    |                     |    |    |    |      |    |    |    |
| <b>Bachelor's Point &amp; NOAA</b>                         | RESILIENCY ENHANCEMENT - RESEARCH & DEVELOPMENT                         |    |    |    |             |    |    |    |                   |    |    |    |                   |    |    |    |                      |    |    |    |                      |    |    |    |                     |    |    |    |      |    |    |    |
|  | Tide Gates  |    |    |    | Monitoring  |    |    |    | Survey            |    |    |    | Planning & Design |    |    |    | Review & Approval    |    |    |    | APPROVALS & FUNDING  |    |    |    |                     |    |    |    |      |    |    |    |
|  |   |    |    |    |             |    |    |    |                   |    |    |    |                   |    |    |    |                      |    |    |    | funding              |    |    |    |                     |    |    |    |      |    |    |    |
| <b>Treatment Plant</b>                                     | RESILIENCY ENHANCEMENT - RESEARCH & DEVELOPMENT                         |    |    |    |             |    |    |    |                   |    |    |    |                   |    |    |    |                      |    |    |    |                      |    |    |    |                     |    |    |    |      |    |    |    |
|  |   |    |    |    | Monitoring  |    |    |    | Survey            |    |    |    | Planning & Design |    |    |    | Review & Approval    |    |    |    | APPROVALS & FUNDING  |    |    |    |                     |    |    |    |      |    |    |    |
|  |   |    |    |    |             |    |    |    |                   |    |    |    |                   |    |    |    |                      |    |    |    | funding              |    |    |    |                     |    |    |    |      |    |    |    |
| <b>Recreation &amp; Conservation Park</b>                  | RESILIENCY ENHANCEMENT - RESEARCH & DEVELOPMENT                         |    |    |    |             |    |    |    |                   |    |    |    |                   |    |    |    |                      |    |    |    |                      |    |    |    |                     |    |    |    |      |    |    |    |
|  |   |    |    |    | Tide Gates  |    |    |    | Monitoring        |    |    |    | Survey            |    |    |    | Planning & Design    |    |    |    | Review & Approval    |    |    |    | APPROVALS & FUNDING |    |    |    |      |    |    |    |
|  |   |    |    |    |             |    |    |    |                   |    |    |    |                   |    |    |    |                      |    |    |    | funding              |    |    |    |                     |    |    |    |      |    |    |    |
| <b>South Morris Beach</b>                                  | SOUTH BEACHES & BLUFFS  |    |    |    |             |    |    |    |                   |    |    |    |                   |    |    |    |                      |    |    |    |                      |    |    |    |                     |    |    |    |      |    |    |    |
|  | Tide Gates  |    |    |    | Monitoring  |    |    |    | Survey            |    |    |    | Planning & Design |    |    |    | Review & Approval    |    |    |    | funding              |    |    |    |                     |    |    |    |      |    |    |    |
| <b>Pier Street Marina</b>                                  | RESILIENCY ENHANCEMENT - RESEARCH & DEVELOPMENT                         |    |    |    |             |    |    |    |                   |    |    |    |                   |    |    |    |                      |    |    |    |                      |    |    |    |                     |    |    |    |      |    |    |    |
|  | Tide Gates  |    |    |    | Monitoring  |    |    |    | Survey            |    |    |    | Planning & Design |    |    |    | Review & Approval    |    |    |    | APPROVALS & FUNDING  |    |    |    |                     |    |    |    |      |    |    |    |
|  |   |    |    |    |             |    |    |    |                   |    |    |    |                   |    |    |    |                      |    |    |    | funding              |    |    |    |                     |    |    |    |      |    |    |    |
| <b>Community</b>   | RESILIENCY ENHANCEMENT - RESEARCH & DEVELOPMENT                         |    |    |    |             |    |    |    |                   |    |    |    |                   |    |    |    |                      |    |    |    |                      |    |    |    |                     |    |    |    |      |    |    |    |
|  |   |    |    |    |             |    |    |    |                   |    |    |    |                   |    |    |    | APPROVALS & FUNDING  |    |    |    |                      |    |    |    |                     |    |    |    |      |    |    |    |



# Resiliency Enhancement Timeline - Immediate Term

Grayed Areas = Research & Development | Colored Areas = Implementation of Shoreline Resiliency & Resiliency Projects



# Resiliency Enhancement Timeline - Short Term

## 2025 - 2040

The following timeline is a projection of suggested timelots for activities described in Volume 1 of this report. These activities are divided between research & development and/or implementation & construction phases. See Volume 1 for details.

### LEGEND

#### RESILIENCY ENHANCEMENT - RESEARCH & DEVELOPMENT

|                      |                              |
|----------------------|------------------------------|
| Monitoring           | Monitoring                   |
| Survey               | Survey                       |
| Planning & Design    | Planning & Design            |
| Review & Approval    | Review & Community Approvals |
| Zoning Modifications | Zoning Modifications         |
| Government Approvals | Government Approvals         |
| Funding              | Funding                      |

#### SHORELINE RESILIENCY ENHANCEMENT

|                   |                             |
|-------------------|-----------------------------|
| Marsh Restoration | Marsh Restoration/Creation  |
| Grading           | Grading                     |
| Beach Restoration | Wetland/Beach Nourishment   |
| Dunes             | Dune Creation & Restoration |

|                |                |
|----------------|----------------|
| Fiber Logs     | Fiber Logs     |
| Rock Sills     | Rock Sills     |
| Toe Revetments | Toe Revetments |
| Oyster Reefs   | Oyster Reefs   |

|              |                |
|--------------|----------------|
| Breakwaters  | Breakwaters    |
| Jetties      | Jetties/Groins |
| Seawalls     | Seawalls       |
| Naturescapes | Naturescapes   |

#### HARDSCAPES, CONSTRUCTION & INFRASTRUCTURES

|                    |                              |
|--------------------|------------------------------|
| Tide Gates         | Repair or Replace Tide Gates |
| Floating Homes     | Floating Homes               |
| Boathouse          | Boathouses                   |
| Walkways/Piers     | Elevated Walkways            |
| Causeway or Bridge | Causeway Modifications       |
| Public Utilities   | Public Utility Improvements  |
| Pump Stations      | Upgrade Pumping Stations     |

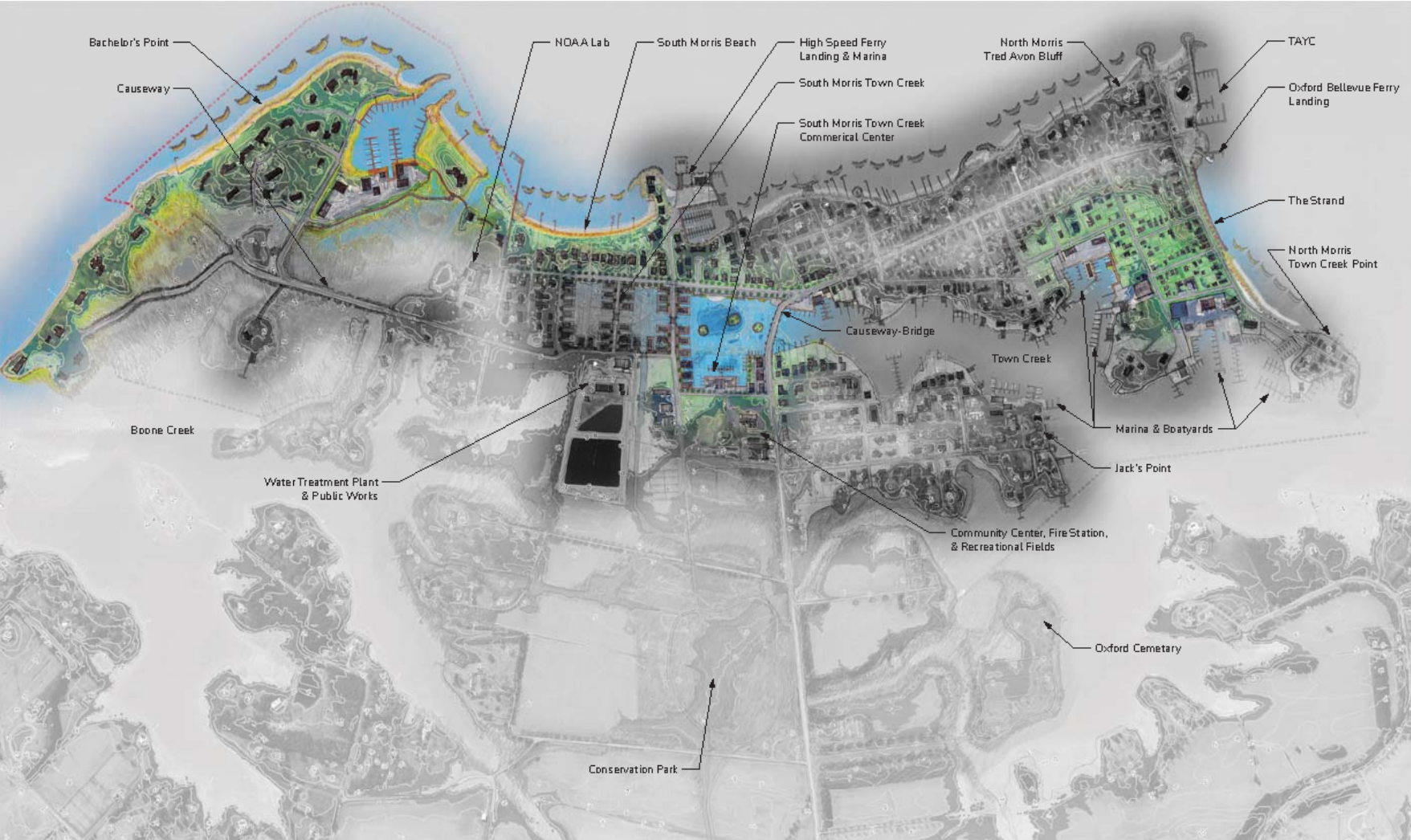
\* 10-YEAR OXFORD MASTERPLAN REVIEW

|   | 2025  |                   |                      |                   |                      |                      |   |                      |                   |                   |                      |                      | 2040 |      |          |
|---|---|-------------------|----------------------|-------------------|----------------------|----------------------|---|----------------------|-------------------|-------------------|----------------------|----------------------|------|------|----------|
| AREA OF OXFORD                                  | 2025  | 2026              | 2027                 | 2028              | 2029                 | 2030                 | 2031  | 2032                 | 2033              | 2034              | 2035                 | 2036                 | 2037 | 2038 | 2039     |
|   | * 10-YEAR OXFORD MASTERPLAN REVIEW                                  |                   |                      |                   |                      |                      |   |                      |                   |                   |                      |                      |      |      |          |
|   | 10-YEAR OXFORD MASTERPLAN REVIEW*                                   |                   |                      |                   |                      |                      |   |                      |                   |                   |                      |                      |      |      |          |
| <b>Town Park, North Morris, Tred Avon Bluff</b> | SHORELINE RESILIENCY ENHANCEMENT - PHASE I - RESEARCH & DEVELOPMENT |                   |                      |                   |                      |                      | RESILIENCY ENHANCEMENT - APPROVALS & FUNDING                                |                      |                   |                   |                      |                      |      |      |          |
|   | Monitoring  | Survey            | Planning & Design    |                   | Review & Approval    | Zoning Modifications | Government Approvals  |                      |                   |                   |                      |                      |      |      | Funding  |
| <b>The Strand, Ferry, Town Creek Point</b>      | SHORELINE RESILIENCY ENHANCEMENT - PHASE I IMPLEMENTATION           |                   |                      |                   |                      |                      | TOWN CREEK POINT RESILIENCY ENHANCEMENT - PHASE II - RESEARCH & DEVELOPMENT |                      |                   |                   |                      |                      |      |      |          |
|   | Breakwaters   | T. Gates          | Fiber Logs           | Rock Sills        | Toe Revetments       | Oyster Reefs         | Monitoring  | Survey               | Planning & Design | Review & Approval | Zoning Modifications | Government Approvals |      |      | Funding  |
| <b>North Morris Town Creek</b>                  | SHORELINE RESILIENCY ENHANCEMENT - PHASE I - RESEARCH & DEVELOPMENT |                   |                      |                   |                      |                      | RAISING OF MILL ST., TILGHMAN ST., NORTON ST., & BANK ST.                   |                      |                   |                   |                      |                      |      |      |          |
|   | Survey  | Planning & Design | review & approval    |                   | government approvals |                      | funding   |                      |                   | Tide Gates        | Public Utilities     | Pump Stations        |      |      | Grading  |
| <b>South Morris Town Creek</b>                  | RESEARCH & DEVELOPMENT  |                   |                      |                   |                      |                      | ELEVATING CAUSEWAY - IMPLEMENTATION & CONSTRUCTION                          |                      |                   |                   |                      |                      |      |      |          |
|   | Review & Approval   |                   | Government Approvals |                   | Funding              |                      |   | Tide Gates           |                   | Public Utilities  |                      |                      |      |      | Seawalls |
| <b>Jack's Point</b>                             | RESILIENCY ENHANCEMENT - RESEARCH & DEVELOPMENT                     |                   |                      |                   |                      |                      | RESILIENCY ENHANCEMENT - APPROVALS & FUNDING                                |                      |                   |                   |                      |                      |      |      |          |
|   |   |                   | Monitoring           | Survey            | Planning & Design    | Review & Approval    | Zoning Modifications  | Government Approvals |                   |                   |                      |                      |      |      | Funding  |
| <b>Bachelor's Point &amp; NOAA</b>              | RESILIENCY ENHANCEMENT - RESEARCH & DEVELOPMENT                     |                   |                      |                   |                      |                      | RESILIENCY ENHANCEMENT - APPROVALS & FUNDING                                |                      |                   |                   |                      |                      |      |      |          |
|   |   |                   | Monitoring           | Survey            | Planning & Design    | Review & Approval    | Zoning Modifications  | Government Approvals |                   |                   |                      |                      |      |      | Funding  |
| <b>Treatment Plant</b>                          | RESILIENCY ENHANCEMENT - RESEARCH & DEVELOPMENT                     |                   |                      |                   |                      |                      | RESILIENCY ENHANCEMENT - APPROVALS & FUNDING                                |                      |                   |                   |                      |                      |      |      |          |
|   |   |                   | Monitoring           | Survey            | Planning & Design    | Review & Approval    | Zoning Modifications  | Government Approvals |                   |                   |                      |                      |      |      | Funding  |
| <b>Recreation &amp; Conservation Park</b>       | RESILIENCY ENHANCEMENT - RESEARCH & DEVELOPMENT                     |                   |                      |                   |                      |                      | RESILIENCY ENHANCEMENT - APPROVALS & FUNDING                                |                      |                   |                   |                      |                      |      |      |          |
|   |   |                   | Monitoring           | Survey            | Planning & Design    | Review & Approval    | Zoning Modifications  | Government Approvals |                   |                   |                      |                      |      |      | Funding  |
| <b>South Morris Beach</b>                       | RESILIENCY ENHANCEMENT - RESEARCH & DEVELOPMENT                     |                   |                      |                   |                      |                      | RESILIENCY ENHANCEMENT - APPROVALS & FUNDING                                |                      |                   |                   |                      |                      |      |      |          |
|   |   | Monitoring        | Survey               | Planning & Design | Review & Approval    | Zoning Modifications | Government Approvals  |                      |                   |                   |                      |                      |      |      | Funding  |
| <b>Pier Street Marina</b>                       | RESILIENCY ENHANCEMENT - RESEARCH & DEVELOPMENT                     |                   |                      |                   |                      |                      | RESILIENCY ENHANCEMENT - APPROVALS & FUNDING                                |                      |                   |                   |                      |                      |      |      |          |
|   |   |                   | Monitoring           | Survey            | Planning & Design    | Review & Approval    | Zoning Modifications  | Government Approvals |                   |                   |                      |                      |      |      | Funding  |
| <b>Community</b>                                | RESILIENCY ENHANCEMENT - RESEARCH & DEVELOPMENT                     |                   |                      |                   |                      |                      | RESILIENCY ENHANCEMENT - APPROVALS & FUNDING                                |                      |                   |                   |                      |                      |      |      |          |
|   |   |                   |                      |                   |                      |                      |   |                      |                   |                   |                      |                      |      |      |          |



# Resiliency Enhancement Timeline - Short Term

Grayed Areas = Research & Development | Colored Areas = Implementation of Shoreline Resiliency & Resiliency Projects



# Resiliency Enhancement Timeline - Mid Term

## 2040 - 2070

The following timeline is a projection of suggested timeslots for activities described in Volume 1 of this report. These activities are divided between research & development and/or implementation & construction phase. See Volume 1 for details.

### LEGEND OF RESILIENCY ENHANCEMENT EFFORTS

| RESEARCH & DEVELOPMENT       | SHORELINE RESILIENCY - NON STRUCTURAL METHOD | SHORELINE RESILIENCY - HYBRID METHOD | RESILIENCY PROJECTS - HARDSCAPES, CONSTRUCTION & INFRASTRUCTURES |
|------------------------------|--|--------------------------------------|--|
| Monitoring                   | Marsh Restoration or Creation                | Fiber Logs                           | Repair or Replace Tide Gates                                     |
| Survey                       | Grading                                      | Rock Sills                           | Floating Homes   |
| Planning & Design            | Wetland & Beach Nourishment                  | Toe Revetments                       | Boathouses   |
| Review & Community Approvals | Dune Creation & Restoration                  | Oyster Reefs                         | Elevated Walkways & Piers  |
| Zoning Modifications         |  | Breakwaters                          | Causeway Modifications   |
| Government Approvals         |  | Jetties & Groins                     | Public Utility Improvements                                      |
| Funding                      |  | Seawalls                             | Upgrade Pumping Stations   |
|                              |  | Naturescapes                         |  |

### \* 10-YEAR OXFORD MASTERPLAN REVIEW 2040

2070

| AREA OF OXFORD                                       | 2040  | 2041              | 2042             | 2043       | 2044              | 2045              | 2046                | 2047                 | 2048       | 2049         | 2050   | 2051 | 2052 | 2053 | 2054 | 2055 | 2056 | 2057 | 2058   | 2059       | 2060   | 2061              | 2062                 | 2063                 | 2064    | 2065 | 2066 | 2067 | 2068 | 2069 |
|--|---|-------------------|------------------|------------|-------------------|-------------------|---------------------|----------------------|------------|--------------|--|------|------|------|------|------|------|------|--|------------|--|-------------------|----------------------|----------------------|---------|------|------|------|------|------|
|  | * 10-YEAR OXFORD MASTERPLAN REVIEW  |                   |                  |            |                   |                   |                     |                      |            |              |  |      |      |      |      |      |      |      |  |            |  |                   |                      |                      |         |      |      |      |      |      |
| <b>Town Park, North Morris &amp; Tred Avon Bluff</b> | PHASE I - RESEARCH DEVELOPMENT  |                   |                  |            |                   |                   |                     |                      |            |              | SHORELINE RESILIENCY ENHANCEMENT - PHASE I - IMPLEMENTATION & CONSTRUCTION |      |      |      |      |      |      |      |  |            | SHORELINE RESILIENCY ENHANCEMENT - PHASE II - RESEARCH & DEVELOPMENT |                   |                      |                      |         |      |      |      |      |      |
|  | Survey  | Planning & Design | Gov. Approvals   | Fund       | Jetties / Groins  | Breakwaters       | Walkways & Piers    | Fiber Logs           | Rock Sills | Toe Revet.   | Oyster Reefs   |      |      |      |      |      |      |      |  | Monitoring | Survey   | Planning & Design | Zoning Modifications | Government Approvals | Funding |      |      |      |      |      |
| <b>The Strand, Ferry, Town Creek Point</b>           | SHORELINE RESILIENCY ENHANCEMENT - PHASE I - IMPLEMENTATION & CONSTRUCTION  |                   |                  |            |                   |                   |                     |                      |            |              | SHORELINE RESILIENCY ENHANCEMENT - PHASE II - RESEARCH & DEVELOPMENT       |      |      |      |      |      |      |      |  |            |  |                   |                      |                      |         |      |      |      |      |      |
|  | Jetties / Groins  | Breakwaters       | Walkways & Piers | Fiber Logs | Rock Sills        | Toe Revet.        | Oyster Reefs        |                      |            |              |  |      |      |      |      |      |      |      |  | Monitoring | Survey   | Planning & Design | Zoning Modifications | Government Approvals | Funding |      |      |      |      |      |
| <b>North Morris Town Creek</b>                       | SHORELINE RESILIENCY ENHANCEMENT - PHASE I - IMPLEMENTATION & CONSTRUCTION  |                   |                  |            |                   |                   |                     |                      |            |              | SHORELINE RESILIENCY ENHANCEMENT - PHASE II - RESEARCH & DEVELOPMENT       |      |      |      |      |      |      |      |  |            |  |                   |                      |                      |         |      |      |      |      |      |
|  | Grading   | Seawalls          | Tide Gates       | Piers      | Utilities         | Pump Stations     | Fiber Logs          | Rock Sills           | Toe Revet. | Oyster Reefs |  |      |      |      |      |      |      |      |  | Monitoring | Survey   | Planning & Design | Zoning Modifications | Government Approvals | Funding |      |      |      |      |      |
| <b>South Morris Town Creek</b>                       | TEMPORARY STORMWATER PUMP STATION   |                   |                  |            |                   |                   |                     |                      |            |              | BRIDGE & SOUTH MORRIS FLOATING HOME COMMUNITY - RESEARCH & DEVELOPMENT     |      |      |      |      |      |      |      |  |            |  |                   |                      |                      |         |      |      |      |      |      |
|  | Pump Stations   | Monitoring        | Survey           | Design     | Review & Approval | Review & Approval | Zoning Modification | Government Approvals | Funding    |              |  |      |      |      |      |      |      |      |  |            |  |                   |                      |                      |         |      |      |      |      |      |
| <b>Jack's Point</b>                                  | SHORELINE RESILIENCY ENHANCEMENT - RESEARCH & DEVELOPMENT                   |                   |                  |            |                   |                   |                     |                      |            |              |  |      |      |      |      |      |      |      |  |            |  |                   |                      |                      |         |      |      |      |      |      |
|  | Monitoring  | Survey            | Design           | Approval   | Modification      | Approvals         |                     |                      |            |              |  |      |      |      |      |      |      |      |  |            |  |                   |                      |                      |         |      |      |      |      |      |
| <b>Bachelor's Point &amp; NOAA</b>                   | SHORELINE RESILIENCY ENHANCEMENT - PHASE II - IMPLEMENTATION & CONSTRUCTION |                   |                  |            |                   |                   |                     |                      |            |              | CAUSEWAY & BOARDWALKS  |      |      |      |      |      |      |      | SHORELINE RESILIENCY ENHANCEMENT - PHASE II - RESEARCH & DEVELOPMENT |            |  |                   |                      |                      |         |      |      |      |      |      |
|  | Jetties   | Seawalls          | Breakwaters      | Utilities  | Fiber Logs        | Rock Sills        | Oyster Reefs        | Causeway             | Walkways   |              |  |      |      |      |      |      |      |      |  | Monitoring | Survey   | Planning & Design | Zoning Modifications | Government Approvals | Funding |      |      |      |      |      |
| <b>Treatment Plant</b>                               | RESILIENCY ENHANCEMENT - PHASE I - IMPLEMENTATION & CONSTRUCTION            |                   |                  |            |                   |                   |                     |                      |            |              |  |      |      |      |      |      |      |      |  |            |  |                   |                      |                      |         |      |      |      |      |      |
|  | SCOPE DEFINED PENDING RESEARCH & DEVELOPMENT EFFORTS                        |                   |                  |            |                   |                   |                     |                      |            |              |  |      |      |      |      |      |      |      |  |            |  |                   |                      |                      |         |      |      |      |      |      |
| <b>Recreation &amp; Conservation Park</b>            | RESILIENCY ENHANCEMENT - PHASE I - IMPLEMENTATION & CONSTRUCTION            |                   |                  |            |                   |                   |                     |                      |            |              | DEVELOP RAILS TO TRAILS  |      |      |      |      |      |      |      | SHORELINE RESILIENCY ENHANCEMENT - PHASE II - RESEARCH & DEVELOPMENT |            |  |                   |                      |                      |         |      |      |      |      |      |
|  | Jetties   | Seawalls          | Walkways & Piers | Rock Sills | Oyster Reefs      |                   |                     |                      |            |              |  |      |      |      |      |      |      |      |  | Monitoring | Survey   | Planning & Design | Zoning Modifications | Government Approvals | Funding |      |      |      |      |      |
| <b>South Morris Beach</b>                            | SHORELINE RESILIENCY ENHANCEMENT - PHASE I - IMPLEMENTATION & CONSTRUCTION  |                   |                  |            |                   |                   |                     |                      |            |              | SHORELINE RESILIENCY ENHANCEMENT - PHASE II - RESEARCH & DEVELOPMENT       |      |      |      |      |      |      |      |  |            |  |                   |                      |                      |         |      |      |      |      |      |
|  | Jetties   | Seawalls          | Breakwaters      | Utilities  | Fiber Logs        | Rock Sills        | Oyster Reefs        | Walkways             |            |              |  |      |      |      |      |      |      |      |  | Monitoring | Survey   | Planning & Design | Zoning Modifications | Government Approvals | Funding |      |      |      |      |      |
| <b>Pier Street Marina</b>                            | RESILIENCY ENHANCEMENT - PHASE I - IMPLEMENTATION & CONSTRUCTION            |                   |                  |            |                   |                   |                     |                      |            |              |  |      |      |      |      |      |      |      |  |            |  |                   |                      |                      |         |      |      |      |      |      |
|  | SCOPE DEFINED PENDING RESEARCH & DEVELOPMENT EFFORTS                        |                   |                  |            |                   |                   |                     |                      |            |              |  |      |      |      |      |      |      |      |  |            |  |                   |                      |                      |         |      |      |      |      |      |
| <b>Community Buildings &amp; Services</b>            | RESILIENCY ENHANCEMENT - PHASE I - IMPLEMENTATION & CONSTRUCTION            |                   |                  |            |                   |                   |                     |                      |            |              |  |      |      |      |      |      |      |      |  |            |  |                   |                      |                      |         |      |      |      |      |      |
|  | SCOPE DEFINED PENDING RESEARCH & DEVELOPMENT EFFORTS                        |                   |                  |            |                   |                   |                     |                      |            |              |  |      |      |      |      |      |      |      |  |            |  |                   |                      |                      |         |      |      |      |      |      |





# Resiliency Enhancement Timeline - Mid Term

Grayed Areas = Research & Development | Colored Areas = Implementation of Shoreline Resiliency & Resiliency Projects



# Resiliency Enhancement Timeline - Long Term

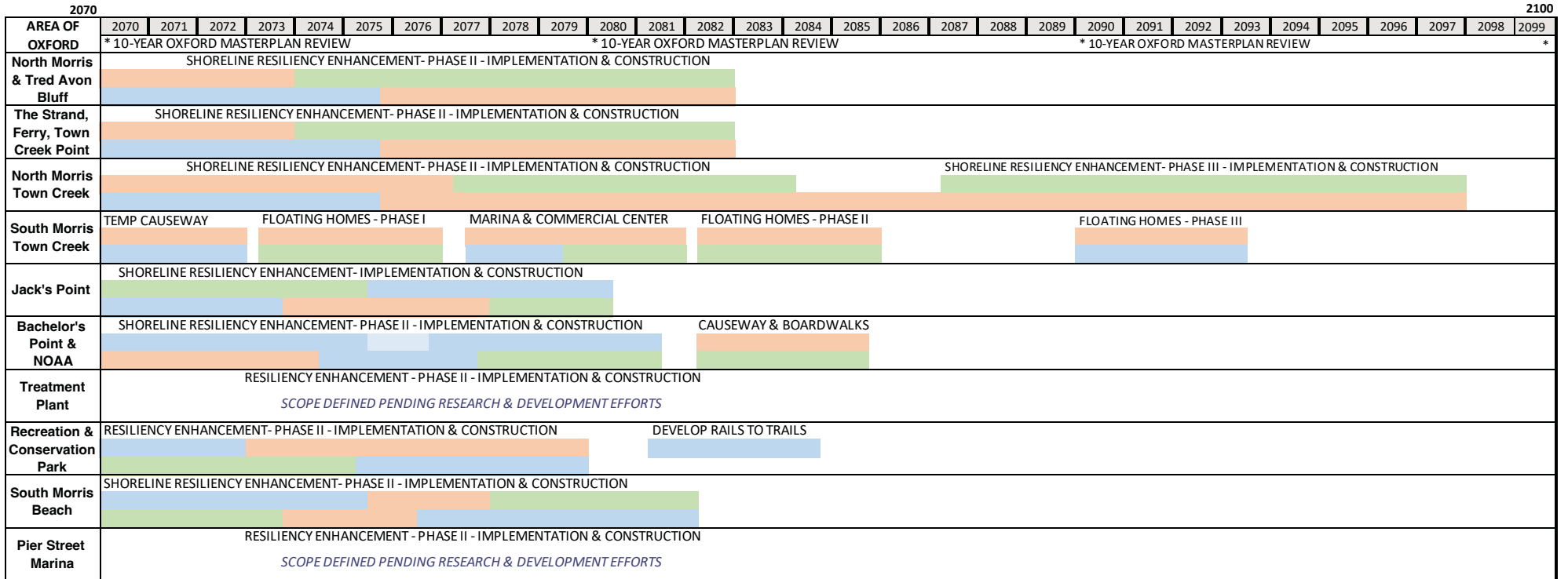
## 2070 - 2100

The following timeline is a projection of suggested timelots for activities described in Volume 1 of this report. These activities are divided between research & development and/or implementation & construction phases. See Volume 1 for details.

### LEGEND OF RESILIENCY ENHANCEMENT EFFORTS

| RESEARCH & DEVELOPMENT   | SHORELINE RESILIENCY - NON STRUCTURAL METHOD   | SHORELINE RESILIENCY - HYBRID METHOD  | RESILIENCY PROJECTS - HARDSCAPES, CONSTRUCTION & INFRASTRUCTURES   |
|--|--|---|--|
| Monitoring<br>Survey<br>Planning & Design<br>Review & Community Approvals<br>Zoning Modifications<br>Government Approvals<br>Funding | Marsh Restoration or Creation<br>Grading<br>Wetland & Beach Nourishment<br>Dune Creation & Restoration | Fiber Logs<br>Rock Sills<br>Toe Revetments<br>Oyster Reefs<br>Breakwaters<br>Jetties & Groins<br>Seawalls<br>Naturescapes | Repair or Replace Tide Gates<br>Floating Homes<br>Boathouses<br>Elevated Walkways & Piers<br>Causeway Modifications<br>Public Utility Improvements<br>Upgrade Pumping Stations |

### \* 10-YEAR OXFORD MASTERPLAN REVIEW





# Resiliency Enhancement Timeline - Long Term

Grayed Areas = Research & Development | Colored Areas = Implementation of Shoreline Resiliency & Resiliency Projects





